

## Natalie Gordon

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**From:** Natalie Gordon  
**Sent:** Monday, November 18, 2019 5:43 PM  
**To:** Mike Bratcher (mike.bratcher@state.nm.us); Victoria Venegas (Victoria.Venegas@state.nm.us); Robert Hamlet (Robert.Hamlet@state.nm.us)  
**Cc:** Johnson, Misti M. (MRO); Isaac Castro (icastro@marathonoil.com); Dennis Williams (DWilliams@vertex.ca); Dhugal Hanton (DHanton@vertex.ca)  
**Subject:** 2RP-5499/2RP-5652: Trebuchet Fee 23 28 19 WXY # 010H 48-hr Sampling Notification - Marathon Oil

All:

Please accept this email as 48-hr notification that Vertex Resource Services Inc. has scheduled confirmation sampling to be conducted at Trebuchet Fee 23 28 19 WXY #010H for Incidents 2RP-5499 and 2RP-5652, DOR: 6/19/2019.

On November 21, 2019 beginning at 8:00 a.m., Vertex personnel will be onsite to complete remediation and collect confirmation samples for closure of the above referenced incidents. There is a chance that remediation and confirmation sampling may continue into November 22, 2019.

If you need assistance with directions to the site, or have any questions or concerns, please do not hesitate to contact me.

Thank you,  
Natalie



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 19, 2019

Isaac Castro  
Marathon Oil Company  
4111 Tidwell Road  
Carlsbad, NM 88220  
TEL: (575) 297-0956  
FAX

RE: Trebuchet Fec 23 28 19

OrderNo.: 1907601

Dear Isaac Castro:

Hall Environmental Analysis Laboratory received 20 sample(s) on 7/12/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-01 2'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:00:00 AM

**Lab ID:** 1907601-001

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	7/13/2019 3:49:20 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/13/2019 3:49:20 PM
Surr: DNOP	106	70-130		%Rec	1	7/13/2019 3:49:20 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 12:35:49 AM
Surr: BFB	91.2	73.8-119		%Rec	1	7/16/2019 12:35:49 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 12:35:49 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 12:35:49 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 12:35:49 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/16/2019 12:35:49 AM
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	7/16/2019 12:35:49 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	7/17/2019 6:23:28 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-02 2'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:10:00 AM

**Lab ID:** 1907601-002

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/13/2019 4:11:36 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/13/2019 4:11:36 PM
Surr: DNOP	108	70-130		%Rec	1	7/13/2019 4:11:36 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 1:47:00 AM
Surr: BFB	95.3	73.8-119		%Rec	1	7/16/2019 1:47:00 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 1:47:00 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 1:47:00 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 1:47:00 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/16/2019 1:47:00 AM
Surr: 4-Bromofluorobenzene	96.8	80-120		%Rec	1	7/16/2019 1:47:00 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	3800	150		mg/Kg	50	7/17/2019 6:35:53 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-03 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:15:00 AM

**Lab ID:** 1907601-003

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	7/13/2019 4:33:58 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/13/2019 4:33:58 PM
Surr: DNOP	95.3	70-130		%Rec	1	7/13/2019 4:33:58 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 2:58:04 AM
Surr: BFB	97.1	73.8-119		%Rec	1	7/16/2019 2:58:04 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	7/16/2019 2:58:04 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 2:58:04 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 2:58:04 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/16/2019 2:58:04 AM
Surr: 4-Bromofluorobenzene	98.4	80-120		%Rec	1	7/16/2019 2:58:04 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1900	60		mg/Kg	20	7/17/2019 12:52:52 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-04 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:20:00 AM

**Lab ID:** 1907601-004

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/13/2019 4:56:24 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/13/2019 4:56:24 PM
Surr: DNOP	95.3	70-130		%Rec	1	7/13/2019 4:56:24 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 3:21:39 AM
Surr: BFB	93.7	73.8-119		%Rec	1	7/16/2019 3:21:39 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 3:21:39 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 3:21:39 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 3:21:39 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/16/2019 3:21:39 AM
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	7/16/2019 3:21:39 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2100	60		mg/Kg	20	7/17/2019 1:05:17 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-05 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:30:00 AM

**Lab ID:** 1907601-005

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/16/2019 3:45:03 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/16/2019 3:45:03 AM
Surr: DNOP	86.3	70-130		%Rec	1	7/16/2019 3:45:03 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 3:45:18 AM
Surr: BFB	107	73.8-119		%Rec	1	7/16/2019 3:45:18 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 3:45:18 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 3:45:18 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 3:45:18 AM
Xylenes, Total	ND	0.098		mg/Kg	1	7/16/2019 3:45:18 AM
Surr: 4-Bromofluorobenzene	110	80-120		%Rec	1	7/16/2019 3:45:18 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1900	60		mg/Kg	20	7/17/2019 1:17:41 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-06 2'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:40:00 AM

**Lab ID:** 1907601-006

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	7/16/2019 4:07:29 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	7/16/2019 4:07:29 AM
Surr: DNOP	90.4	70-130		%Rec	1	7/16/2019 4:07:29 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/16/2019 4:09:04 AM
Surr: BFB	94.2	73.8-119		%Rec	1	7/16/2019 4:09:04 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 4:09:04 AM
Toluene	ND	0.050		mg/Kg	1	7/16/2019 4:09:04 AM
Ethylbenzene	ND	0.050		mg/Kg	1	7/16/2019 4:09:04 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/16/2019 4:09:04 AM
Surr: 4-Bromofluorobenzene	95.6	80-120		%Rec	1	7/16/2019 4:09:04 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	290	60		mg/Kg	20	7/17/2019 1:30:06 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-07 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 9:50:00 AM

**Lab ID:** 1907601-007

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/16/2019 4:29:38 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/16/2019 4:29:38 AM
Surr: DNOP	91.6	70-130		%Rec	1	7/16/2019 4:29:38 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 4:32:47 AM
Surr: BFB	95.9	73.8-119		%Rec	1	7/16/2019 4:32:47 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/16/2019 4:32:47 AM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 4:32:47 AM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 4:32:47 AM
Xylenes, Total	ND	0.099		mg/Kg	1	7/16/2019 4:32:47 AM
Surr: 4-Bromofluorobenzene	96.5	80-120		%Rec	1	7/16/2019 4:32:47 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1900	60		mg/Kg	20	7/17/2019 11:46:25 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-08 2'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 10:00:00 AM

**Lab ID:** 1907601-008

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/16/2019 4:51:48 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/16/2019 4:51:48 AM
Surr: DNOP	90.6	70-130		%Rec	1	7/16/2019 4:51:48 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 3:28:35 PM
Surr: BFB	108	73.8-119		%Rec	1	7/15/2019 3:28:35 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 3:28:35 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 3:28:35 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 3:28:35 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/15/2019 3:28:35 PM
Surr: 4-Bromofluorobenzene	95.1	80-120		%Rec	1	7/15/2019 3:28:35 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	62	60		mg/Kg	20	7/17/2019 11:58:49 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-09 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 10:10:00 AM

**Lab ID:** 1907601-009

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	7/16/2019 5:13:49 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	7/16/2019 5:13:49 AM
Surr: DNOP	89.2	70-130		%Rec	1	7/16/2019 5:13:49 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 3:51:25 PM
Surr: BFB	106	73.8-119		%Rec	1	7/15/2019 3:51:25 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 3:51:25 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 3:51:25 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 3:51:25 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/15/2019 3:51:25 PM
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	7/15/2019 3:51:25 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	7/18/2019 2:53:24 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-10 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 10:20:00 AM

**Lab ID:** 1907601-010

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.2		mg/Kg	1	7/16/2019 5:35:57 AM
Motor Oil Range Organics (MRO)	ND	41		mg/Kg	1	7/16/2019 5:35:57 AM
Surr: DNOP	92.4	70-130		%Rec	1	7/16/2019 5:35:57 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/15/2019 4:14:16 PM
Surr: BFB	107	73.8-119		%Rec	1	7/15/2019 4:14:16 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 4:14:16 PM
Toluene	ND	0.049		mg/Kg	1	7/15/2019 4:14:16 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/15/2019 4:14:16 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/15/2019 4:14:16 PM
Surr: 4-Bromofluorobenzene	94.7	80-120		%Rec	1	7/15/2019 4:14:16 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1600	60		mg/Kg	20	7/17/2019 12:23:37 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
D	Sample Diluted Due to Matrix	E	Value above quantitation range
H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
PQL	Practical Quantitative Limit	RL	Reporting Limit
S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-11 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 10:30:00 AM

**Lab ID:** 1907601-011

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	7/16/2019 5:58:16 AM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	7/16/2019 5:58:16 AM
Surr: DNOP	101	70-130		%Rec	1	7/16/2019 5:58:16 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 4:37:06 PM
Surr: BFB	105	73.8-119		%Rec	1	7/15/2019 4:37:06 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 4:37:06 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 4:37:06 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 4:37:06 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/15/2019 4:37:06 PM
Surr: 4-Bromofluorobenzene	94.0	80-120		%Rec	1	7/15/2019 4:37:06 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1700	60		mg/Kg	20	7/17/2019 12:36:02 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-12 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 10:40:00 AM

**Lab ID:** 1907601-012

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.2		mg/Kg	1	7/16/2019 6:20:29 AM
Motor Oil Range Organics (MRO)	ND	41		mg/Kg	1	7/16/2019 6:20:29 AM
Surr: DNOP	83.8	70-130		%Rec	1	7/16/2019 6:20:29 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/16/2019 7:55:29 PM
Surr: BFB	100	73.8-119		%Rec	1	7/16/2019 7:55:29 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	7/16/2019 7:55:29 PM
Toluene	ND	0.049		mg/Kg	1	7/16/2019 7:55:29 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/16/2019 7:55:29 PM
Xylenes, Total	ND	0.098		mg/Kg	1	7/16/2019 7:55:29 PM
Surr: 4-Bromofluorobenzene	87.9	80-120		%Rec	1	7/16/2019 7:55:29 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1800	60		mg/Kg	20	7/18/2019 10:20:24 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-13 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:00:00 AM

**Lab ID:** 1907601-014

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/16/2019 6:42:32 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/16/2019 6:42:32 AM
Surr: DNOP	84.3	70-130		%Rec	1	7/16/2019 6:42:32 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/15/2019 4:59:55 PM
Surr: BFB	104	73.8-119		%Rec	1	7/15/2019 4:59:55 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 4:59:55 PM
Toluene	ND	0.049		mg/Kg	1	7/15/2019 4:59:55 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/15/2019 4:59:55 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 4:59:55 PM
Surr: 4-Bromofluorobenzene	91.6	80-120		%Rec	1	7/15/2019 4:59:55 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1900	60		mg/Kg	20	7/17/2019 12:48:26 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-14 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:10:00 AM

**Lab ID:** 1907601-015

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.6		mg/Kg	1	7/16/2019 7:04:38 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	7/16/2019 7:04:38 AM
Surr: DNOP	84.5	70-130		%Rec	1	7/16/2019 7:04:38 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 5:22:43 PM
Surr: BFB	104	73.8-119		%Rec	1	7/15/2019 5:22:43 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 5:22:43 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 5:22:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 5:22:43 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 5:22:43 PM
Surr: 4-Bromofluorobenzene	93.0	80-120		%Rec	1	7/15/2019 5:22:43 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2300	150		mg/Kg	50	7/18/2019 3:05:49 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907601

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-15 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:20:00 AM

**Lab ID:** 1907601-016

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/16/2019 7:26:47 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/16/2019 7:26:47 AM
Surr: DNOP	84.9	70-130		%Rec	1	7/16/2019 7:26:47 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/15/2019 5:45:29 PM
Surr: BFB	106	73.8-119		%Rec	1	7/15/2019 5:45:29 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 5:45:29 PM
Toluene	ND	0.049		mg/Kg	1	7/15/2019 5:45:29 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/15/2019 5:45:29 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 5:45:29 PM
Surr: 4-Bromofluorobenzene	92.8	80-120		%Rec	1	7/15/2019 5:45:29 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2000	60		mg/Kg	20	7/17/2019 1:38:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907601

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** TP19-16 4'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:30:00 AM

**Lab ID:** 1907601-017

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	7/16/2019 7:49:07 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	7/16/2019 7:49:07 AM
Surr: DNOP	84.2	70-130		%Rec	1	7/16/2019 7:49:07 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	7/15/2019 6:08:14 PM
Surr: BFB	107	73.8-119		%Rec	1	7/15/2019 6:08:14 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 6:08:14 PM
Toluene	ND	0.049		mg/Kg	1	7/15/2019 6:08:14 PM
Ethylbenzene	ND	0.049		mg/Kg	1	7/15/2019 6:08:14 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 6:08:14 PM
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	7/15/2019 6:08:14 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1800	60		mg/Kg	20	7/17/2019 1:50:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** SS19-17 0'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:40:00 AM

**Lab ID:** 1907601-018

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/16/2019 8:33:41 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/16/2019 8:33:41 AM
Surr: DNOP	93.9	70-130		%Rec	1	7/16/2019 8:33:41 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 6:30:58 PM
Surr: BFB	106	73.8-119		%Rec	1	7/15/2019 6:30:58 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 6:30:58 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 6:30:58 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 6:30:58 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 6:30:58 PM
Surr: 4-Bromofluorobenzene	91.8	80-120		%Rec	1	7/15/2019 6:30:58 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	130	60		mg/Kg	20	7/17/2019 2:02:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** SS19-18 0'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 11:50:00 AM

**Lab ID:** 1907601-019

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	7/16/2019 8:55:53 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/16/2019 8:55:53 AM
Surr: DNOP	83.2	70-130		%Rec	1	7/16/2019 8:55:53 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 7:39:09 PM
Surr: BFB	107	73.8-119		%Rec	1	7/15/2019 7:39:09 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 7:39:09 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 7:39:09 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 7:39:09 PM
Xylenes, Total	ND	0.10		mg/Kg	1	7/15/2019 7:39:09 PM
Surr: 4-Bromofluorobenzene	96.3	80-120		%Rec	1	7/15/2019 7:39:09 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	87	60		mg/Kg	20	7/17/2019 2:15:16 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1907601**

Date Reported: 7/19/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** SS19-19 0'

**Project:** Trebuchet Fec 23 28 19

**Collection Date:** 7/10/2019 12:00:00 PM

**Lab ID:** 1907601-020

**Matrix:** SOIL

**Received Date:** 7/12/2019 7:50:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	7/16/2019 9:18:10 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	7/16/2019 9:18:10 AM
Surr: DNOP	89.6	70-130		%Rec	1	7/16/2019 9:18:10 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	7/15/2019 8:01:50 PM
Surr: BFB	104	73.8-119		%Rec	1	7/15/2019 8:01:50 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	7/15/2019 8:01:50 PM
Toluene	ND	0.050		mg/Kg	1	7/15/2019 8:01:50 PM
Ethylbenzene	ND	0.050		mg/Kg	1	7/15/2019 8:01:50 PM
Xylenes, Total	ND	0.099		mg/Kg	1	7/15/2019 8:01:50 PM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	7/15/2019 8:01:50 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	290	60		mg/Kg	20	7/17/2019 2:27:40 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company  
**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>MB-46214</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46214</b>	RunNo: <b>61409</b>								
Prep Date: <b>7/16/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2082660</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46214</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46214</b>	RunNo: <b>61409</b>								
Prep Date: <b>7/16/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2082661</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.8	90	110			

Sample ID: <b>MB-46223</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46223</b>	RunNo: <b>61446</b>								
Prep Date: <b>7/17/2019</b>	Analysis Date: <b>7/17/2019</b>	SeqNo: <b>2083563</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46223</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46223</b>	RunNo: <b>61446</b>								
Prep Date: <b>7/17/2019</b>	Analysis Date: <b>7/17/2019</b>	SeqNo: <b>2083564</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

Sample ID: <b>MB-46246</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46246</b>	RunNo: <b>61473</b>								
Prep Date: <b>7/18/2019</b>	Analysis Date: <b>7/18/2019</b>	SeqNo: <b>2084960</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46246</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46246</b>	RunNo: <b>61473</b>								
Prep Date: <b>7/18/2019</b>	Analysis Date: <b>7/18/2019</b>	SeqNo: <b>2084961</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.1	90	110			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company  
**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>LCS-46156</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46156</b>	RunNo: <b>61377</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/13/2019</b>	SeqNo: <b>2080458</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	57	10	50.00	0	115	63.9	124			
Surr: DNOP	5.4		5.000		108	70	130			

Sample ID: <b>MB-46156</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46156</b>	RunNo: <b>61377</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/13/2019</b>	SeqNo: <b>2080459</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		127	70	130			

Sample ID: <b>LCS-46194</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46194</b>	RunNo: <b>61390</b>								
Prep Date: <b>7/16/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081502</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.6		5.000		92.0	70	130			

Sample ID: <b>MB-46194</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46194</b>	RunNo: <b>61390</b>								
Prep Date: <b>7/16/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081503</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	9.8		10.00		97.7	70	130			

Sample ID: <b>1907601-020AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SS19-19 0'</b>	Batch ID: <b>46167</b>	RunNo: <b>61384</b>								
Prep Date: <b>7/13/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081604</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.5	47.26	2.198	101	57	142			
Surr: DNOP	3.8		4.726		80.3	70	130			

Sample ID: <b>1907601-020AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SS19-19 0'</b>	Batch ID: <b>46167</b>	RunNo: <b>61384</b>								
Prep Date: <b>7/13/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081605</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	9.7	48.40	2.198	105	57	142	6.34	20	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company  
**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>1907601-020AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>SS19-19 0'</b>	Batch ID: <b>46167</b>	RunNo: <b>61384</b>								
Prep Date: <b>7/13/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081605</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	4.2		4.840		87.5	70	130	0	0	

Sample ID: <b>LCS-46167</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46167</b>	RunNo: <b>61384</b>								
Prep Date: <b>7/13/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081606</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	63.9	124			
Surr: DNOP	4.2		5.000		84.4	70	130			

Sample ID: <b>MB-46167</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46167</b>	RunNo: <b>61384</b>								
Prep Date: <b>7/13/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081607</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.2		10.00		91.6	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company  
**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>MB-46155</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080717</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1000		93.6	73.8	119			

Sample ID: <b>LCS-46155</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/15/2019</b>	SeqNo: <b>2080718</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	21	5.0	25.00	0	84.5	80.1	123			
Surr: BFB	1200		1000		119	73.8	119			S

Sample ID: <b>1907601-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>TP19-01 2'</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080721</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	18	4.9	24.44	0	74.0	69.1	142			
Surr: BFB	1000		977.5		104	73.8	119			

Sample ID: <b>1907601-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>TP19-01 2'</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080722</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	19	4.9	24.68	0	76.5	69.1	142	4.28	20	
Surr: BFB	1000		987.2		104	73.8	119	0	0	

Sample ID: <b>MB-46184</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46184</b>	RunNo: <b>61408</b>								
Prep Date: <b>7/15/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081931</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		106	73.8	119			

Sample ID: <b>LCS-46184</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46184</b>	RunNo: <b>61408</b>								
Prep Date: <b>7/15/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081932</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

Client: Marathon Oil Company

Project: Trebuchet Fec 23 28 19

Sample ID: <b>LCS-46184</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46184</b>	RunNo: <b>61408</b>								
Prep Date: <b>7/15/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081932</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	95.5	80.1	123			
Surr: BFB	1200		1000		120	73.8	119			S

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>MB-46155</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080750</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.1	80	120			

Sample ID: <b>LCS-46155</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/15/2019</b>	SeqNo: <b>2080751</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	1.000	0	98.8	80	120			
Toluene	1.0	0.050	1.000	0	102	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.0	0.10	3.000	0	100	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		97.5	80	120			

Sample ID: <b>1907601-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>TP19-02 2'</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080754</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.89	0.024	0.9785	0	91.3	63.9	127			
Toluene	0.94	0.049	0.9785	0.009566	95.1	69.9	131			
Ethylbenzene	0.95	0.049	0.9785	0	96.9	71	132			
Xylenes, Total	2.8	0.098	2.935	0	96.6	71.8	131			
Surr: 4-Bromofluorobenzene	0.96		0.9785		98.5	80	120			

Sample ID: <b>1907601-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>TP19-02 2'</b>	Batch ID: <b>46155</b>	RunNo: <b>61374</b>								
Prep Date: <b>7/12/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2080755</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.82	0.024	0.9766	0	84.0	63.9	127	8.44	20	
Toluene	0.91	0.049	0.9766	0.009566	92.0	69.9	131	3.42	20	
Ethylbenzene	0.92	0.049	0.9766	0	94.2	71	132	3.01	20	
Xylenes, Total	2.7	0.098	2.930	0	93.7	71.8	131	3.21	20	
Surr: 4-Bromofluorobenzene	0.97		0.9766		99.6	80	120	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907601

19-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet Fec 23 28 19

Sample ID: <b>MB-46184</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46184</b>	RunNo: <b>61408</b>								
Prep Date: <b>7/15/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081946</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.92		1.000		92.3	80	120			

Sample ID: <b>LCS-46184</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46184</b>	RunNo: <b>61408</b>								
Prep Date: <b>7/15/2019</b>	Analysis Date: <b>7/16/2019</b>	SeqNo: <b>2081947</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	97.6	80	120			
Toluene	1.0	0.050	1.000	0	99.6	80	120			
Ethylbenzene	0.97	0.050	1.000	0	97.2	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.6	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		105	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

**Sample Log-In Check List**

Client Name: **MARATHON OIL COMPA**      Work Order Number: **1907601**      RcptNo: 1

Received By: **Desiree Dominguez**      7/12/2019 7:50:00 AM      *DD*  
 Completed By: **Desiree Dominguez**      7/12/2019 9:37:44 AM      *DD*  
 Reviewed By: **DAD 7/12/19**

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Courier

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: **ENM 7/12/19**

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       ~~NA~~

Person Notified:	<b>Dennis Williams</b>	Date:	<b>7/12/19</b>
By Whom:	<b>Erin Melendez</b>	Via:	<input type="checkbox"/> eMail <input checked="" type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<b>-012 and -013 have same ID's and only 1 soil was submitted.</b>		
Client Instructions:			

16. Additional remarks: **- ENM 7/12/19**

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.1	Good	Not Present			

# Chain-of-Custody Record

Client: Marathon Oil  
 Mailing Address: 4111 S. Tidwell Road  
Carlsbad, NM 88220  
 Phone #: 505-988-0561  
 email or Fax#: icastro@marathonoil.com  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  AZ Compliance  
 NELAC  Other  
 EDD (Type) \_\_\_\_\_

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
7-10-2011	9:00	S	TP19-01 2'	1 Jar	ice	-001
7-10-2011	9:10	S	TP19-02 2'	1 Jar	ice	-002
7-10-2011	9:15	S	TP19-03 4'	1 Jar	ice	-003
7-10-2011	9:20	S	TP19-04 4'	1 Jar	ice	-004
7-10-2011	9:20	S	TP19-05 4'	1 Jar	ice	-005
7-10-2011	9:40	S	TP19-06 2'	1 Jar	ice	-006
7-10-2011	9:50	S	TP19-07 4'	1 Jar	ice	-007
7-10-2011	10:00	S	TP19-08 2'	1 Jar	ice	-008
7-10-2011	10:10	S	TP19-09 4'	1 Jar	ice	-009
7-10-2011	10:20	S	TP19-10 4'	1 Jar	ice	-010
7-10-2011	10:30	S	TP19-11 4'	1 Jar	ice	-011
7-10-2011	10:40	S	TP19-12 4'	1 Jar	ice	-012

Date: 7-11-2011 Time: 7:45 AM  
 Relinquished by: [Signature]  
 Date: 7/11/11 Time: 1300  
 Relinquished by: [Signature]

Turn-Around Time: 5 days  
 Standard  Rush  
 Project Name: Tribute + Fee 23 28 19  
 Project #: 14E-02213

Project Manager: Dennis Williams  
Permin@vertex.ca  
Esque Castro - icastro@marathonoil.com  
 Sampler: Jason Carlsbad  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 5.5 0.4 = 5.1°C

TPH:8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl <sup>-</sup> , F <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>-</sup> , SO <sub>4</sub> <sup>-</sup>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
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Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 23, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX:

RE: Trebuchet Fee 23 28 19

OrderNo.: 1908977

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 49 sample(s) on 8/19/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-01 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:00:00 AM

**Lab ID:** 1908977-001

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	8600	300		mg/Kg	100	8/21/2019 9:51:16 PM	46925
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/20/2019 10:22:29 AM	46909
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/20/2019 10:22:29 AM	46909
Surr: DNOP	98.1	70-130		%Rec	1	8/20/2019 10:22:29 AM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/20/2019 9:37:00 AM	46897
Surr: BFB	93.4	77.4-118		%Rec	1	8/20/2019 9:37:00 AM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/20/2019 9:37:00 AM	46897
Toluene	ND	0.050		mg/Kg	1	8/20/2019 9:37:00 AM	46897
Ethylbenzene	ND	0.050		mg/Kg	1	8/20/2019 9:37:00 AM	46897
Xylenes, Total	ND	0.099		mg/Kg	1	8/20/2019 9:37:00 AM	46897
Surr: 4-Bromofluorobenzene	94.5	80-120		%Rec	1	8/20/2019 9:37:00 AM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-02 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:05:00 AM

**Lab ID:** 1908977-002

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	5300	300		mg/Kg	100	8/21/2019 10:03:38 PM	46925
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/20/2019 11:29:07 AM	46909
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/20/2019 11:29:07 AM	46909
Surr: DNOP	95.8	70-130		%Rec	1	8/20/2019 11:29:07 AM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/20/2019 10:47:22 AM	46897
Surr: BFB	93.1	77.4-118		%Rec	1	8/20/2019 10:47:22 AM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 10:47:22 AM	46897
Toluene	ND	0.047		mg/Kg	1	8/20/2019 10:47:22 AM	46897
Ethylbenzene	ND	0.047		mg/Kg	1	8/20/2019 10:47:22 AM	46897
Xylenes, Total	ND	0.094		mg/Kg	1	8/20/2019 10:47:22 AM	46897
Surr: 4-Bromofluorobenzene	95.8	80-120		%Rec	1	8/20/2019 10:47:22 AM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-03 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:10:00 AM

**Lab ID:** 1908977-003

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	4900	300		mg/Kg	100	8/22/2019 6:29:39 AM	46925
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/20/2019 11:51:03 AM	46909
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/20/2019 11:51:03 AM	46909
Surr: DNOP	84.3	70-130		%Rec	1	8/20/2019 11:51:03 AM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 11:57:47 AM	46897
Surr: BFB	92.1	77.4-118		%Rec	1	8/20/2019 11:57:47 AM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/20/2019 11:57:47 AM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 11:57:47 AM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 11:57:47 AM	46897
Xylenes, Total	ND	0.098		mg/Kg	1	8/20/2019 11:57:47 AM	46897
Surr: 4-Bromofluorobenzene	93.5	80-120		%Rec	1	8/20/2019 11:57:47 AM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908977**

Date Reported: **8/23/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-04 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:15:00 AM

**Lab ID:** 1908977-004

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	9700	300		mg/Kg	100	8/21/2019 10:40:39 PM	46925
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/20/2019 12:13:22 PM	46909
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/20/2019 12:13:22 PM	46909
Surr: DNOP	103	70-130		%Rec	1	8/20/2019 12:13:22 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 12:21:16 PM	46897
Surr: BFB	94.0	77.4-118		%Rec	1	8/20/2019 12:21:16 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 12:21:16 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 12:21:16 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 12:21:16 PM	46897
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 12:21:16 PM	46897
Surr: 4-Bromofluorobenzene	95.9	80-120		%Rec	1	8/20/2019 12:21:16 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908977**

Date Reported: **8/23/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-05 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:20:00 AM

**Lab ID:** 1908977-005

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	5000	300		mg/Kg	100	8/21/2019 10:52:59 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/20/2019 12:35:27 PM	46909
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/20/2019 12:35:27 PM	46909
Surr: DNOP	77.5	70-130		%Rec	1	8/20/2019 12:35:27 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 12:44:49 PM	46897
Surr: BFB	94.1	77.4-118		%Rec	1	8/20/2019 12:44:49 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/20/2019 12:44:49 PM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 12:44:49 PM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 12:44:49 PM	46897
Xylenes, Total	ND	0.098		mg/Kg	1	8/20/2019 12:44:49 PM	46897
Surr: 4-Bromofluorobenzene	96.3	80-120		%Rec	1	8/20/2019 12:44:49 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-06 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:25:00 AM

**Lab ID:** 1908977-006

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	5200	300		mg/Kg	100	8/21/2019 11:05:20 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/20/2019 12:57:34 PM	46909
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/20/2019 12:57:34 PM	46909
Surr: DNOP	82.3	70-130		%Rec	1	8/20/2019 12:57:34 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 1:08:22 PM	46897
Surr: BFB	101	77.4-118		%Rec	1	8/20/2019 1:08:22 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 1:08:22 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 1:08:22 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 1:08:22 PM	46897
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 1:08:22 PM	46897
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	8/20/2019 1:08:22 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-07 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:30:00 AM

**Lab ID:** 1908977-007

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	6300	300		mg/Kg	100	8/21/2019 11:17:40 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	8/20/2019 1:19:41 PM	46909
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	8/20/2019 1:19:41 PM	46909
Surr: DNOP	80.7	70-130		%Rec	1	8/20/2019 1:19:41 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 1:31:56 PM	46897
Surr: BFB	97.4	77.4-118		%Rec	1	8/20/2019 1:31:56 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 1:31:56 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 1:31:56 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 1:31:56 PM	46897
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 1:31:56 PM	46897
Surr: 4-Bromofluorobenzene	98.9	80-120		%Rec	1	8/20/2019 1:31:56 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-08 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:35:00 AM

**Lab ID:** 1908977-008

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	5200	300		mg/Kg	100	8/21/2019 11:30:01 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/20/2019 1:41:54 PM	46909
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/20/2019 1:41:54 PM	46909
Surr: DNOP	84.6	70-130		%Rec	1	8/20/2019 1:41:54 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/20/2019 1:55:34 PM	46897
Surr: BFB	95.2	77.4-118		%Rec	1	8/20/2019 1:55:34 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 1:55:34 PM	46897
Toluene	ND	0.047		mg/Kg	1	8/20/2019 1:55:34 PM	46897
Ethylbenzene	ND	0.047		mg/Kg	1	8/20/2019 1:55:34 PM	46897
Xylenes, Total	ND	0.094		mg/Kg	1	8/20/2019 1:55:34 PM	46897
Surr: 4-Bromofluorobenzene	96.3	80-120		%Rec	1	8/20/2019 1:55:34 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-09 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:40:00 AM

**Lab ID:** 1908977-009

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	4200	150		mg/Kg	50	8/21/2019 11:42:22 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/20/2019 2:04:05 PM	46909
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/20/2019 2:04:05 PM	46909
Surr: DNOP	89.9	70-130		%Rec	1	8/20/2019 2:04:05 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/20/2019 2:19:08 PM	46897
Surr: BFB	94.4	77.4-118		%Rec	1	8/20/2019 2:19:08 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 2:19:08 PM	46897
Toluene	ND	0.047		mg/Kg	1	8/20/2019 2:19:08 PM	46897
Ethylbenzene	ND	0.047		mg/Kg	1	8/20/2019 2:19:08 PM	46897
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 2:19:08 PM	46897
Surr: 4-Bromofluorobenzene	94.6	80-120		%Rec	1	8/20/2019 2:19:08 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-021 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:45:00 AM

**Lab ID:** 1908977-010

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	4000	150		mg/Kg	50	8/21/2019 11:54:43 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	19	8.8		mg/Kg	1	8/20/2019 2:26:19 PM	46909
Motor Oil Range Organics (MRO)	51	44		mg/Kg	1	8/20/2019 2:26:19 PM	46909
Surr: DNOP	94.6	70-130		%Rec	1	8/20/2019 2:26:19 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 2:42:43 PM	46897
Surr: BFB	94.7	77.4-118		%Rec	1	8/20/2019 2:42:43 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 2:42:43 PM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 2:42:43 PM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 2:42:43 PM	46897
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 2:42:43 PM	46897
Surr: 4-Bromofluorobenzene	95.5	80-120		%Rec	1	8/20/2019 2:42:43 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-022 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:50:00 AM

**Lab ID:** 1908977-011

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	4300	150		mg/Kg	50	8/22/2019 12:07:03 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	44	9.6		mg/Kg	1	8/20/2019 2:48:22 PM	46909
Motor Oil Range Organics (MRO)	86	48		mg/Kg	1	8/20/2019 2:48:22 PM	46909
Surr: DNOP	107	70-130		%Rec	1	8/20/2019 2:48:22 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 4:17:24 PM	46897
Surr: BFB	93.9	77.4-118		%Rec	1	8/20/2019 4:17:24 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 4:17:24 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 4:17:24 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 4:17:24 PM	46897
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 4:17:24 PM	46897
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	8/20/2019 4:17:24 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-023 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 8:55:00 AM

**Lab ID:** 1908977-012

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2400	150		mg/Kg	50	8/22/2019 12:19:24 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/20/2019 3:10:38 PM	46909
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/20/2019 3:10:38 PM	46909
Surr: DNOP	98.6	70-130		%Rec	1	8/20/2019 3:10:38 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 4:41:03 PM	46897
Surr: BFB	96.0	77.4-118		%Rec	1	8/20/2019 4:41:03 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 4:41:03 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 4:41:03 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 4:41:03 PM	46897
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 4:41:03 PM	46897
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	8/20/2019 4:41:03 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-024 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:00:00 AM

**Lab ID:** 1908977-013

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	8/22/2019 12:31:45 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/20/2019 3:32:47 PM	46909
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/20/2019 3:32:47 PM	46909
Surr: DNOP	106	70-130		%Rec	1	8/20/2019 3:32:47 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 5:04:39 PM	46897
Surr: BFB	91.7	77.4-118		%Rec	1	8/20/2019 5:04:39 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 5:04:39 PM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 5:04:39 PM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 5:04:39 PM	46897
Xylenes, Total	ND	0.098		mg/Kg	1	8/20/2019 5:04:39 PM	46897
Surr: 4-Bromofluorobenzene	93.0	80-120		%Rec	1	8/20/2019 5:04:39 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-025 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:05:00 AM

**Lab ID:** 1908977-014

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3300	150		mg/Kg	50	8/22/2019 1:08:46 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	20	9.2		mg/Kg	1	8/20/2019 3:55:06 PM	46909
Motor Oil Range Organics (MRO)	110	46		mg/Kg	1	8/20/2019 3:55:06 PM	46909
Surr: DNOP	109	70-130		%Rec	1	8/20/2019 3:55:06 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/20/2019 5:28:22 PM	46897
Surr: BFB	94.6	77.4-118		%Rec	1	8/20/2019 5:28:22 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/20/2019 5:28:22 PM	46897
Toluene	ND	0.047		mg/Kg	1	8/20/2019 5:28:22 PM	46897
Ethylbenzene	ND	0.047		mg/Kg	1	8/20/2019 5:28:22 PM	46897
Xylenes, Total	ND	0.094		mg/Kg	1	8/20/2019 5:28:22 PM	46897
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	8/20/2019 5:28:22 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-026 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:10:00 AM

**Lab ID:** 1908977-015

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3000	150		mg/Kg	50	8/22/2019 1:21:07 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	19	9.6		mg/Kg	1	8/20/2019 4:17:11 PM	46909
Motor Oil Range Organics (MRO)	190	48		mg/Kg	1	8/20/2019 4:17:11 PM	46909
Surr: DNOP	109	70-130		%Rec	1	8/20/2019 4:17:11 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 5:52:03 PM	46897
Surr: BFB	92.8	77.4-118		%Rec	1	8/20/2019 5:52:03 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 5:52:03 PM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 5:52:03 PM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 5:52:03 PM	46897
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 5:52:03 PM	46897
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	8/20/2019 5:52:03 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-027 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:15:00 AM

**Lab ID:** 1908977-016

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3400	150		mg/Kg	50	8/22/2019 1:33:26 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	20	9.0		mg/Kg	1	8/20/2019 4:39:27 PM	46909
Motor Oil Range Organics (MRO)	93	45		mg/Kg	1	8/20/2019 4:39:27 PM	46909
Surr: DNOP	97.2	70-130		%Rec	1	8/20/2019 4:39:27 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 6:15:40 PM	46897
Surr: BFB	93.0	77.4-118		%Rec	1	8/20/2019 6:15:40 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 6:15:40 PM	46897
Toluene	ND	0.049		mg/Kg	1	8/20/2019 6:15:40 PM	46897
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 6:15:40 PM	46897
Xylenes, Total	ND	0.098		mg/Kg	1	8/20/2019 6:15:40 PM	46897
Surr: 4-Bromofluorobenzene	93.5	80-120		%Rec	1	8/20/2019 6:15:40 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-028 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:20:00 AM

**Lab ID:** 1908977-017

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3100	150		mg/Kg	50	8/22/2019 1:45:48 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/20/2019 5:01:31 PM	46909
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/20/2019 5:01:31 PM	46909
Surr: DNOP	96.7	70-130		%Rec	1	8/20/2019 5:01:31 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/20/2019 6:39:14 PM	46897
Surr: BFB	94.6	77.4-118		%Rec	1	8/20/2019 6:39:14 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/20/2019 6:39:14 PM	46897
Toluene	ND	0.046		mg/Kg	1	8/20/2019 6:39:14 PM	46897
Ethylbenzene	ND	0.046		mg/Kg	1	8/20/2019 6:39:14 PM	46897
Xylenes, Total	ND	0.092		mg/Kg	1	8/20/2019 6:39:14 PM	46897
Surr: 4-Bromofluorobenzene	94.8	80-120		%Rec	1	8/20/2019 6:39:14 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-029 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:25:00 AM

**Lab ID:** 1908977-018

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2400	150		mg/Kg	50	8/22/2019 1:58:08 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	8/20/2019 5:23:56 PM	46909
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/20/2019 5:23:56 PM	46909
Surr: DNOP	97.0	70-130		%Rec	1	8/20/2019 5:23:56 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 7:02:46 PM	46897
Surr: BFB	92.4	77.4-118		%Rec	1	8/20/2019 7:02:46 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 7:02:46 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 7:02:46 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 7:02:46 PM	46897
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 7:02:46 PM	46897
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	8/20/2019 7:02:46 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-030 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:30:00 AM

**Lab ID:** 1908977-019

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2200	60		mg/Kg	20	8/22/2019 2:10:28 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/20/2019 5:46:16 PM	46909
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/20/2019 5:46:16 PM	46909
Surr: DNOP	95.9	70-130		%Rec	1	8/20/2019 5:46:16 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/20/2019 7:26:14 PM	46897
Surr: BFB	90.7	77.4-118		%Rec	1	8/20/2019 7:26:14 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/20/2019 7:26:14 PM	46897
Toluene	ND	0.050		mg/Kg	1	8/20/2019 7:26:14 PM	46897
Ethylbenzene	ND	0.050		mg/Kg	1	8/20/2019 7:26:14 PM	46897
Xylenes, Total	ND	0.099		mg/Kg	1	8/20/2019 7:26:14 PM	46897
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	8/20/2019 7:26:14 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-031 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:35:00 AM

**Lab ID:** 1908977-020

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3100	150		mg/Kg	50	8/22/2019 2:22:49 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/20/2019 6:08:42 PM	46909
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/20/2019 6:08:42 PM	46909
Surr: DNOP	91.6	70-130		%Rec	1	8/20/2019 6:08:42 PM	46909
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 7:49:44 PM	46897
Surr: BFB	98.8	77.4-118		%Rec	1	8/20/2019 7:49:44 PM	46897
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 7:49:44 PM	46897
Toluene	ND	0.048		mg/Kg	1	8/20/2019 7:49:44 PM	46897
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 7:49:44 PM	46897
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 7:49:44 PM	46897
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/20/2019 7:49:44 PM	46897

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-032 2'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:40:00 AM

**Lab ID:** 1908977-021

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1700	60		mg/Kg	20	8/20/2019 10:06:15 PM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/20/2019 11:00:07 PM	46910
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/20/2019 11:00:07 PM	46910
Surr: DNOP	84.9	70-130		%Rec	1	8/20/2019 11:00:07 PM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 9:47:48 PM	46899
Surr: BFB	97.8	77.4-118		%Rec	1	8/20/2019 9:47:48 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 9:47:48 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 9:47:48 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 9:47:48 PM	46899
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 9:47:48 PM	46899
Surr: 4-Bromofluorobenzene	90.4	80-120		%Rec	1	8/20/2019 9:47:48 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-033 2'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:45:00 AM

**Lab ID:** 1908977-022

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3400	150		mg/Kg	50	8/22/2019 2:35:09 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/21/2019 12:07:14 AM	46910
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 12:07:14 AM	46910
Surr: DNOP	90.8	70-130		%Rec	1	8/21/2019 12:07:14 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/20/2019 10:56:47 PM	46899
Surr: BFB	98.9	77.4-118		%Rec	1	8/20/2019 10:56:47 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/20/2019 10:56:47 PM	46899
Toluene	ND	0.050		mg/Kg	1	8/20/2019 10:56:47 PM	46899
Ethylbenzene	ND	0.050		mg/Kg	1	8/20/2019 10:56:47 PM	46899
Xylenes, Total	ND	0.099		mg/Kg	1	8/20/2019 10:56:47 PM	46899
Surr: 4-Bromofluorobenzene	92.9	80-120		%Rec	1	8/20/2019 10:56:47 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-034 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:50:00 AM

**Lab ID:** 1908977-023

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3200	150		mg/Kg	50	8/22/2019 2:47:30 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/21/2019 12:29:48 AM	46910
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 12:29:48 AM	46910
Surr: DNOP	93.4	70-130		%Rec	1	8/21/2019 12:29:48 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2019 12:05:29 AM	46899
Surr: BFB	101	77.4-118		%Rec	1	8/21/2019 12:05:29 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/21/2019 12:05:29 AM	46899
Toluene	ND	0.047		mg/Kg	1	8/21/2019 12:05:29 AM	46899
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2019 12:05:29 AM	46899
Xylenes, Total	ND	0.093		mg/Kg	1	8/21/2019 12:05:29 AM	46899
Surr: 4-Bromofluorobenzene	93.9	80-120		%Rec	1	8/21/2019 12:05:29 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-035 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 9:55:00 AM

**Lab ID:** 1908977-024

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3500	150		mg/Kg	50	8/22/2019 2:59:51 AM	46926
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/21/2019 12:52:08 AM	46910
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/21/2019 12:52:08 AM	46910
Surr: DNOP	90.0	70-130		%Rec	1	8/21/2019 12:52:08 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2019 12:28:23 AM	46899
Surr: BFB	100	77.4-118		%Rec	1	8/21/2019 12:28:23 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/21/2019 12:28:23 AM	46899
Toluene	ND	0.048		mg/Kg	1	8/21/2019 12:28:23 AM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2019 12:28:23 AM	46899
Xylenes, Total	ND	0.096		mg/Kg	1	8/21/2019 12:28:23 AM	46899
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	8/21/2019 12:28:23 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-036 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:00:00 AM

**Lab ID:** 1908977-025

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3000	150		mg/Kg	50	8/22/2019 3:36:52 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/21/2019 1:14:21 AM	46910
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/21/2019 1:14:21 AM	46910
Surr: DNOP	91.1	70-130		%Rec	1	8/21/2019 1:14:21 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/21/2019 12:51:14 AM	46899
Surr: BFB	101	77.4-118		%Rec	1	8/21/2019 12:51:14 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/21/2019 12:51:14 AM	46899
Toluene	ND	0.049		mg/Kg	1	8/21/2019 12:51:14 AM	46899
Ethylbenzene	ND	0.049		mg/Kg	1	8/21/2019 12:51:14 AM	46899
Xylenes, Total	ND	0.098		mg/Kg	1	8/21/2019 12:51:14 AM	46899
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	8/21/2019 12:51:14 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-037 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:05:00 AM

**Lab ID:** 1908977-026

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2200	150		mg/Kg	50	8/22/2019 3:49:12 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 1:36:49 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 1:36:49 AM	46910
Surr: DNOP	89.8	70-130		%Rec	1	8/21/2019 1:36:49 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2019 1:14:13 AM	46899
Surr: BFB	101	77.4-118		%Rec	1	8/21/2019 1:14:13 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/21/2019 1:14:13 AM	46899
Toluene	ND	0.047		mg/Kg	1	8/21/2019 1:14:13 AM	46899
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2019 1:14:13 AM	46899
Xylenes, Total	ND	0.093		mg/Kg	1	8/21/2019 1:14:13 AM	46899
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	8/21/2019 1:14:13 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-038 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:10:00 AM

**Lab ID:** 1908977-027

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1700	61		mg/Kg	20	8/21/2019 12:35:10 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 1:59:10 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 1:59:10 AM	46910
Surr: DNOP	92.9	70-130		%Rec	1	8/21/2019 1:59:10 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/21/2019 1:37:17 AM	46899
Surr: BFB	98.1	77.4-118		%Rec	1	8/21/2019 1:37:17 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/21/2019 1:37:17 AM	46899
Toluene	ND	0.049		mg/Kg	1	8/21/2019 1:37:17 AM	46899
Ethylbenzene	ND	0.049		mg/Kg	1	8/21/2019 1:37:17 AM	46899
Xylenes, Total	ND	0.099		mg/Kg	1	8/21/2019 1:37:17 AM	46899
Surr: 4-Bromofluorobenzene	89.6	80-120		%Rec	1	8/21/2019 1:37:17 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-039 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:15:00 AM

**Lab ID:** 1908977-028

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1200	61		mg/Kg	20	8/21/2019 12:47:34 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/21/2019 2:21:35 AM	46910
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/21/2019 2:21:35 AM	46910
Surr: DNOP	92.0	70-130		%Rec	1	8/21/2019 2:21:35 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2019 2:00:13 AM	46899
Surr: BFB	105	77.4-118		%Rec	1	8/21/2019 2:00:13 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/21/2019 2:00:13 AM	46899
Toluene	ND	0.048		mg/Kg	1	8/21/2019 2:00:13 AM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2019 2:00:13 AM	46899
Xylenes, Total	ND	0.097		mg/Kg	1	8/21/2019 2:00:13 AM	46899
Surr: 4-Bromofluorobenzene	95.4	80-120		%Rec	1	8/21/2019 2:00:13 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-040 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:20:00 AM

**Lab ID:** 1908977-029

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1800	61		mg/Kg	20	8/21/2019 12:59:59 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 2:43:55 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 2:43:55 AM	46910
Surr: DNOP	94.2	70-130		%Rec	1	8/21/2019 2:43:55 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/21/2019 2:23:14 AM	46899
Surr: BFB	103	77.4-118		%Rec	1	8/21/2019 2:23:14 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/21/2019 2:23:14 AM	46899
Toluene	ND	0.046		mg/Kg	1	8/21/2019 2:23:14 AM	46899
Ethylbenzene	ND	0.046		mg/Kg	1	8/21/2019 2:23:14 AM	46899
Xylenes, Total	ND	0.092		mg/Kg	1	8/21/2019 2:23:14 AM	46899
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	8/21/2019 2:23:14 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-041 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:25:00 AM

**Lab ID:** 1908977-030

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	61		mg/Kg	20	8/21/2019 1:12:23 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/21/2019 3:06:16 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 3:06:16 AM	46910
Surr: DNOP	96.5	70-130		%Rec	1	8/21/2019 3:06:16 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/21/2019 2:46:19 AM	46899
Surr: BFB	101	77.4-118		%Rec	1	8/21/2019 2:46:19 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/21/2019 2:46:19 AM	46899
Toluene	ND	0.048		mg/Kg	1	8/21/2019 2:46:19 AM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/21/2019 2:46:19 AM	46899
Xylenes, Total	ND	0.095		mg/Kg	1	8/21/2019 2:46:19 AM	46899
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	1	8/21/2019 2:46:19 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-042 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:30:00 AM

**Lab ID:** 1908977-031

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1900	60		mg/Kg	20	8/21/2019 1:24:48 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 3:28:28 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 3:28:28 AM	46910
Surr: DNOP	102	70-130		%Rec	1	8/21/2019 3:28:28 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 9:24:04 PM	46899
Surr: BFB	93.5	77.4-118		%Rec	1	8/20/2019 9:24:04 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 9:24:04 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 9:24:04 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 9:24:04 PM	46899
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 9:24:04 PM	46899
Surr: 4-Bromofluorobenzene	95.7	80-120		%Rec	1	8/20/2019 9:24:04 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-043 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:35:00 AM

**Lab ID:** 1908977-032

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3000	150		mg/Kg	50	8/22/2019 4:01:33 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/21/2019 3:50:44 AM	46910
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/21/2019 3:50:44 AM	46910
Surr: DNOP	90.6	70-130		%Rec	1	8/21/2019 3:50:44 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 9:47:42 PM	46899
Surr: BFB	95.7	77.4-118		%Rec	1	8/20/2019 9:47:42 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 9:47:42 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 9:47:42 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 9:47:42 PM	46899
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 9:47:42 PM	46899
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	8/20/2019 9:47:42 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-044 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:40:00 AM

**Lab ID:** 1908977-033

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	8/22/2019 4:13:53 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/21/2019 4:13:00 AM	46910
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 4:13:00 AM	46910
Surr: DNOP	94.9	70-130		%Rec	1	8/21/2019 4:13:00 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 10:11:27 PM	46899
Surr: BFB	92.8	77.4-118		%Rec	1	8/20/2019 10:11:27 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 10:11:27 PM	46899
Toluene	ND	0.049		mg/Kg	1	8/20/2019 10:11:27 PM	46899
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 10:11:27 PM	46899
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 10:11:27 PM	46899
Surr: 4-Bromofluorobenzene	93.7	80-120		%Rec	1	8/20/2019 10:11:27 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-045 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:45:00 AM

**Lab ID:** 1908977-034

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	60		mg/Kg	20	8/21/2019 2:26:50 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/21/2019 4:35:20 AM	46910
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 4:35:20 AM	46910
Surr: DNOP	93.4	70-130		%Rec	1	8/21/2019 4:35:20 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 10:35:04 PM	46899
Surr: BFB	93.6	77.4-118		%Rec	1	8/20/2019 10:35:04 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 10:35:04 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 10:35:04 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 10:35:04 PM	46899
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 10:35:04 PM	46899
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	8/20/2019 10:35:04 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Wall 19-01 3'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:50:00 AM

**Lab ID:** 1908977-035

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	610	60		mg/Kg	20	8/21/2019 3:04:03 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 5:19:38 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 5:19:38 AM	46910
Surr: DNOP	68.4	70-130	S	%Rec	1	8/21/2019 5:19:38 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 10:58:39 PM	46899
Surr: BFB	90.6	77.4-118		%Rec	1	8/20/2019 10:58:39 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 10:58:39 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 10:58:39 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 10:58:39 PM	46899
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 10:58:39 PM	46899
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	1	8/20/2019 10:58:39 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Wall 19-02 3'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 10:55:00 AM

**Lab ID:** 1908977-036

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	440	60		mg/Kg	20	8/21/2019 3:16:27 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/21/2019 5:41:50 AM	46910
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/21/2019 5:41:50 AM	46910
Surr: DNOP	49.5	70-130	S	%Rec	1	8/21/2019 5:41:50 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/20/2019 11:22:17 PM	46899
Surr: BFB	94.2	77.4-118		%Rec	1	8/20/2019 11:22:17 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/20/2019 11:22:17 PM	46899
Toluene	ND	0.046		mg/Kg	1	8/20/2019 11:22:17 PM	46899
Ethylbenzene	ND	0.046		mg/Kg	1	8/20/2019 11:22:17 PM	46899
Xylenes, Total	ND	0.093		mg/Kg	1	8/20/2019 11:22:17 PM	46899
Surr: 4-Bromofluorobenzene	95.6	80-120		%Rec	1	8/20/2019 11:22:17 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908977**

Date Reported: **8/23/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Wall 19-03 3'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 11:00:00 AM

**Lab ID:** 1908977-037

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2300	150		mg/Kg	50	8/22/2019 4:26:13 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 6:04:07 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 6:04:07 AM	46910
Surr: DNOP	47.1	70-130	S	%Rec	1	8/21/2019 6:04:07 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 11:45:46 PM	46899
Surr: BFB	92.9	77.4-118		%Rec	1	8/20/2019 11:45:46 PM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 11:45:46 PM	46899
Toluene	ND	0.048		mg/Kg	1	8/20/2019 11:45:46 PM	46899
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 11:45:46 PM	46899
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 11:45:46 PM	46899
Surr: 4-Bromofluorobenzene	94.2	80-120		%Rec	1	8/20/2019 11:45:46 PM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908977**

Date Reported: **8/23/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Wall 19-04 3'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 11:05:00 AM

**Lab ID:** 1908977-038

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3600	150		mg/Kg	50	8/22/2019 4:38:34 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	84	9.6		mg/Kg	1	8/21/2019 6:26:11 AM	46910
Motor Oil Range Organics (MRO)	93	48		mg/Kg	1	8/21/2019 6:26:11 AM	46910
Surr: DNOP	69.3	70-130	S	%Rec	1	8/21/2019 6:26:11 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/21/2019 12:09:16 AM	46899
Surr: BFB	89.9	77.4-118		%Rec	1	8/21/2019 12:09:16 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/21/2019 12:09:16 AM	46899
Toluene	ND	0.047		mg/Kg	1	8/21/2019 12:09:16 AM	46899
Ethylbenzene	ND	0.047		mg/Kg	1	8/21/2019 12:09:16 AM	46899
Xylenes, Total	ND	0.095		mg/Kg	1	8/21/2019 12:09:16 AM	46899
Surr: 4-Bromofluorobenzene	91.9	80-120		%Rec	1	8/21/2019 12:09:16 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Wall 19-05 3'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/18/2019 11:10:00 AM

**Lab ID:** 1908977-039

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	6600	300		mg/Kg	100	8/22/2019 4:50:55 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	140	9.5		mg/Kg	1	8/21/2019 6:48:26 AM	46910
Motor Oil Range Organics (MRO)	120	48		mg/Kg	1	8/21/2019 6:48:26 AM	46910
Surr: DNOP	64.1	70-130	S	%Rec	1	8/21/2019 6:48:26 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/21/2019 12:32:47 AM	46899
Surr: BFB	90.9	77.4-118		%Rec	1	8/21/2019 12:32:47 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/21/2019 12:32:47 AM	46899
Toluene	ND	0.049		mg/Kg	1	8/21/2019 12:32:47 AM	46899
Ethylbenzene	ND	0.049		mg/Kg	1	8/21/2019 12:32:47 AM	46899
Xylenes, Total	ND	0.098		mg/Kg	1	8/21/2019 12:32:47 AM	46899
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	8/21/2019 12:32:47 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-11 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:00:00 PM

**Lab ID:** 1908977-040

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/21/2019 4:06:05 AM	46934
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/21/2019 7:10:30 AM	46910
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 7:10:30 AM	46910
Surr: DNOP	49.5	70-130	S	%Rec	1	8/21/2019 7:10:30 AM	46910
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/21/2019 12:56:28 AM	46899
Surr: BFB	100	77.4-118		%Rec	1	8/21/2019 12:56:28 AM	46899
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/21/2019 12:56:28 AM	46899
Toluene	ND	0.050		mg/Kg	1	8/21/2019 12:56:28 AM	46899
Ethylbenzene	ND	0.050		mg/Kg	1	8/21/2019 12:56:28 AM	46899
Xylenes, Total	ND	0.10		mg/Kg	1	8/21/2019 12:56:28 AM	46899
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	8/21/2019 12:56:28 AM	46899

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-12 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:05:00 PM

**Lab ID:** 1908977-041

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2700	150		mg/Kg	50	8/22/2019 5:03:15 AM	46934
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 4:47:54 PM	46903
Surr: BFB	91.8	70-130		%Rec	1	8/20/2019 4:47:54 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/21/2019 6:41:53 PM	46911
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/21/2019 6:41:53 PM	46911
Surr: DNOP	84.8	70-130		%Rec	1	8/21/2019 6:41:53 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 4:47:54 PM	46903
Toluene	ND	0.048		mg/Kg	1	8/20/2019 4:47:54 PM	46903
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 4:47:54 PM	46903
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 4:47:54 PM	46903
Surr: 1,2-Dichloroethane-d4	97.7	70-130		%Rec	1	8/20/2019 4:47:54 PM	46903
Surr: 4-Bromofluorobenzene	95.7	70-130		%Rec	1	8/20/2019 4:47:54 PM	46903
Surr: Dibromofluoromethane	106	70-130		%Rec	1	8/20/2019 4:47:54 PM	46903
Surr: Toluene-d8	97.1	70-130		%Rec	1	8/20/2019 4:47:54 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-13 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:10:00 PM

**Lab ID:** 1908977-042

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: CAS
Chloride	1800	60		mg/Kg	20	8/21/2019 4:30:54 AM	46934
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: JMR
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/20/2019 6:14:34 PM	46903
Surr: BFB	93.8	70-130		%Rec	1	8/20/2019 6:14:34 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: BRM
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/21/2019 7:55:04 PM	46911
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/21/2019 7:55:04 PM	46911
Surr: DNOP	84.4	70-130		%Rec	1	8/21/2019 7:55:04 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: JMR
Benzene	ND	0.024		mg/Kg	1	8/20/2019 6:14:34 PM	46903
Toluene	ND	0.047		mg/Kg	1	8/20/2019 6:14:34 PM	46903
Ethylbenzene	ND	0.047		mg/Kg	1	8/20/2019 6:14:34 PM	46903
Xylenes, Total	ND	0.094		mg/Kg	1	8/20/2019 6:14:34 PM	46903
Surr: 1,2-Dichloroethane-d4	93.2	70-130		%Rec	1	8/20/2019 6:14:34 PM	46903
Surr: 4-Bromofluorobenzene	98.8	70-130		%Rec	1	8/20/2019 6:14:34 PM	46903
Surr: Dibromofluoromethane	101	70-130		%Rec	1	8/20/2019 6:14:34 PM	46903
Surr: Toluene-d8	97.3	70-130		%Rec	1	8/20/2019 6:14:34 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-14 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:15:00 PM

**Lab ID:** 1908977-043

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1900	60		mg/Kg	20	8/21/2019 4:43:18 AM	46934
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 7:40:59 PM	46903
Surr: BFB	90.8	70-130		%Rec	1	8/20/2019 7:40:59 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/21/2019 8:19:35 PM	46911
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/21/2019 8:19:35 PM	46911
Surr: DNOP	86.2	70-130		%Rec	1	8/21/2019 8:19:35 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 7:40:59 PM	46903
Toluene	ND	0.048		mg/Kg	1	8/20/2019 7:40:59 PM	46903
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 7:40:59 PM	46903
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 7:40:59 PM	46903
Surr: 1,2-Dichloroethane-d4	95.4	70-130		%Rec	1	8/20/2019 7:40:59 PM	46903
Surr: 4-Bromofluorobenzene	96.4	70-130		%Rec	1	8/20/2019 7:40:59 PM	46903
Surr: Dibromofluoromethane	101	70-130		%Rec	1	8/20/2019 7:40:59 PM	46903
Surr: Toluene-d8	95.7	70-130		%Rec	1	8/20/2019 7:40:59 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-15 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:20:00 PM

**Lab ID:** 1908977-044

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2100	60		mg/Kg	20	8/21/2019 4:55:42 AM	46934
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/20/2019 8:09:44 PM	46903
Surr: BFB	94.0	70-130		%Rec	1	8/20/2019 8:09:44 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/21/2019 8:44:13 PM	46911
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/21/2019 8:44:13 PM	46911
Surr: DNOP	86.1	70-130		%Rec	1	8/21/2019 8:44:13 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 8:09:44 PM	46903
Toluene	ND	0.049		mg/Kg	1	8/20/2019 8:09:44 PM	46903
Ethylbenzene	ND	0.049		mg/Kg	1	8/20/2019 8:09:44 PM	46903
Xylenes, Total	ND	0.097		mg/Kg	1	8/20/2019 8:09:44 PM	46903
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	8/20/2019 8:09:44 PM	46903
Surr: 4-Bromofluorobenzene	99.9	70-130		%Rec	1	8/20/2019 8:09:44 PM	46903
Surr: Dibromofluoromethane	102	70-130		%Rec	1	8/20/2019 8:09:44 PM	46903
Surr: Toluene-d8	97.7	70-130		%Rec	1	8/20/2019 8:09:44 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-16 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:25:00 PM

**Lab ID:** 1908977-045

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	8/22/2019 5:15:35 AM	46945
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 8:38:33 PM	46903
Surr: BFB	92.7	70-130		%Rec	1	8/20/2019 8:38:33 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/21/2019 9:09:02 PM	46911
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 9:09:02 PM	46911
Surr: DNOP	86.4	70-130		%Rec	1	8/21/2019 9:09:02 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 8:38:33 PM	46903
Toluene	ND	0.048		mg/Kg	1	8/20/2019 8:38:33 PM	46903
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 8:38:33 PM	46903
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 8:38:33 PM	46903
Surr: 1,2-Dichloroethane-d4	96.9	70-130		%Rec	1	8/20/2019 8:38:33 PM	46903
Surr: 4-Bromofluorobenzene	98.2	70-130		%Rec	1	8/20/2019 8:38:33 PM	46903
Surr: Dibromofluoromethane	101	70-130		%Rec	1	8/20/2019 8:38:33 PM	46903
Surr: Toluene-d8	98.3	70-130		%Rec	1	8/20/2019 8:38:33 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-17 2'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:30:00 PM

**Lab ID:** 1908977-046

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1200	60		mg/Kg	20	8/21/2019 10:37:28 AM	46945
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 9:07:19 PM	46903
Surr: BFB	90.8	70-130		%Rec	1	8/20/2019 9:07:19 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/21/2019 9:33:42 PM	46911
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 9:33:42 PM	46911
Surr: DNOP	71.0	70-130		%Rec	1	8/21/2019 9:33:42 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 9:07:19 PM	46903
Toluene	ND	0.048		mg/Kg	1	8/20/2019 9:07:19 PM	46903
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 9:07:19 PM	46903
Xylenes, Total	ND	0.095		mg/Kg	1	8/20/2019 9:07:19 PM	46903
Surr: 1,2-Dichloroethane-d4	96.2	70-130		%Rec	1	8/20/2019 9:07:19 PM	46903
Surr: 4-Bromofluorobenzene	96.3	70-130		%Rec	1	8/20/2019 9:07:19 PM	46903
Surr: Dibromofluoromethane	97.9	70-130		%Rec	1	8/20/2019 9:07:19 PM	46903
Surr: Toluene-d8	99.0	70-130		%Rec	1	8/20/2019 9:07:19 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-18 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:35:00 PM

**Lab ID:** 1908977-047

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	4100	150		mg/Kg	50	8/22/2019 5:27:55 AM	46945
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/20/2019 9:36:04 PM	46903
Surr: BFB	91.7	70-130		%Rec	1	8/20/2019 9:36:04 PM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/21/2019 9:58:28 PM	46911
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/21/2019 9:58:28 PM	46911
Surr: DNOP	59.3	70-130	S	%Rec	1	8/21/2019 9:58:28 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	8/20/2019 9:36:04 PM	46903
Toluene	ND	0.048		mg/Kg	1	8/20/2019 9:36:04 PM	46903
Ethylbenzene	ND	0.048		mg/Kg	1	8/20/2019 9:36:04 PM	46903
Xylenes, Total	ND	0.096		mg/Kg	1	8/20/2019 9:36:04 PM	46903
Surr: 1,2-Dichloroethane-d4	100	70-130		%Rec	1	8/20/2019 9:36:04 PM	46903
Surr: 4-Bromofluorobenzene	95.2	70-130		%Rec	1	8/20/2019 9:36:04 PM	46903
Surr: Dibromofluoromethane	102	70-130		%Rec	1	8/20/2019 9:36:04 PM	46903
Surr: Toluene-d8	99.4	70-130		%Rec	1	8/20/2019 9:36:04 PM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-19 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:40:00 PM

**Lab ID:** 1908977-048

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	3100	150		mg/Kg	50	8/22/2019 6:04:58 AM	46945
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/22/2019 1:47:24 AM	46903
Surr: BFB	93.1	70-130		%Rec	1	8/22/2019 1:47:24 AM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/21/2019 10:23:08 PM	46911
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/21/2019 10:23:08 PM	46911
Surr: DNOP	63.0	70-130	S	%Rec	1	8/21/2019 10:23:08 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.023		mg/Kg	1	8/22/2019 1:47:24 AM	46903
Toluene	ND	0.047		mg/Kg	1	8/22/2019 1:47:24 AM	46903
Ethylbenzene	ND	0.047		mg/Kg	1	8/22/2019 1:47:24 AM	46903
Xylenes, Total	ND	0.093		mg/Kg	1	8/22/2019 1:47:24 AM	46903
Surr: 1,2-Dichloroethane-d4	116	70-130		%Rec	1	8/22/2019 1:47:24 AM	46903
Surr: 4-Bromofluorobenzene	87.2	70-130		%Rec	1	8/22/2019 1:47:24 AM	46903
Surr: Dibromofluoromethane	119	70-130		%Rec	1	8/22/2019 1:47:24 AM	46903
Surr: Toluene-d8	94.5	70-130		%Rec	1	8/22/2019 1:47:24 AM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908977

Date Reported: 8/23/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** Base 19-20 4'

**Project:** Trebuchet Fee 23 28 19

**Collection Date:** 8/16/2019 2:45:00 PM

**Lab ID:** 1908977-049

**Matrix:** SOIL

**Received Date:** 8/19/2019 8:35:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	2600	150		mg/Kg	50	8/22/2019 6:17:18 AM	46945
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>							Analyst: <b>DJF</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/22/2019 2:17:16 AM	46903
Surr: BFB	95.5	70-130		%Rec	1	8/22/2019 2:17:16 AM	46903
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/21/2019 10:47:57 PM	46911
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/21/2019 10:47:57 PM	46911
Surr: DNOP	53.4	70-130	S	%Rec	1	8/21/2019 10:47:57 PM	46911
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>							Analyst: <b>DJF</b>
Benzene	ND	0.024		mg/Kg	1	8/22/2019 2:17:16 AM	46903
Toluene	ND	0.047		mg/Kg	1	8/22/2019 2:17:16 AM	46903
Ethylbenzene	ND	0.047		mg/Kg	1	8/22/2019 2:17:16 AM	46903
Xylenes, Total	ND	0.095		mg/Kg	1	8/22/2019 2:17:16 AM	46903
Surr: 1,2-Dichloroethane-d4	108	70-130		%Rec	1	8/22/2019 2:17:16 AM	46903
Surr: 4-Bromofluorobenzene	88.8	70-130		%Rec	1	8/22/2019 2:17:16 AM	46903
Surr: Dibromofluoromethane	112	70-130		%Rec	1	8/22/2019 2:17:16 AM	46903
Surr: Toluene-d8	99.2	70-130		%Rec	1	8/22/2019 2:17:16 AM	46903

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>MB-46925</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46925</b>	RunNo: <b>62282</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116108</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46925</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46925</b>	RunNo: <b>62282</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116109</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	96.9	90	110			

Sample ID: <b>MB-46926</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46926</b>	RunNo: <b>62288</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116492</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46926</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46926</b>	RunNo: <b>62288</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116493</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.0	90	110			

Sample ID: <b>MB-46934</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46934</b>	RunNo: <b>62288</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116524</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46934</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46934</b>	RunNo: <b>62288</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116525</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.4	90	110			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>MB-46945</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46945</b>	RunNo: <b>62333</b>								
Prep Date: <b>8/21/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2118232</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46945</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46945</b>	RunNo: <b>62333</b>								
Prep Date: <b>8/21/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2118233</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.5	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>LCS-46909</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46909</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115158</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	105	63.9	124			
Surr: DNOP	4.8		5.000		95.5	70	130			

Sample ID: <b>MB-46909</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46909</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115159</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Sample ID: <b>1908977-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>Base 19-01 4'</b>	Batch ID: <b>46909</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115340</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	9.6	48.08	0	108	57	142			
Surr: DNOP	4.6		4.808		95.8	70	130			

Sample ID: <b>1908977-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>Base 19-01 4'</b>	Batch ID: <b>46909</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115341</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	9.2	46.04	0	105	57	142	7.19	20	
Surr: DNOP	4.4		4.604		94.6	70	130	0	0	

Sample ID: <b>1908977-021AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>Base 19-032 2'</b>	Batch ID: <b>46910</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115993</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.9	49.41	0	103	57	142			
Surr: DNOP	3.9		4.941		79.0	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>1908977-021AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>Base 19-032 2'</b>	Batch ID: <b>46910</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115994</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	48	9.5	47.35	0	101	57	142	6.55	20	
Surr: DNOP	3.8		4.735		80.9	70	130	0	0	

Sample ID: <b>LCS-46910</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46910</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116014</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	10	50.00	0	108	63.9	124			
Surr: DNOP	4.5		5.000		90.5	70	130			

Sample ID: <b>MB-46910</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46910</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116016</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.7		10.00		96.6	70	130			

Sample ID: <b>MB-46911</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46911</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2117215</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10	50.00	0	0	63.9	124			S
Surr: DNOP	9.7		5.000		193	70	130			S

Sample ID: <b>LCS-46911</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46911</b>	RunNo: <b>62249</b>								
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2117217</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	60	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	4.5		10.00		45.1	70	130			S

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>1908977-041AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>									
Client ID: <b>Base 19-12 4'</b>	Batch ID: <b>46911</b>	RunNo: <b>62286</b>									
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2117582</b>	Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	46	9.0	44.76	6.816	86.8	57	142			B	
Surr: DNOP	3.4		4.476		76.3	70	130				

Sample ID: <b>1908977-041AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>									
Client ID: <b>Base 19-12 4'</b>	Batch ID: <b>46911</b>	RunNo: <b>62286</b>									
Prep Date: <b>8/20/2019</b>	Analysis Date: <b>8/21/2019</b>	SeqNo: <b>2117583</b>	Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	49	9.5	47.35	6.816	89.3	57	142	7.18	20	B	
Surr: DNOP	3.7		4.735		78.2	70	130	0	0		

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>MB-46897</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115678</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	930		1000		93.1	77.4	118			

Sample ID: <b>LCS-46897</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115679</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.4	80	120			
Surr: BFB	1000		1000		104	77.4	118			

Sample ID: <b>1908977-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>Base 19-01 4'</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115681</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	4.8	24.15	0	105	69.1	142			
Surr: BFB	1000		966.2		107	77.4	118			

Sample ID: <b>1908977-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>Base 19-01 4'</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115682</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	4.9	24.53	0	105	69.1	142	1.75	20	
Surr: BFB	1100		981.4		108	77.4	118	0	0	

Sample ID: <b>MB-46899</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115781</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		101	77.4	118			

Sample ID: <b>LCS-46899</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115782</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>LCS-46899</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115782</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	91.2	80	120			
Surr: BFB	1200		1000		117	77.4	118			

Sample ID: <b>1908977-021AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>Base 19-032 2'</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115784</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	4.7	23.30	0	99.7	69.1	142			
Surr: BFB	1100		932.0		117	77.4	118			

Sample ID: <b>1908977-021AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>Base 19-032 2'</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115785</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.32	0	96.8	69.1	142	1.27	20	
Surr: BFB	1100		972.8		117	77.4	118	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>MB-46897</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115719</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		94.5	80	120			

Sample ID: <b>LCS-46897</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115720</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	104	80	120			
Toluene	1.1	0.050	1.000	0	107	80	120			
Ethylbenzene	1.1	0.050	1.000	0	109	80	120			
Xylenes, Total	3.3	0.10	3.000	0	110	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID: <b>1908977-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>Base 19-02 4'</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115723</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9843	0	107	76	123			
Toluene	1.1	0.049	0.9843	0	111	80.3	127			
Ethylbenzene	1.1	0.049	0.9843	0	114	80.2	131			
Xylenes, Total	3.4	0.098	2.953	0.01668	114	78	133			
Surr: 4-Bromofluorobenzene	0.96		0.9843		97.9	80	120			

Sample ID: <b>1908977-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>Base 19-02 4'</b>	Batch ID: <b>46897</b>	RunNo: <b>62278</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115724</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.024	0.9671	0	118	76	123	7.87	20	
Toluene	1.2	0.048	0.9671	0	123	80.3	127	8.54	20	
Ethylbenzene	1.2	0.048	0.9671	0	125	80.2	131	7.60	20	
Xylenes, Total	3.6	0.097	2.901	0.01668	124	78	133	6.91	20	
Surr: 4-Bromofluorobenzene	0.93		0.9671		96.4	80	120	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>MB-46899</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115823</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.94		1.000		93.8	80	120			

Sample ID: <b>LCS-46899</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115824</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	94.7	80	120			
Toluene	0.97	0.050	1.000	0	96.5	80	120			
Ethylbenzene	0.98	0.050	1.000	0	98.0	80	120			
Xylenes, Total	2.9	0.10	3.000	0	98.2	80	120			
Surr: 4-Bromofluorobenzene	0.99		1.000		99.1	80	120			

Sample ID: <b>1908977-022AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>Base 19-033 2'</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115827</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.023	0.9337	0	102	76	123			
Toluene	1.0	0.047	0.9337	0	107	80.3	127			
Ethylbenzene	1.0	0.047	0.9337	0	112	80.2	131			
Xylenes, Total	3.1	0.093	2.801	0	112	78	133			
Surr: 4-Bromofluorobenzene	0.92		0.9337		98.5	80	120			

Sample ID: <b>1908977-022AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>Base 19-033 2'</b>	Batch ID: <b>46899</b>	RunNo: <b>62279</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2115828</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.023	0.9285	0	105	76	123	2.16	20	
Toluene	1.0	0.046	0.9285	0	109	80.3	127	1.19	20	
Ethylbenzene	1.0	0.046	0.9285	0	113	80.2	131	0.251	20	
Xylenes, Total	3.1	0.093	2.786	0	112	78	133	0.395	20	
Surr: 4-Bromofluorobenzene	0.95		0.9285		102	80	120	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>ics-46903</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260B: Volatiles Short List</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116842</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	92.5	68	135			
Toluene	0.99	0.050	1.000	0	99.3	70	130			
Ethylbenzene	1.0	0.050	1.000	0	100	70	130			
Xylenes, Total	3.1	0.10	3.000	0	104	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		99.5	70	130			
Surr: 4-Bromofluorobenzene	0.48		0.5000		96.8	70	130			
Surr: Dibromofluoromethane	0.53		0.5000		107	70	130			
Surr: Toluene-d8	0.49		0.5000		99.0	70	130			

Sample ID: <b>mb-46903</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260B: Volatiles Short List</b>							
Client ID: <b>PBS</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116843</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		100	70	130			
Surr: 4-Bromofluorobenzene	0.51		0.5000		102	70	130			
Surr: Dibromofluoromethane	0.54		0.5000		107	70	130			
Surr: Toluene-d8	0.49		0.5000		98.3	70	130			

Sample ID: <b>1908977-042AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8260B: Volatiles Short List</b>							
Client ID: <b>Base 19-13 4'</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116846</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.023	0.9363	0	102	57.1	141			
Toluene	1.1	0.047	0.9363	0	116	70	130			
Ethylbenzene	1.1	0.047	0.9363	0	119	70	130			
Xylenes, Total	3.4	0.094	2.809	0	123	70	130			
Surr: 1,2-Dichloroethane-d4	0.45		0.4682		96.1	70	130			
Surr: 4-Bromofluorobenzene	0.46		0.4682		97.2	70	130			
Surr: Dibromofluoromethane	0.47		0.4682		101	70	130			
Surr: Toluene-d8	0.46		0.4682		99.1	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>1908977-042AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8260B: Volatiles Short List</b>								
Client ID: <b>Base 19-13 4'</b>	Batch ID: <b>46903</b>	RunNo: <b>62292</b>								
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>	SeqNo: <b>2116847</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.1	0.025	0.9823	0	109	57.1	141	11.4	20	
Toluene	1.1	0.049	0.9823	0	116	70	130	4.37	20	
Ethylbenzene	1.2	0.049	0.9823	0	119	70	130	5.04	0	
Xylenes, Total	3.7	0.098	2.947	0	124	70	130	5.98	0	
Surr: 1,2-Dichloroethane-d4	0.51		0.4912		104	70	130	0	0	
Surr: 4-Bromofluorobenzene	0.49		0.4912		99.8	70	130	0	0	
Surr: Dibromofluoromethane	0.51		0.4912		104	70	130	0	0	
Surr: Toluene-d8	0.48		0.4912		98.7	70	130	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908977

23-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet Fee 23 28 19

Sample ID: <b>Ics-46903</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116854</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	20	5.0	25.00	0	81.0	70	130			
Surr: BFB	460		500.0		92.4	70	130			

Sample ID: <b>mb-46903</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116855</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	470		500.0		93.4	70	130			

Sample ID: <b>1908977-041ams</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>Base 19-12 4'</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116857</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.8	23.92	0	101	70	130			
Surr: BFB	460		478.5		95.8	70	130			

Sample ID: <b>1908977-041amsd</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>Base 19-12 4'</b>	Batch ID: <b>46903</b>		RunNo: <b>62292</b>							
Prep Date: <b>8/19/2019</b>	Analysis Date: <b>8/20/2019</b>		SeqNo: <b>2116858</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	4.9	24.51	0	98.5	70	130	0.0542	20	
Surr: BFB	450		490.2		92.7	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Client Name: VERTEX CARLSBAD

Work Order Number: 1908977

RcptNo: 1

Received By: Erin Melendrez 8/19/2019 8:35:00 AM *EM*

Completed By: Leah Baca 8/19/2019 9:58:54 AM *Leah Baca*

Reviewed By: *LB* 8/19/19

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *DAD 8/19/19*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<i>Dennis Williams</i>	Date:	<i>8/19/19</i>
By Whom:	<i>Leah Baca</i>	Via:	<input type="checkbox"/> eMail <input checked="" type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<i>sample name discrepancy between COC and sample label</i>		
Client Instructions:	<i>the sample label was correct.</i>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.0	Good	Yes			

# Chain-of-Custody Record

Client: Veritek Resource group LTD

Marshon Oil

Mailing Address:

213 S Mesa Street, Carlsbad, NM, 88220

Phone #: 575 361 1137

email or Fax#:

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance

NELAC  Other

EDD (Type)

Project Manager: Dennis Williams

Sampler:

On Ice:  Yes  No

# of Coolers: 1

Cooler Temp (including CP): 3.8 (H) 2 (C) = 40 (C)

Container Type and # 6 L Glass Jar 1CC

Preservative Type HEAL No. 1908977

Date

Time

Matrix

Sample Name

8/19 8:00

8/19 8:05

09/14 8:10

09/18 8:15

09/18 8:20

09/18 8:25

09/18 8:30

09/18 8:35

09/18 8:40

09/18 8:45

09/18 8:50

09/18 8:55

Date:

Time:

Relinquished by:

Date:

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Relinquished by:

Received by:

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Received by:

Date:

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Remarks:

# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

8081 Pesticides/8082 PCB's	TPH/8015D(GRO / DRO / MRO)	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>-3</sup> , SO <sub>4</sub> <sup>-2</sup>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
<input checked="" type="checkbox"/> MTBE / TMB's (8021)	<input checked="" type="checkbox"/> TPH/8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/> 8081 Pesticides/8082 PCB's	<input type="checkbox"/> EDB (Method 504.1)	<input type="checkbox"/> PAHs by 8310 or 8270SIMS	<input type="checkbox"/> RCRA 8 Metals	<input checked="" type="checkbox"/> Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>-3</sup> , SO <sub>4</sub> <sup>-2</sup>			
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Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 28, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX:

RE: Trebuchet 23 28 19

OrderNo.: 1908D34

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 22 sample(s) on 8/22/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-46

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-001

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1700	60		mg/Kg	20	8/23/2019 6:02:22 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/23/2019 11:47:39 AM	47011
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/23/2019 11:47:39 AM	47011
Surr: DNOP	110	70-130		%Rec	1	8/23/2019 11:47:39 AM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/24/2019 11:33:37 AM	47004
Surr: BFB	92.8	77.4-118		%Rec	1	8/24/2019 11:33:37 AM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 11:33:37 AM	47004
Toluene	ND	0.048		mg/Kg	1	8/24/2019 11:33:37 AM	47004
Ethylbenzene	ND	0.048		mg/Kg	1	8/24/2019 11:33:37 AM	47004
Xylenes, Total	ND	0.096		mg/Kg	1	8/24/2019 11:33:37 AM	47004
Surr: 4-Bromofluorobenzene	93.3	80-120		%Rec	1	8/24/2019 11:33:37 AM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-47

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-002

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1500	60		mg/Kg	20	8/23/2019 6:14:46 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/23/2019 12:12:03 PM	47011
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/23/2019 12:12:03 PM	47011
Surr: DNOP	109	70-130		%Rec	1	8/23/2019 12:12:03 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/24/2019 12:44:01 PM	47004
Surr: BFB	92.1	77.4-118		%Rec	1	8/24/2019 12:44:01 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 12:44:01 PM	47004
Toluene	ND	0.047		mg/Kg	1	8/24/2019 12:44:01 PM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2019 12:44:01 PM	47004
Xylenes, Total	ND	0.095		mg/Kg	1	8/24/2019 12:44:01 PM	47004
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	8/24/2019 12:44:01 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-48

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-003

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1600	60		mg/Kg	20	8/23/2019 6:27:10 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/23/2019 12:36:29 PM	47011
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/23/2019 12:36:29 PM	47011
Surr: DNOP	112	70-130		%Rec	1	8/23/2019 12:36:29 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/24/2019 1:54:20 PM	47004
Surr: BFB	94.3	77.4-118		%Rec	1	8/24/2019 1:54:20 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 1:54:20 PM	47004
Toluene	ND	0.048		mg/Kg	1	8/24/2019 1:54:20 PM	47004
Ethylbenzene	ND	0.048		mg/Kg	1	8/24/2019 1:54:20 PM	47004
Xylenes, Total	ND	0.096		mg/Kg	1	8/24/2019 1:54:20 PM	47004
Surr: 4-Bromofluorobenzene	94.3	80-120		%Rec	1	8/24/2019 1:54:20 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-49

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-004

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2500	150		mg/Kg	50	8/26/2019 12:14:34 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/23/2019 1:00:49 PM	47011
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/23/2019 1:00:49 PM	47011
Surr: DNOP	111	70-130		%Rec	1	8/23/2019 1:00:49 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/24/2019 3:04:53 PM	47004
Surr: BFB	102	77.4-118		%Rec	1	8/24/2019 3:04:53 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 3:04:53 PM	47004
Toluene	ND	0.047		mg/Kg	1	8/24/2019 3:04:53 PM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2019 3:04:53 PM	47004
Xylenes, Total	ND	0.095		mg/Kg	1	8/24/2019 3:04:53 PM	47004
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/24/2019 3:04:53 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-50

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-005

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	60		mg/Kg	20	8/23/2019 8:06:26 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	8/23/2019 1:25:08 PM	47011
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/23/2019 1:25:08 PM	47011
Surr: DNOP	114	70-130		%Rec	1	8/23/2019 1:25:08 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 3:28:25 PM	47004
Surr: BFB	93.2	77.4-118		%Rec	1	8/24/2019 3:28:25 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 3:28:25 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/24/2019 3:28:25 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 3:28:25 PM	47004
Xylenes, Total	ND	0.097		mg/Kg	1	8/24/2019 3:28:25 PM	47004
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	8/24/2019 3:28:25 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-51

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-006

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1900	60		mg/Kg	20	8/23/2019 8:18:50 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/23/2019 1:49:30 PM	47011
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/23/2019 1:49:30 PM	47011
Surr: DNOP	105	70-130		%Rec	1	8/23/2019 1:49:30 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 3:51:59 PM	47004
Surr: BFB	92.3	77.4-118		%Rec	1	8/24/2019 3:51:59 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 3:51:59 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/24/2019 3:51:59 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 3:51:59 PM	47004
Xylenes, Total	ND	0.097		mg/Kg	1	8/24/2019 3:51:59 PM	47004
Surr: 4-Bromofluorobenzene	92.4	80-120		%Rec	1	8/24/2019 3:51:59 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-52

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-007

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	660	60		mg/Kg	20	8/23/2019 8:31:15 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/23/2019 2:13:51 PM	47011
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/23/2019 2:13:51 PM	47011
Surr: DNOP	106	70-130		%Rec	1	8/23/2019 2:13:51 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/24/2019 4:15:32 PM	47004
Surr: BFB	93.4	77.4-118		%Rec	1	8/24/2019 4:15:32 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/24/2019 4:15:32 PM	47004
Toluene	ND	0.050		mg/Kg	1	8/24/2019 4:15:32 PM	47004
Ethylbenzene	ND	0.050		mg/Kg	1	8/24/2019 4:15:32 PM	47004
Xylenes, Total	ND	0.10		mg/Kg	1	8/24/2019 4:15:32 PM	47004
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	8/24/2019 4:15:32 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-53

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-008

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	770	61		mg/Kg	20	8/23/2019 8:43:40 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	11	9.4		mg/Kg	1	8/23/2019 2:38:10 PM	47011
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/23/2019 2:38:10 PM	47011
Surr: DNOP	102	70-130		%Rec	1	8/23/2019 2:38:10 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 4:39:04 PM	47004
Surr: BFB	91.3	77.4-118		%Rec	1	8/24/2019 4:39:04 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 4:39:04 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/24/2019 4:39:04 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 4:39:04 PM	47004
Xylenes, Total	ND	0.098		mg/Kg	1	8/24/2019 4:39:04 PM	47004
Surr: 4-Bromofluorobenzene	90.5	80-120		%Rec	1	8/24/2019 4:39:04 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-54

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-009

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1800	60		mg/Kg	20	8/23/2019 8:56:05 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/23/2019 3:02:28 PM	47011
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/23/2019 3:02:28 PM	47011
Surr: DNOP	103	70-130		%Rec	1	8/23/2019 3:02:28 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 5:02:36 PM	47004
Surr: BFB	92.3	77.4-118		%Rec	1	8/24/2019 5:02:36 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/24/2019 5:02:36 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/24/2019 5:02:36 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 5:02:36 PM	47004
Xylenes, Total	ND	0.099		mg/Kg	1	8/24/2019 5:02:36 PM	47004
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	8/24/2019 5:02:36 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-55

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-010

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1600	60		mg/Kg	20	8/23/2019 9:33:19 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/23/2019 3:26:55 PM	47011
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/23/2019 3:26:55 PM	47011
Surr: DNOP	103	70-130		%Rec	1	8/23/2019 3:26:55 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/24/2019 5:26:06 PM	47004
Surr: BFB	101	77.4-118		%Rec	1	8/24/2019 5:26:06 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 5:26:06 PM	47004
Toluene	ND	0.047		mg/Kg	1	8/24/2019 5:26:06 PM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2019 5:26:06 PM	47004
Xylenes, Total	ND	0.095		mg/Kg	1	8/24/2019 5:26:06 PM	47004
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	8/24/2019 5:26:06 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-01 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-011

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1100	60		mg/Kg	20	8/23/2019 9:45:44 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	31	9.6		mg/Kg	1	8/23/2019 1:06:30 PM	47011
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/23/2019 1:06:30 PM	47011
Surr: DNOP	103	70-130		%Rec	1	8/23/2019 1:06:30 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/24/2019 5:49:40 PM	47004
Surr: BFB	91.5	77.4-118		%Rec	1	8/24/2019 5:49:40 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/24/2019 5:49:40 PM	47004
Toluene	ND	0.046		mg/Kg	1	8/24/2019 5:49:40 PM	47004
Ethylbenzene	ND	0.046		mg/Kg	1	8/24/2019 5:49:40 PM	47004
Xylenes, Total	ND	0.092		mg/Kg	1	8/24/2019 5:49:40 PM	47004
Surr: 4-Bromofluorobenzene	90.9	80-120		%Rec	1	8/24/2019 5:49:40 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-02 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-012

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	540	59		mg/Kg	20	8/23/2019 9:58:08 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/23/2019 10:09:24 AM	47011
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/23/2019 10:09:24 AM	47011
Surr: DNOP	104	70-130		%Rec	1	8/23/2019 10:09:24 AM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/24/2019 6:13:14 PM	47004
Surr: BFB	92.7	77.4-118		%Rec	1	8/24/2019 6:13:14 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/24/2019 6:13:14 PM	47004
Toluene	ND	0.047		mg/Kg	1	8/24/2019 6:13:14 PM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2019 6:13:14 PM	47004
Xylenes, Total	ND	0.094		mg/Kg	1	8/24/2019 6:13:14 PM	47004
Surr: 4-Bromofluorobenzene	92.4	80-120		%Rec	1	8/24/2019 6:13:14 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-03 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-013

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1500	60		mg/Kg	20	8/23/2019 10:10:32 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	62	9.4		mg/Kg	1	8/23/2019 1:28:30 PM	47011
Motor Oil Range Organics (MRO)	120	47		mg/Kg	1	8/23/2019 1:28:30 PM	47011
Surr: DNOP	109	70-130		%Rec	1	8/23/2019 1:28:30 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/23/2019 9:58:16 PM	47004
Surr: BFB	95.7	77.4-118		%Rec	1	8/23/2019 9:58:16 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/23/2019 9:58:16 PM	47004
Toluene	ND	0.050		mg/Kg	1	8/23/2019 9:58:16 PM	47004
Ethylbenzene	ND	0.050		mg/Kg	1	8/23/2019 9:58:16 PM	47004
Xylenes, Total	ND	0.099		mg/Kg	1	8/23/2019 9:58:16 PM	47004
Surr: 4-Bromofluorobenzene	89.3	80-120		%Rec	1	8/23/2019 9:58:16 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-04 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-014

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	870	60		mg/Kg	20	8/23/2019 10:22:57 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/23/2019 1:50:45 PM	47011
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/23/2019 1:50:45 PM	47011
Surr: DNOP	105	70-130		%Rec	1	8/23/2019 1:50:45 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/23/2019 10:21:23 PM	47004
Surr: BFB	104	77.4-118		%Rec	1	8/23/2019 10:21:23 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/23/2019 10:21:23 PM	47004
Toluene	ND	0.048		mg/Kg	1	8/23/2019 10:21:23 PM	47004
Ethylbenzene	ND	0.048		mg/Kg	1	8/23/2019 10:21:23 PM	47004
Xylenes, Total	ND	0.095		mg/Kg	1	8/23/2019 10:21:23 PM	47004
Surr: 4-Bromofluorobenzene	94.2	80-120		%Rec	1	8/23/2019 10:21:23 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-05 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-015

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	600	60		mg/Kg	20	8/23/2019 10:35:21 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	8/23/2019 2:12:51 PM	47011
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/23/2019 2:12:51 PM	47011
Surr: DNOP	104	70-130		%Rec	1	8/23/2019 2:12:51 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/23/2019 10:44:20 PM	47004
Surr: BFB	101	77.4-118		%Rec	1	8/23/2019 10:44:20 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/23/2019 10:44:20 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/23/2019 10:44:20 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/23/2019 10:44:20 PM	47004
Xylenes, Total	ND	0.098		mg/Kg	1	8/23/2019 10:44:20 PM	47004
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	8/23/2019 10:44:20 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-06 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-016

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1000	60		mg/Kg	20	8/23/2019 10:47:46 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/23/2019 10:31:33 AM	47011
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/23/2019 10:31:33 AM	47011
Surr: DNOP	102	70-130		%Rec	1	8/23/2019 10:31:33 AM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/23/2019 11:07:12 PM	47004
Surr: BFB	99.1	77.4-118		%Rec	1	8/23/2019 11:07:12 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/23/2019 11:07:12 PM	47004
Toluene	ND	0.049		mg/Kg	1	8/23/2019 11:07:12 PM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/23/2019 11:07:12 PM	47004
Xylenes, Total	ND	0.099		mg/Kg	1	8/23/2019 11:07:12 PM	47004
Surr: 4-Bromofluorobenzene	90.0	80-120		%Rec	1	8/23/2019 11:07:12 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-07 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-017

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2100	60		mg/Kg	20	8/23/2019 11:00:10 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/23/2019 2:35:05 PM	47011
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/23/2019 2:35:05 PM	47011
Surr: DNOP	105	70-130		%Rec	1	8/23/2019 2:35:05 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	8/23/2019 11:30:04 PM	47004
Surr: BFB	105	77.4-118		%Rec	1	8/23/2019 11:30:04 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/23/2019 11:30:04 PM	47004
Toluene	ND	0.050		mg/Kg	1	8/23/2019 11:30:04 PM	47004
Ethylbenzene	ND	0.050		mg/Kg	1	8/23/2019 11:30:04 PM	47004
Xylenes, Total	ND	0.099		mg/Kg	1	8/23/2019 11:30:04 PM	47004
Surr: 4-Bromofluorobenzene	96.1	80-120		%Rec	1	8/23/2019 11:30:04 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-08 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-018

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1000	60		mg/Kg	20	8/23/2019 11:12:35 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/23/2019 2:57:13 PM	47011
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/23/2019 2:57:13 PM	47011
Surr: DNOP	98.8	70-130		%Rec	1	8/23/2019 2:57:13 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/23/2019 11:52:57 PM	47004
Surr: BFB	105	77.4-118		%Rec	1	8/23/2019 11:52:57 PM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/23/2019 11:52:57 PM	47004
Toluene	ND	0.047		mg/Kg	1	8/23/2019 11:52:57 PM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/23/2019 11:52:57 PM	47004
Xylenes, Total	ND	0.094		mg/Kg	1	8/23/2019 11:52:57 PM	47004
Surr: 4-Bromofluorobenzene	94.9	80-120		%Rec	1	8/23/2019 11:52:57 PM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS 19-09 1'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-019

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	770	60		mg/Kg	20	8/23/2019 11:25:00 PM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/23/2019 12:00:04 PM	47011
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/23/2019 12:00:04 PM	47011
Surr: DNOP	108	70-130		%Rec	1	8/23/2019 12:00:04 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 12:15:50 AM	47004
Surr: BFB	102	77.4-118		%Rec	1	8/24/2019 12:15:50 AM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 12:15:50 AM	47004
Toluene	ND	0.049		mg/Kg	1	8/24/2019 12:15:50 AM	47004
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 12:15:50 AM	47004
Xylenes, Total	ND	0.097		mg/Kg	1	8/24/2019 12:15:50 AM	47004
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	8/24/2019 12:15:50 AM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS 19-06

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-020

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/24/2019 12:02:13 AM	47019
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/23/2019 3:19:25 PM	47011
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/23/2019 3:19:25 PM	47011
Surr: DNOP	106	70-130		%Rec	1	8/23/2019 3:19:25 PM	47011
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	8/24/2019 12:38:51 AM	47004
Surr: BFB	101	77.4-118		%Rec	1	8/24/2019 12:38:51 AM	47004
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 12:38:51 AM	47004
Toluene	ND	0.047		mg/Kg	1	8/24/2019 12:38:51 AM	47004
Ethylbenzene	ND	0.047		mg/Kg	1	8/24/2019 12:38:51 AM	47004
Xylenes, Total	ND	0.094		mg/Kg	1	8/24/2019 12:38:51 AM	47004
Surr: 4-Bromofluorobenzene	91.3	80-120		%Rec	1	8/24/2019 12:38:51 AM	47004

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS 19-07

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-021

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	750	60		mg/Kg	20	8/24/2019 6:02:07 AM	47025
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	8/26/2019 9:12:45 AM	47012
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/26/2019 9:12:45 AM	47012
Surr: DNOP	98.4	70-130		%Rec	1	8/26/2019 9:12:45 AM	47012
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/24/2019 10:46:35 AM	46998
Surr: BFB	93.2	77.4-118		%Rec	1	8/24/2019 10:46:35 AM	46998
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/24/2019 10:46:35 AM	46998
Toluene	ND	0.049		mg/Kg	1	8/24/2019 10:46:35 AM	46998
Ethylbenzene	ND	0.049		mg/Kg	1	8/24/2019 10:46:35 AM	46998
Xylenes, Total	ND	0.098		mg/Kg	1	8/24/2019 10:46:35 AM	46998
Surr: 4-Bromofluorobenzene	94.0	80-120		%Rec	1	8/24/2019 10:46:35 AM	46998

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908D34

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS 19-08

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/20/2019

**Lab ID:** 1908D34-022

**Matrix:** SOIL

**Received Date:** 8/22/2019 8:45:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	60		mg/Kg	20	8/24/2019 6:14:31 AM	47025
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/26/2019 9:37:05 AM	47012
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 9:37:05 AM	47012
Surr: DNOP	110	70-130		%Rec	1	8/26/2019 9:37:05 AM	47012
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/24/2019 11:10:07 AM	46998
Surr: BFB	91.3	77.4-118		%Rec	1	8/24/2019 11:10:07 AM	46998
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/24/2019 11:10:07 AM	46998
Toluene	ND	0.048		mg/Kg	1	8/24/2019 11:10:07 AM	46998
Ethylbenzene	ND	0.048		mg/Kg	1	8/24/2019 11:10:07 AM	46998
Xylenes, Total	ND	0.096		mg/Kg	1	8/24/2019 11:10:07 AM	46998
Surr: 4-Bromofluorobenzene	91.7	80-120		%Rec	1	8/24/2019 11:10:07 AM	46998

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47019</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47019</b>	RunNo: <b>62388</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2121517</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47019</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47019</b>	RunNo: <b>62388</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2121519</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.7	90	110			

Sample ID: <b>MB-47025</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47025</b>	RunNo: <b>62388</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/24/2019</b>	SeqNo: <b>2121577</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47025</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47025</b>	RunNo: <b>62388</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/24/2019</b>	SeqNo: <b>2121579</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.8	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47011</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47011</b>	RunNo: <b>62327</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2119961</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		109	70	130			

Sample ID: <b>LCS-47011</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47011</b>	RunNo: <b>62327</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2120619</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.5	63.9	124			
Surr: DNOP	4.8		5.000		95.2	70	130			

Sample ID: <b>1908D34-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS 19-46</b>	Batch ID: <b>47011</b>	RunNo: <b>62327</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2121050</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	9.7	48.45	0	97.8	57	142			
Surr: DNOP	5.0		4.845		102	70	130			

Sample ID: <b>1908D34-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS 19-46</b>	Batch ID: <b>47011</b>	RunNo: <b>62327</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2121051</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	9.6	47.89	0	96.8	57	142	2.17	20	
Surr: DNOP	4.8		4.789		100	70	130	0	0	

Sample ID: <b>LCS-47012</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47012</b>	RunNo: <b>62411</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121721</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	63.9	124			
Surr: DNOP	4.7		5.000		94.3	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47012</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47012</b>	RunNo: <b>62411</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121724</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		106	70	130			

Sample ID: <b>1908D34-021AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>WS 19-07</b>	Batch ID: <b>47012</b>	RunNo: <b>62411</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121967</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	56	10	50.25	6.209	98.2	57	142			
Surr: DNOP	3.8		5.025		76.6	70	130			

Sample ID: <b>1908D34-021AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>WS 19-07</b>	Batch ID: <b>47012</b>	RunNo: <b>62411</b>								
Prep Date: <b>8/23/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121968</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	54	9.5	47.26	6.209	101	57	142	2.53	20	
Surr: DNOP	3.8		4.726		81.0	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-46998</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>46998</b>		RunNo: <b>62392</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>		SeqNo: <b>2120740</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		95.9	77.4	118			

Sample ID: <b>LCS-46998</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>46998</b>		RunNo: <b>62392</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>		SeqNo: <b>2120741</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.5	80	120			
Surr: BFB	1100		1000		105	77.4	118			

Sample ID: <b>MB-47004</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47004</b>		RunNo: <b>62392</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>		SeqNo: <b>2120755</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	940		1000		94.1	77.4	118			

Sample ID: <b>LCS-47004</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47004</b>		RunNo: <b>62392</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>		SeqNo: <b>2120756</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	94.2	80	120			
Surr: BFB	1000		1000		104	77.4	118			

Sample ID: <b>1908D34-001AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>BS 19-46</b>	Batch ID: <b>47004</b>		RunNo: <b>62394</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/24/2019</b>		SeqNo: <b>2120894</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	88.2	69.1	142			
Surr: BFB	1100		1000		109	77.4	118			

Sample ID: <b>1908D34-001AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>BS 19-46</b>	Batch ID: <b>47004</b>		RunNo: <b>62394</b>							
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/24/2019</b>		SeqNo: <b>2120895</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

Client: Vertex Resource Group Ltd.

Project: Trebuchet 23 28 19

Sample ID: 1908D34-001AMSD	SampType: MSD	TestCode: EPA Method 8015D: Gasoline Range								
Client ID: BS 19-46	Batch ID: 47004	RunNo: 62394								
Prep Date: 8/22/2019	Analysis Date: 8/24/2019	SeqNo: 2120895 Units: mg/Kg								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.9	24.44	0	90.4	69.1	142	0.146	20	
Surr: BFB	1100		977.5		111	77.4	118	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-46998</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46998</b>	RunNo: <b>62392</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2120761</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.97		1.000		96.6	80	120			

Sample ID: <b>LCS-46998</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46998</b>	RunNo: <b>62392</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2120762</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	98.3	80	120			
Toluene	1.0	0.050	1.000	0	102	80	120			
Ethylbenzene	1.0	0.050	1.000	0	102	80	120			
Xylenes, Total	3.1	0.10	3.000	0	102	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.0	80	120			

Sample ID: <b>MB-47004</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47004</b>	RunNo: <b>62392</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2120774</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.2	80	120			

Sample ID: <b>LCS-47004</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47004</b>	RunNo: <b>62392</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/23/2019</b>	SeqNo: <b>2120775</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	100	80	120			
Toluene	1.0	0.050	1.000	0	103	80	120			
Ethylbenzene	1.0	0.050	1.000	0	104	80	120			
Xylenes, Total	3.1	0.10	3.000	0	105	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		96.1	80	120			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908D34

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>1908D34-002AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS 19-47</b>	Batch ID: <b>47004</b>	RunNo: <b>62394</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/24/2019</b>	SeqNo: <b>2120933</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.88	0.024	0.9524	0	92.2	76	123			
Toluene	0.92	0.048	0.9524	0.008807	95.7	80.3	127			
Ethylbenzene	0.93	0.048	0.9524	0	97.4	80.2	131			
Xylenes, Total	2.8	0.095	2.857	0	97.8	78	133			
Surr: 4-Bromofluorobenzene	0.89		0.9524		93.1	80	120			

Sample ID: <b>1908D34-002AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS 19-47</b>	Batch ID: <b>47004</b>	RunNo: <b>62394</b>								
Prep Date: <b>8/22/2019</b>	Analysis Date: <b>8/24/2019</b>	SeqNo: <b>2120934</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.024	0.9785	0	92.6	76	123	3.12	20	
Toluene	0.95	0.049	0.9785	0.008807	95.9	80.3	127	2.97	20	
Ethylbenzene	0.96	0.049	0.9785	0	98.6	80.2	131	3.91	20	
Xylenes, Total	2.9	0.098	2.935	0	99.0	78	133	3.92	20	
Surr: 4-Bromofluorobenzene	0.93		0.9785		95.3	80	120	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

**Sample Log-In Check List**

Client Name: VERTEX CARLSBAD

Work Order Number: 1908D34

RcptNo: 1

Received By:

*David M*

8/22/2019 8:45:00 AM

Completed By:

Yazmine Garduno

8/22/2019 12:43:09 PM

*Yazmine Garduno*

Reviewed By:

*ENM*

*8/22/19*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes  No
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes  No

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *NR 8/22/19*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.3	Good				

# Chain-of-Custody Record

Client: Vertex Resource Group  
Marathon Oil  
 Mailing Address:  
213 S Meza St Carlsbad  
Phone #: 575 361 1137  
 email or Fax#: Jim.Hans@Vertex.ca  
 QA/QC Package: Penniman@Vertex.ca  
 Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance  
 NELAC  Other  
 EDD (Type)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
8/20	17:08	Soil	BS 19 - 46	glass jar	ICC	10065234
			47			-001
			48			-002
			49			-003
			50			-004
			51			-005
			52			-006
			53			-007
			54			-008
			55			-009
						-010
						-011

Date: 8/19/19 Time: 17:08 Relinquished by: Branden Schaefer  
 Date: 8/19 Time: 19:00 Relinquished by: [Signature]

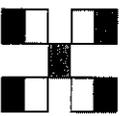
Turn-Around Time:  
 Standard  Rush 48 hours  
 Project Name: Trébuchet 23 28 19  
~~XXXXXXXXXX~~  
 Project #: 19E-00614

Project Manager:  
Dennis Williams

Sampler: Brandon Schaefer  
 On Ice:  Yes  No  
 # of Coolers: 1  
 Cooler Temp (including CF): 33°F to 33°C (90)

TPH: 8015D (GRO / DRO / MRO)	BTEX	MTBE / TMB's (8021)	8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							
X	X	X							

Received by: [Signature] Date: 8/19/19 Time: 15:00  
 Received by: [Signature] Date: 8/22/19 Time: 8:45



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**  
 www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

Remarks: Page 1 of 2

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



# Chain-of-Custody Record

Client: Vertex Resource group

Marathon Oil

Mailing Address:

on file

Phone #: on file

email or Fax#: on file

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance

NELAC  Other

EDD (Type)

Turn-Around Time:  Standard  Rush 48 hours

Project Name:

Project #:

Project Manager:

Sampler: Brandon Schafer

On Ice:  Yes  No

# of Coolers:

Cooler Temp (including CF): \_\_\_\_\_ (°C)

Container Type and #

Preservative Type

HEAL No

glass jar 1cc

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Date: 9/20/19

Time: 17:28

Date: 9/21/19

Time: 19:00

Relinquished by:

Brandon Schafer

Relinquished by:

[Signature]

Received by:

[Signature]

Via:

courier

Date

9/21/19

Time

15:00

Received by:

[Signature]

Via:

8/22/19

Date

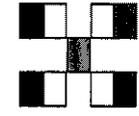
8/22/19

Time

8:45

Remarks:

Page 2 of 2



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	CF, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
TFH:8015D(GRO / DRO / MRO)							
BTX / MTBE / TMB's (8021)	X						
	X						
	X						



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

August 28, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX:

RE: Trebuchet 23 28 19

OrderNo.: 1908E43

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 13 sample(s) on 8/23/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-56 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-001

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/26/2019 5:24:47 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/26/2019 11:50:39 AM	47044
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/26/2019 11:50:39 AM	47044
Surr: DNOP	103	70-130		%Rec	1	8/26/2019 11:50:39 AM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.1		mg/Kg	1	8/26/2019 1:07:48 PM	A62419
Surr: BFB	93.2	77.4-118		%Rec	1	8/26/2019 1:07:48 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.020		mg/Kg	1	8/26/2019 1:07:48 PM	C62419
Toluene	ND	0.041		mg/Kg	1	8/26/2019 1:07:48 PM	C62419
Ethylbenzene	ND	0.041		mg/Kg	1	8/26/2019 1:07:48 PM	C62419
Xylenes, Total	ND	0.081		mg/Kg	1	8/26/2019 1:07:48 PM	C62419
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	8/26/2019 1:07:48 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-57 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-002

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	150		mg/Kg	50	8/27/2019 11:31:04 AM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/26/2019 12:14:36 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 12:14:36 PM	47044
Surr: DNOP	104	70-130		%Rec	1	8/26/2019 12:14:36 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	8/26/2019 1:31:23 PM	A62419
Surr: BFB	92.3	77.4-118		%Rec	1	8/26/2019 1:31:23 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.022		mg/Kg	1	8/26/2019 1:31:23 PM	C62419
Toluene	ND	0.045		mg/Kg	1	8/26/2019 1:31:23 PM	C62419
Ethylbenzene	ND	0.045		mg/Kg	1	8/26/2019 1:31:23 PM	C62419
Xylenes, Total	ND	0.089		mg/Kg	1	8/26/2019 1:31:23 PM	C62419
Surr: 4-Bromofluorobenzene	93.2	80-120		%Rec	1	8/26/2019 1:31:23 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-58 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-003

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	150		mg/Kg	50	8/27/2019 2:37:14 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/26/2019 12:38:36 PM	47044
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/26/2019 12:38:36 PM	47044
Surr: DNOP	106	70-130		%Rec	1	8/26/2019 12:38:36 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	8/26/2019 1:55:06 PM	A62419
Surr: BFB	93.7	77.4-118		%Rec	1	8/26/2019 1:55:06 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/26/2019 1:55:06 PM	C62419
Toluene	ND	0.048		mg/Kg	1	8/26/2019 1:55:06 PM	C62419
Ethylbenzene	ND	0.048		mg/Kg	1	8/26/2019 1:55:06 PM	C62419
Xylenes, Total	ND	0.096		mg/Kg	1	8/26/2019 1:55:06 PM	C62419
Surr: 4-Bromofluorobenzene	94.8	80-120		%Rec	1	8/26/2019 1:55:06 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-59 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-004

**Matrix:** MEOH (SOIL) **Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/26/2019 6:26:49 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/26/2019 1:02:38 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 1:02:38 PM	47044
Surr: DNOP	105	70-130		%Rec	1	8/26/2019 1:02:38 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	8/26/2019 2:18:53 PM	A62419
Surr: BFB	96.4	77.4-118		%Rec	1	8/26/2019 2:18:53 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.022		mg/Kg	1	8/26/2019 2:18:53 PM	C62419
Toluene	ND	0.045		mg/Kg	1	8/26/2019 2:18:53 PM	C62419
Ethylbenzene	ND	0.045		mg/Kg	1	8/26/2019 2:18:53 PM	C62419
Xylenes, Total	ND	0.090		mg/Kg	1	8/26/2019 2:18:53 PM	C62419
Surr: 4-Bromofluorobenzene	97.3	80-120		%Rec	1	8/26/2019 2:18:53 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-60 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-005

**Matrix:** MEOH (SOIL) **Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1600	60		mg/Kg	20	8/26/2019 6:39:14 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	8/26/2019 1:26:44 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 1:26:44 PM	47044
Surr: DNOP	105	70-130		%Rec	1	8/26/2019 1:26:44 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/26/2019 2:42:46 PM	A62419
Surr: BFB	95.9	77.4-118		%Rec	1	8/26/2019 2:42:46 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/26/2019 2:42:46 PM	C62419
Toluene	ND	0.046		mg/Kg	1	8/26/2019 2:42:46 PM	C62419
Ethylbenzene	ND	0.046		mg/Kg	1	8/26/2019 2:42:46 PM	C62419
Xylenes, Total	ND	0.091		mg/Kg	1	8/26/2019 2:42:46 PM	C62419
Surr: 4-Bromofluorobenzene	96.2	80-120		%Rec	1	8/26/2019 2:42:46 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-61 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-006

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/26/2019 7:16:27 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/26/2019 2:15:04 PM	47044
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/26/2019 2:15:04 PM	47044
Surr: DNOP	102	70-130		%Rec	1	8/26/2019 2:15:04 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.2		mg/Kg	1	8/26/2019 3:06:40 PM	A62419
Surr: BFB	93.1	77.4-118		%Rec	1	8/26/2019 3:06:40 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.021		mg/Kg	1	8/26/2019 3:06:40 PM	C62419
Toluene	ND	0.042		mg/Kg	1	8/26/2019 3:06:40 PM	C62419
Ethylbenzene	ND	0.042		mg/Kg	1	8/26/2019 3:06:40 PM	C62419
Xylenes, Total	ND	0.083		mg/Kg	1	8/26/2019 3:06:40 PM	C62419
Surr: 4-Bromofluorobenzene	93.6	80-120		%Rec	1	8/26/2019 3:06:40 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-62 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-007

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1300	60		mg/Kg	20	8/26/2019 7:28:51 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/26/2019 2:39:20 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 2:39:20 PM	47044
Surr: DNOP	105	70-130		%Rec	1	8/26/2019 2:39:20 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/26/2019 3:30:29 PM	A62419
Surr: BFB	104	77.4-118		%Rec	1	8/26/2019 3:30:29 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	8/26/2019 3:30:29 PM	C62419
Toluene	ND	0.049		mg/Kg	1	8/26/2019 3:30:29 PM	C62419
Ethylbenzene	ND	0.049		mg/Kg	1	8/26/2019 3:30:29 PM	C62419
Xylenes, Total	ND	0.097		mg/Kg	1	8/26/2019 3:30:29 PM	C62419
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	8/26/2019 3:30:29 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-63 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-008

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1200	60		mg/Kg	20	8/26/2019 7:41:16 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	8/26/2019 3:03:38 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 3:03:38 PM	47044
Surr: DNOP	97.8	70-130		%Rec	1	8/26/2019 3:03:38 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/26/2019 3:54:20 PM	A62419
Surr: BFB	97.2	77.4-118		%Rec	1	8/26/2019 3:54:20 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/26/2019 3:54:20 PM	C62419
Toluene	ND	0.049		mg/Kg	1	8/26/2019 3:54:20 PM	C62419
Ethylbenzene	ND	0.049		mg/Kg	1	8/26/2019 3:54:20 PM	C62419
Xylenes, Total	ND	0.099		mg/Kg	1	8/26/2019 3:54:20 PM	C62419
Surr: 4-Bromofluorobenzene	97.8	80-120		%Rec	1	8/26/2019 3:54:20 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-64 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-009

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	1200	60		mg/Kg	20	8/26/2019 7:53:40 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/26/2019 3:27:54 PM	47044
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/26/2019 3:27:54 PM	47044
Surr: DNOP	94.7	70-130		%Rec	1	8/26/2019 3:27:54 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.8		mg/Kg	1	8/26/2019 5:29:27 PM	A62419
Surr: BFB	97.8	77.4-118		%Rec	1	8/26/2019 5:29:27 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.019		mg/Kg	1	8/26/2019 5:29:27 PM	C62419
Toluene	ND	0.038		mg/Kg	1	8/26/2019 5:29:27 PM	C62419
Ethylbenzene	ND	0.038		mg/Kg	1	8/26/2019 5:29:27 PM	C62419
Xylenes, Total	ND	0.077		mg/Kg	1	8/26/2019 5:29:27 PM	C62419
Surr: 4-Bromofluorobenzene	98.1	80-120		%Rec	1	8/26/2019 5:29:27 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-65 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-010

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2100	60		mg/Kg	20	8/26/2019 8:06:05 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/26/2019 3:52:16 PM	47044
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	8/26/2019 3:52:16 PM	47044
Surr: DNOP	95.1	70-130		%Rec	1	8/26/2019 3:52:16 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.3		mg/Kg	1	8/26/2019 5:53:14 PM	A62419
Surr: BFB	92.8	77.4-118		%Rec	1	8/26/2019 5:53:14 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.016		mg/Kg	1	8/26/2019 5:53:14 PM	C62419
Toluene	ND	0.033		mg/Kg	1	8/26/2019 5:53:14 PM	C62419
Ethylbenzene	ND	0.033		mg/Kg	1	8/26/2019 5:53:14 PM	C62419
Xylenes, Total	ND	0.066		mg/Kg	1	8/26/2019 5:53:14 PM	C62419
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	8/26/2019 5:53:14 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-10 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-011

**Matrix:** MEOH (SOIL) **Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	4500	150		mg/Kg	50	8/27/2019 2:49:39 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/26/2019 4:16:36 PM	47044
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/26/2019 4:16:36 PM	47044
Surr: DNOP	95.1	70-130		%Rec	1	8/26/2019 4:16:36 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	8/26/2019 6:16:54 PM	A62419
Surr: BFB	94.7	77.4-118		%Rec	1	8/26/2019 6:16:54 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	8/26/2019 6:16:54 PM	C62419
Toluene	ND	0.046		mg/Kg	1	8/26/2019 6:16:54 PM	C62419
Ethylbenzene	ND	0.046		mg/Kg	1	8/26/2019 6:16:54 PM	C62419
Xylenes, Total	ND	0.093		mg/Kg	1	8/26/2019 6:16:54 PM	C62419
Surr: 4-Bromofluorobenzene	94.0	80-120		%Rec	1	8/26/2019 6:16:54 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-11 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019

**Lab ID:** 1908E43-012

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	2400	150		mg/Kg	50	8/27/2019 3:02:04 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/26/2019 4:40:53 PM	47044
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/26/2019 4:40:53 PM	47044
Surr: DNOP	94.1	70-130		%Rec	1	8/26/2019 4:40:53 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.4		mg/Kg	1	8/26/2019 6:40:40 PM	A62419
Surr: BFB	91.5	77.4-118		%Rec	1	8/26/2019 6:40:40 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.022		mg/Kg	1	8/26/2019 6:40:40 PM	C62419
Toluene	ND	0.044		mg/Kg	1	8/26/2019 6:40:40 PM	C62419
Ethylbenzene	ND	0.044		mg/Kg	1	8/26/2019 6:40:40 PM	C62419
Xylenes, Total	ND	0.088		mg/Kg	1	8/26/2019 6:40:40 PM	C62419
Surr: 4-Bromofluorobenzene	90.6	80-120		%Rec	1	8/26/2019 6:40:40 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E43

Date Reported: 8/28/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-09 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/21/2019 4:00:00 PM

**Lab ID:** 1908E43-013

**Matrix:** MEOH (SOIL)

**Received Date:** 8/23/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>CAS</b>
Chloride	4200	150		mg/Kg	50	8/27/2019 3:14:28 PM	47059
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/26/2019 5:05:03 PM	47044
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	8/26/2019 5:05:03 PM	47044
Surr: DNOP	97.7	70-130		%Rec	1	8/26/2019 5:05:03 PM	47044
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.6		mg/Kg	1	8/26/2019 7:04:22 PM	A62419
Surr: BFB	93.3	77.4-118		%Rec	1	8/26/2019 7:04:22 PM	A62419
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.028		mg/Kg	1	8/26/2019 7:04:22 PM	C62419
Toluene	ND	0.056		mg/Kg	1	8/26/2019 7:04:22 PM	C62419
Ethylbenzene	ND	0.056		mg/Kg	1	8/26/2019 7:04:22 PM	C62419
Xylenes, Total	ND	0.11		mg/Kg	1	8/26/2019 7:04:22 PM	C62419
Surr: 4-Bromofluorobenzene	92.7	80-120		%Rec	1	8/26/2019 7:04:22 PM	C62419

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908E43

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47059</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47059</b>	RunNo: <b>62418</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122942</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47059</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47059</b>	RunNo: <b>62418</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122943</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.1	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908E43

28-Aug-19

Client: Vertex Resource Group Ltd.

Project: Trebuchet 23 28 19

Sample ID: <b>MB-47044</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47044</b>	RunNo: <b>62408</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121954</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		101	70	130			

Sample ID: <b>LCS-47044</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47044</b>	RunNo: <b>62408</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2121955</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	46	10	50.00	0	91.1	63.9	124			
Surr: DNOP	4.5		5.000		90.1	70	130			

Sample ID: <b>1908E43-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS19-56 4'</b>	Batch ID: <b>47044</b>	RunNo: <b>62408</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122288</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	9.3	46.43	0	92.5	57	142			
Surr: DNOP	4.4		4.643		95.2	70	130			

Sample ID: <b>1908E43-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS19-56 4'</b>	Batch ID: <b>47044</b>	RunNo: <b>62408</b>								
Prep Date: <b>8/26/2019</b>	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122290</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	39	8.7	43.71	0	90.1	57	142	8.57	20	
Surr: DNOP	4.1		4.371		94.0	70	130	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908E43

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>A62419</b>		RunNo: <b>62419</b>							
Prep Date:	Analysis Date: <b>8/26/2019</b>		SeqNo: <b>2122213</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		101	77.4	118			

Sample ID: <b>2.5UG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>A62419</b>		RunNo: <b>62419</b>							
Prep Date:	Analysis Date: <b>8/26/2019</b>		SeqNo: <b>2122214</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.4	80	120			
Surr: BFB	1100		1000		109	77.4	118			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1908E43

28-Aug-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>C62419</b>	RunNo: <b>62419</b>								
Prep Date:	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122257</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID: <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>C62419</b>	RunNo: <b>62419</b>								
Prep Date:	Analysis Date: <b>8/26/2019</b>	SeqNo: <b>2122258</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	97.2	80	120			
Toluene	1.0	0.050	1.000	0	99.8	80	120			
Ethylbenzene	1.0	0.050	1.000	0	99.9	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.97		1.000		97.4	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

**Sample Log-In Check List**

Client Name: VERTEX CARLSBAD

Work Order Number: 1908E43

RcptNo: 1

Received By: Yazmine Garduno

8/23/2019 9:40:00 AM

*Yazmine Garduno*

Completed By: Yazmine Garduno

8/24/2019 10:25:40 AM

*Yazmine Garduno*

Reviewed By: ENM

8/26/19

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present

2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA

4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA

5. Sample(s) in proper container(s)? Yes  No

6. Sufficient sample volume for indicated test(s)? Yes  No

7. Are samples (except VOA and ONG) properly preserved? Yes  No

8. Was preservative added to bottles? Yes  No  NA

9. VOA vials have zero headspace? Yes  No  No VOA Vials

10. Were any sample containers received broken? Yes  No

11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)

12. Are matrices correctly identified on Chain of Custody? Yes  No

13. Is it clear what analyses were requested? Yes  No

14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: DAD 8/26/19

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date: \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.6	Good				
2	5.9	Good				
3	5.6	Good				
4	5.3	Good				



# Chain-of-Custody Record

Client: *Vertex Resource Group*

*Marathon Oil*

Mailing Address:

*on file*

Phone #: *on file*

email or Fax#: *on file*

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance

NELAC  Other

EDD (Type)

Turn-Around Time:

Standard  Rush *48 hours*

Project Name:

*Trebucket 23 28 19*

Project #:

*19E-00614*

Project Manager:

*Dennis Williams*

Sampler: *Brandon Schaefer*

On Ice:  Yes  No

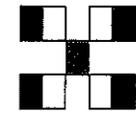
# of Coolers: *4*

Cooler Temp (including CP): *10/10/11* (°C)

Container Type and #  
*glass jar 1cc*

Preservative Type  
*HEAL No: 1905E UB*

*-013*



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

8081 Pesticides/8082 PCBs	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>3-</sup> , SO <sub>4</sub> <sup>2-</sup>	<i>X</i>
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	
8081 Pesticides/8082 PCBs	
TPH/8015D(GRO / DRO / MRO)	<i>X</i>
BTX / MTBE / TMB's (8021)	<i>X</i>

Remarks:

*5.1 TO.SCF=5.4  
5.4 TO.SCF=5.4  
5.1 TO.SCF=5.4  
4.8 TO.SCF=5.35*

*Page 2 of 2*

Received by: *[Signature]* Date: *8/2/19* Time: *0900*

Received by: *[Signature]* Date: *8/2/19* Time: *09:40*

Relinquished by: *Brandon Schaefer*

Relinquished by: *[Signature]*

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E44

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-66 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:00:00 PM

**Lab ID:** 1908E44-001

**Matrix:** MEOH (SOIL) **Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/26/2019 5:29:31 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/26/2019 5:29:31 PM
Surr: DNOP	96.1	70-130		%Rec	1	8/26/2019 5:29:31 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	8/26/2019 7:28:06 PM
Surr: BFB	92.1	77.4-118		%Rec	1	8/26/2019 7:28:06 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.022		mg/Kg	1	8/26/2019 7:28:06 PM
Toluene	ND	0.045		mg/Kg	1	8/26/2019 7:28:06 PM
Ethylbenzene	ND	0.045		mg/Kg	1	8/26/2019 7:28:06 PM
Xylenes, Total	ND	0.090		mg/Kg	1	8/26/2019 7:28:06 PM
Surr: 4-Bromofluorobenzene	91.6	80-120		%Rec	1	8/26/2019 7:28:06 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1800	60		mg/Kg	20	8/26/2019 8:55:44 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E44

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-67 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:05:00 PM

**Lab ID:** 1908E44-002

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	8/26/2019 5:53:52 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/26/2019 5:53:52 PM
Surr: DNOP	98.0	70-130		%Rec	1	8/26/2019 5:53:52 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.2		mg/Kg	1	8/26/2019 7:51:40 PM
Surr: BFB	91.0	77.4-118		%Rec	1	8/26/2019 7:51:40 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.021		mg/Kg	1	8/26/2019 7:51:40 PM
Toluene	ND	0.042		mg/Kg	1	8/26/2019 7:51:40 PM
Ethylbenzene	ND	0.042		mg/Kg	1	8/26/2019 7:51:40 PM
Xylenes, Total	ND	0.084		mg/Kg	1	8/26/2019 7:51:40 PM
Surr: 4-Bromofluorobenzene	91.1	80-120		%Rec	1	8/26/2019 7:51:40 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/26/2019 9:08:08 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E44

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-68 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:10:00 PM

**Lab ID:** 1908E44-003

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/26/2019 6:18:09 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/26/2019 6:18:09 PM
Surr: DNOP	97.3	70-130		%Rec	1	8/26/2019 6:18:09 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.2		mg/Kg	1	8/26/2019 8:15:14 PM
Surr: BFB	91.1	77.4-118		%Rec	1	8/26/2019 8:15:14 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.026		mg/Kg	1	8/26/2019 8:15:14 PM
Toluene	ND	0.052		mg/Kg	1	8/26/2019 8:15:14 PM
Ethylbenzene	ND	0.052		mg/Kg	1	8/26/2019 8:15:14 PM
Xylenes, Total	ND	0.10		mg/Kg	1	8/26/2019 8:15:14 PM
Surr: 4-Bromofluorobenzene	90.8	80-120		%Rec	1	8/26/2019 8:15:14 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2300	150		mg/Kg	50	8/27/2019 3:51:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E44

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-69 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:15:00 PM

**Lab ID:** 1908E44-004

**Matrix:** MEOH (SOIL) **Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	8/26/2019 6:42:33 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	8/26/2019 6:42:33 PM
Surr: DNOP	97.7	70-130		%Rec	1	8/26/2019 6:42:33 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	8/26/2019 8:38:48 PM
Surr: BFB	90.7	77.4-118		%Rec	1	8/26/2019 8:38:48 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	8/26/2019 8:38:48 PM
Toluene	ND	0.049		mg/Kg	1	8/26/2019 8:38:48 PM
Ethylbenzene	ND	0.049		mg/Kg	1	8/26/2019 8:38:48 PM
Xylenes, Total	ND	0.098		mg/Kg	1	8/26/2019 8:38:48 PM
Surr: 4-Bromofluorobenzene	90.1	80-120		%Rec	1	8/26/2019 8:38:48 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2200	60		mg/Kg	20	8/26/2019 10:22:35 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1908E44

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-70 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:20:00 PM

**Lab ID:** 1908E44-005

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	8/26/2019 7:06:44 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	8/26/2019 7:06:44 PM
Surr: DNOP	98.3	70-130		%Rec	1	8/26/2019 7:06:44 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.3		mg/Kg	1	8/26/2019 9:02:19 PM
Surr: BFB	91.2	77.4-118		%Rec	1	8/26/2019 9:02:19 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.026		mg/Kg	1	8/26/2019 9:02:19 PM
Toluene	ND	0.053		mg/Kg	1	8/26/2019 9:02:19 PM
Ethylbenzene	ND	0.053		mg/Kg	1	8/26/2019 9:02:19 PM
Xylenes, Total	ND	0.11		mg/Kg	1	8/26/2019 9:02:19 PM
Surr: 4-Bromofluorobenzene	91.0	80-120		%Rec	1	8/26/2019 9:02:19 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2500	150		mg/Kg	50	8/27/2019 4:04:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908E44**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-71 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:25:00 PM

**Lab ID:** 1908E44-006

**Matrix:** MEOH (SOIL) **Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	8/26/2019 7:30:51 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/26/2019 7:30:51 PM
Surr: DNOP	98.0	70-130		%Rec	1	8/26/2019 7:30:51 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	8/26/2019 10:13:03 PM
Surr: BFB	96.8	77.4-118		%Rec	1	8/26/2019 10:13:03 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.018		mg/Kg	1	8/26/2019 10:13:03 PM
Toluene	ND	0.037		mg/Kg	1	8/26/2019 10:13:03 PM
Ethylbenzene	ND	0.037		mg/Kg	1	8/26/2019 10:13:03 PM
Xylenes, Total	ND	0.074		mg/Kg	1	8/26/2019 10:13:03 PM
Surr: 4-Bromofluorobenzene	96.4	80-120		%Rec	1	8/26/2019 10:13:03 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2300	60		mg/Kg	20	8/26/2019 10:47:24 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908E44**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-72 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:30:00 PM

**Lab ID:** 1908E44-007

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	8/26/2019 7:55:04 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	8/26/2019 7:55:04 PM
Surr: DNOP	98.5	70-130		%Rec	1	8/26/2019 7:55:04 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	8/26/2019 11:23:28 PM
Surr: BFB	91.2	77.4-118		%Rec	1	8/26/2019 11:23:28 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.019		mg/Kg	1	8/26/2019 11:23:28 PM
Toluene	ND	0.037		mg/Kg	1	8/26/2019 11:23:28 PM
Ethylbenzene	ND	0.037		mg/Kg	1	8/26/2019 11:23:28 PM
Xylenes, Total	ND	0.075		mg/Kg	1	8/26/2019 11:23:28 PM
Surr: 4-Bromofluorobenzene	91.9	80-120		%Rec	1	8/26/2019 11:23:28 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1500	60		mg/Kg	20	8/26/2019 10:59:49 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908E44**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-12 3'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:35:00 PM

**Lab ID:** 1908E44-008

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	8/27/2019 9:25:49 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	8/27/2019 9:25:49 AM
Surr: DNOP	89.5	70-130		%Rec	1	8/27/2019 9:25:49 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.5		mg/Kg	1	8/27/2019 12:33:58 AM
Surr: BFB	91.5	77.4-118		%Rec	1	8/27/2019 12:33:58 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.022		mg/Kg	1	8/27/2019 12:33:58 AM
Toluene	ND	0.045		mg/Kg	1	8/27/2019 12:33:58 AM
Ethylbenzene	ND	0.045		mg/Kg	1	8/27/2019 12:33:58 AM
Xylenes, Total	ND	0.090		mg/Kg	1	8/27/2019 12:33:58 AM
Surr: 4-Bromofluorobenzene	91.3	80-120		%Rec	1	8/27/2019 12:33:58 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	150	60		mg/Kg	20	8/27/2019 6:26:27 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1908E44**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-13 3'

**Project:** Trebuchet 23 28 19

**Collection Date:** 8/22/2019 1:40:00 PM

**Lab ID:** 1908E44-009

**Matrix:** MEOH (SOIL)

**Received Date:** 8/24/2019 9:40:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	120	10		mg/Kg	1	8/27/2019 9:50:24 AM
Motor Oil Range Organics (MRO)	200	50		mg/Kg	1	8/27/2019 9:50:24 AM
Surr: DNOP	109	70-130		%Rec	1	8/27/2019 9:50:24 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.2		mg/Kg	1	8/27/2019 12:57:30 AM
Surr: BFB	87.4	77.4-118		%Rec	1	8/27/2019 12:57:30 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.026		mg/Kg	1	8/27/2019 12:57:30 AM
Toluene	ND	0.052		mg/Kg	1	8/27/2019 12:57:30 AM
Ethylbenzene	ND	0.052		mg/Kg	1	8/27/2019 12:57:30 AM
Xylenes, Total	ND	0.10		mg/Kg	1	8/27/2019 12:57:30 AM
Surr: 4-Bromofluorobenzene	87.5	80-120		%Rec	1	8/27/2019 12:57:30 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	3300	150		mg/Kg	50	8/27/2019 4:16:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

July 30, 2019

Dennis Williams  
Marathon Oil Company  
4111 Tidwell Road  
Carlsbad, NM 88220  
TEL: (575) 297-0956  
FAX

RE: Trebuchet 23 28 19

OrderNo.: 1907E19

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 4 sample(s) on 7/27/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907E19

Date Reported: 7/30/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** BG19-17 (0')

**Project:** Trebuchet 23 28 19

**Collection Date:** 7/26/2019 9:30:00 AM

**Lab ID:** 1907E19-001

**Matrix:** MEOH (SOIL)

**Received Date:** 7/27/2019 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/29/2019 9:47:35 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	7/29/2019 9:47:35 AM
Surr: DNOP	72.8	70-130		%Rec	1	7/29/2019 9:47:35 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.7		mg/Kg	1	7/29/2019 10:35:35 AM
Surr: BFB	101	73.8-119		%Rec	1	7/29/2019 10:35:35 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.019		mg/Kg	1	7/29/2019 10:35:35 AM
Toluene	ND	0.037		mg/Kg	1	7/29/2019 10:35:35 AM
Ethylbenzene	ND	0.037		mg/Kg	1	7/29/2019 10:35:35 AM
Xylenes, Total	ND	0.075		mg/Kg	1	7/29/2019 10:35:35 AM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	7/29/2019 10:35:35 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	7/29/2019 12:52:51 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907E19

Date Reported: 7/30/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** BG19-17 (2')

**Project:** Trebuchet 23 28 19

**Collection Date:** 7/26/2019 9:40:00 AM

**Lab ID:** 1907E19-002

**Matrix:** MEOH (SOIL) **Received Date:** 7/27/2019 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	7/29/2019 10:09:42 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	7/29/2019 10:09:42 AM
Surr: DNOP	76.7	70-130		%Rec	1	7/29/2019 10:09:42 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.2		mg/Kg	1	7/29/2019 10:58:59 AM
Surr: BFB	94.3	73.8-119		%Rec	1	7/29/2019 10:58:59 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.021		mg/Kg	1	7/29/2019 10:58:59 AM
Toluene	ND	0.042		mg/Kg	1	7/29/2019 10:58:59 AM
Ethylbenzene	ND	0.042		mg/Kg	1	7/29/2019 10:58:59 AM
Xylenes, Total	ND	0.084		mg/Kg	1	7/29/2019 10:58:59 AM
Surr: 4-Bromofluorobenzene	93.8	80-120		%Rec	1	7/29/2019 10:58:59 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	4500	150		mg/Kg	50	7/29/2019 2:44:32 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907E19

Date Reported: 7/30/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** BG19-17 (4')

**Project:** Trebuchet 23 28 19

**Collection Date:** 7/26/2019 10:00:00 AM

**Lab ID:** 1907E19-003

**Matrix:** MEOH (SOIL) **Received Date:** 7/27/2019 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	7/29/2019 10:31:54 AM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	7/29/2019 10:31:54 AM
Surr: DNOP	77.1	70-130		%Rec	1	7/29/2019 10:31:54 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.1		mg/Kg	1	7/29/2019 11:22:25 AM
Surr: BFB	89.1	73.8-119		%Rec	1	7/29/2019 11:22:25 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.016		mg/Kg	1	7/29/2019 11:22:25 AM
Toluene	ND	0.031		mg/Kg	1	7/29/2019 11:22:25 AM
Ethylbenzene	ND	0.031		mg/Kg	1	7/29/2019 11:22:25 AM
Xylenes, Total	ND	0.062		mg/Kg	1	7/29/2019 11:22:25 AM
Surr: 4-Bromofluorobenzene	89.5	80-120		%Rec	1	7/29/2019 11:22:25 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1200	60		mg/Kg	20	7/29/2019 1:42:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1907E19

Date Reported: 7/30/2019

**CLIENT:** Marathon Oil Company

**Client Sample ID:** BG19-17 (6')

**Project:** Trebuchet 23 28 19

**Collection Date:** 7/26/2019 11:00:00 AM

**Lab ID:** 1907E19-004

**Matrix:** MEOH (SOIL) **Received Date:** 7/27/2019 9:07:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>TOM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	7/29/2019 10:54:00 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	7/29/2019 10:54:00 AM
Surr: DNOP	81.1	70-130		%Rec	1	7/29/2019 10:54:00 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	3.5		mg/Kg	1	7/29/2019 11:45:59 AM
Surr: BFB	89.0	73.8-119		%Rec	1	7/29/2019 11:45:59 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.018		mg/Kg	1	7/29/2019 11:45:59 AM
Toluene	ND	0.035		mg/Kg	1	7/29/2019 11:45:59 AM
Ethylbenzene	ND	0.035		mg/Kg	1	7/29/2019 11:45:59 AM
Xylenes, Total	ND	0.070		mg/Kg	1	7/29/2019 11:45:59 AM
Surr: 4-Bromofluorobenzene	90.2	80-120		%Rec	1	7/29/2019 11:45:59 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	730	60		mg/Kg	20	7/29/2019 1:54:55 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907E19

30-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-46441</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46441</b>	RunNo: <b>61714</b>								
Prep Date: <b>7/29/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092746</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-46441</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46441</b>	RunNo: <b>61714</b>								
Prep Date: <b>7/29/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092748</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.4	90	110			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907E19

30-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet 23 28 19

Sample ID: <b>LCS-46437</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46437</b>	RunNo: <b>61704</b>								
Prep Date: <b>7/29/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2091574</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	94.0	63.9	124			
Surr: DNOP	4.2		5.000		84.3	70	130			

Sample ID: <b>MB-46437</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46437</b>	RunNo: <b>61704</b>								
Prep Date: <b>7/29/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2091575</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.8		10.00		87.6	70	130			

Sample ID: <b>LCS-46410</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46410</b>	RunNo: <b>61704</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092243</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	5.9		5.000		118	70	130			

Sample ID: <b>MB-46410</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46410</b>	RunNo: <b>61704</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092244</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: DNOP	12		10.00		123	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907E19

30-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-46422</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46422</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092021</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	890		1000		89.3	73.8	119			

Sample ID: <b>LCS-46422</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46422</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092022</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	94.6	80.1	123			
Surr: BFB	1000		1000		104	73.8	119			

Sample ID: <b>MB-46417</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46417</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092033</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	920		1000		92.0	73.8	119			

Sample ID: <b>LCS-46417</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46417</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092035</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: BFB	1000		1000		100	73.8	119			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1907E19

30-Jul-19

**Client:** Marathon Oil Company

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-46422</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46422</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092074</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.89		1.000		88.8	80	120			

Sample ID: <b>LCS-46422</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46422</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092075</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.2	80	120			
Toluene	1.0	0.050	1.000	0	101	80	120			
Ethylbenzene	1.0	0.050	1.000	0	101	80	120			
Xylenes, Total	3.0	0.10	3.000	0	101	80	120			
Surr: 4-Bromofluorobenzene	0.96		1.000		95.7	80	120			

Sample ID: <b>MB-46417</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>46417</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092081</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	0.91		1.000		91.2	80	120			

Sample ID: <b>LCS-46417</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>46417</b>	RunNo: <b>61712</b>								
Prep Date: <b>7/26/2019</b>	Analysis Date: <b>7/29/2019</b>	SeqNo: <b>2092082</b>	Units: <b>%Rec</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	1.0		1.000		99.9	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Sample Log-In Check List

Client Name: **MARATHON OIL COMPA**

Work Order Number: **1907E19**

RcptNo: 1

Received By: **Yazmine Garduno**      **7/27/2019 9:07:00 AM**      *Yazmine Garduno*  
 Completed By: **Yazmine Garduno**      **7/27/2019 10:39:44 AM**      *Yazmine Garduno*  
 Reviewed By: **DAD 7/29/19**

**Chain of Custody**

1. Is Chain of Custody complete?      Yes       No       Not Present   
 2. How was the sample delivered?      Courier

**Log In**

3. Was an attempt made to cool the samples?      Yes       No       NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C      Yes       No       NA   
 5. Sample(s) in proper container(s)?      Yes       No   
 6. Sufficient sample volume for indicated test(s)?      Yes       No   
 7. Are samples (except VOA and ONG) properly preserved?      Yes       No   
 8. Was preservative added to bottles?      Yes       No       NA   
 9. VOA vials have zero headspace?      Yes       No       No VOA Vials   
 10. Were any sample containers received broken?      Yes       No   
 11. Does paperwork match bottle labels?      Yes       No   
     (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody?      Yes       No   
 13. Is it clear what analyses were requested?      Yes       No   
 14. Were all holding times able to be met?      Yes       No   
     (If no, notify customer for authorization.)

# of preserved bottles checked for pH:  
 (<2 or >12 unless noted)  
 Adjusted?  
 Checked by: *YG 7/27/19*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order?      Yes       No       NA

Person Notified: \_\_\_\_\_ Date \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.9	Good	Yes			
2	2.5	Good	Yes			





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

September 12, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX

RE: Trebuchet Fee 23 28 19 WXY 010H

OrderNo.: 1909316

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 1 sample(s) on 9/7/2019 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued September 11, 2019.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. All samples are reported as received unless otherwise indicated.

Please don't hesitate to contact HEAL for any additional information or clarifications.

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1909316

Date Reported: 9/12/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** SS15-01

**Project:** Trebuchet Fee 23 28 19 WXY 010H

**Collection Date:** 9/6/2019 8:00:00 AM

**Lab ID:** 1909316-001

**Matrix:** MEOH (SOIL)

**Received Date:** 9/7/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	47000	3000		mg/Kg	1E+	9/9/2019 11:18:04 AM	47343
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	9/9/2019 10:48:03 AM	47342
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	9/9/2019 10:48:03 AM	47342
Surr: DNOP	95.3	70-130		%Rec	1	9/9/2019 10:48:03 AM	47342
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	19		mg/Kg	5	9/9/2019 9:38:28 AM	G62762
Surr: BFB	95.7	77.4-118		%Rec	5	9/9/2019 9:38:28 AM	G62762
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.094		mg/Kg	5	9/9/2019 9:38:28 AM	B62762
Toluene	ND	0.19		mg/Kg	5	9/9/2019 9:38:28 AM	B62762
Ethylbenzene	ND	0.19		mg/Kg	5	9/9/2019 9:38:28 AM	B62762
Xylenes, Total	ND	0.38		mg/Kg	5	9/9/2019 9:38:28 AM	B62762
Surr: 4-Bromofluorobenzene	96.2	80-120		%Rec	5	9/9/2019 9:38:28 AM	B62762

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1909316

12-Sep-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY 010H

Sample ID: <b>MB-47343</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47343</b>	RunNo: <b>62754</b>								
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138648</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47343</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47343</b>	RunNo: <b>62754</b>								
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138649</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	97.7	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1909316

12-Sep-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY 010H

Sample ID: <b>LCS-47342</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47342</b>		RunNo: <b>62753</b>							
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2137494</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	101	63.9	124			
Surr: DNOP	4.0		5.000		80.3	70	130			

Sample ID: <b>MB-47342</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47342</b>		RunNo: <b>62753</b>							
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2137495</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.1		10.00		91.1	70	130			

Sample ID: <b>1909316-001AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>SS15-01</b>	Batch ID: <b>47342</b>		RunNo: <b>62753</b>							
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2137639</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	49	9.7	48.26	0	102	57	142			
Surr: DNOP	4.4		4.826		90.3	70	130			

Sample ID: <b>1909316-001AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>SS15-01</b>	Batch ID: <b>47342</b>		RunNo: <b>62753</b>							
Prep Date: <b>9/9/2019</b>	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2137641</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	9.7	48.64	0	103	57	142	1.49	20	
Surr: DNOP	4.4		4.864		89.9	70	130	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1909316

12-Sep-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY 010H

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>G62762</b>		RunNo: <b>62762</b>							
Prep Date:	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2138121</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	930		1000		93.2	77.4	118			

Sample ID: <b>2.5UG GRO LCS</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>G62762</b>		RunNo: <b>62762</b>							
Prep Date:	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2138122</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	101	80	120			
Surr: BFB	1200		1000		116	77.4	118			

Sample ID: <b>1909316-001AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SS15-01</b>	Batch ID: <b>G62762</b>		RunNo: <b>62762</b>							
Prep Date:	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2138124</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	91	19	93.99	0	97.2	69.1	142			
Surr: BFB	4000		3760		108	77.4	118			

Sample ID: <b>1909316-001AMSD</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>SS15-01</b>	Batch ID: <b>G62762</b>		RunNo: <b>62762</b>							
Prep Date:	Analysis Date: <b>9/9/2019</b>		SeqNo: <b>2138125</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	90	19	93.99	0	96.0	69.1	142	1.20	20	
Surr: BFB	3800		3760		101	77.4	118	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1909316

12-Sep-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY 010H

Sample ID: <b>RB</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>B62762</b>	RunNo: <b>62762</b>								
Prep Date:	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138138</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.93		1.000		93.2	80	120			

Sample ID: <b>100NG BTEX LCS</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>B62762</b>	RunNo: <b>62762</b>								
Prep Date:	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138139</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.97	0.025	1.000	0	97.3	80	120			
Toluene	0.97	0.050	1.000	0	96.7	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.1	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.4	80	120			
Surr: 4-Bromofluorobenzene	0.98		1.000		98.0	80	120			

Sample ID: <b>1909316-001AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>SS15-01</b>	Batch ID: <b>B62762</b>	RunNo: <b>62762</b>								
Prep Date:	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138141</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.7	0.094	3.760	0.05151	98.0	76	123			
Toluene	3.9	0.19	3.760	0.04850	102	80.3	127			
Ethylbenzene	3.8	0.19	3.760	0	102	80.2	131			
Xylenes, Total	12	0.38	11.28	0.07669	103	78	133			
Surr: 4-Bromofluorobenzene	3.8		3.760		102	80	120			

Sample ID: <b>1909316-001AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>SS15-01</b>	Batch ID: <b>B62762</b>	RunNo: <b>62762</b>								
Prep Date:	Analysis Date: <b>9/9/2019</b>	SeqNo: <b>2138142</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	3.6	0.094	3.760	0.05151	95.4	76	123	2.69	20	
Toluene	3.8	0.19	3.760	0.04850	99.1	80.3	127	2.54	20	
Ethylbenzene	3.8	0.19	3.760	0	100	80.2	131	1.78	20	
Xylenes, Total	11	0.38	11.28	0.07669	101	78	133	2.11	20	
Surr: 4-Bromofluorobenzene	3.7		3.760		97.2	80	120	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

**Sample Log-In Check List**

Client Name: VERTEX CARLSBAD

Work Order Number: 1909316

RcptNo: 1

Received By: Yazmine Garduno

9/7/2019 9:30:00 AM

*Yazmine Garduno*

Completed By: Yazmine Garduno

9/7/2019 10:53:05 AM

*Yazmine Garduno*

Reviewed By: ENM

9/7/19

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: \_\_\_\_\_

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	5.2	Good				
2	3.1	Good				
3	3.9	Good				

# Chain-of-Custody Record

Client: Vertex Resource Services

Mailing Address: 213 S. Mesa St.

Carlsbad, NM 88220

Phone #: 575-361-1137

email or Fax#: Permian@vertes.ca

QA/QC Package:  
 Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance  
 NELAC  Other

EDD (Type)

Turn-Around Time:  
 Standard  Rush 27-hr  
 data needed Monday PM

Project Name:  
Trebuchet Fee

23 28 19 Wxy #010H

Project #:  
19E-00614

Project Manager:  
Dennis Williams  
dwilliams@vertes.ca

Sampler: Sharlene Harvester

On Ice:  Yes  No

# of Coolers: 3

Cooler Temp (including CF): Remarks (°C)

Container Type and #  
Glass Jar 1cc

Preservative Type  
HEAL No. 1909316

Remarks

Received by: [Signature] Date: 9/6/19 Time: 12:00

Relinquished by: [Signature] Date: 9/6/19 Time: 1900

Received by: [Signature] Date: 9/11/19 Time: 0:30

Relinquished by: [Signature] Date: 9/11/19 Time: 0:30

Remarks:  
4.9 + 0.3 = 5.2  
2.8 + 0.3 = 3.1  
3.4 + 0.3 = 3.9



www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

<input checked="" type="checkbox"/> BTEX / MTBE / TMB's (8021)	
<input checked="" type="checkbox"/> TPH 8015D (GRO / DRO / MRO)	
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
<input checked="" type="checkbox"/> CF, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

Hall Environmental Analysis Laboratory, Inc.

CLIENT: Vertex Resource Group Ltd.
Project: Trebuchet Fee 23 28 19 WXY 10H

Lab Order: 1909531

Lab ID: 1909531-001 Collection Date: 9/10/2019 12:50:00 PM

Client Sample ID: BG19-02 0' Matrix: SOIL

Analyses Result RL Qual Units DF Date Analyzed

EPA METHOD 300.0: ANIONS

Analyst: SRM

Chloride ND 60 mg/Kg 20 9/12/2019 11:18:00 AM

Lab ID: 1909531-002 Collection Date: 9/10/2019 1:00:00 PM

Client Sample ID: BG19-02 2' Matrix: SOIL

Analyses Result RL Qual Units DF Date Analyzed

EPA METHOD 300.0: ANIONS

Analyst: SRM

Chloride 2400 150 mg/Kg 50 9/12/2019 12:32:00 PM

Lab ID: 1909531-003 Collection Date: 9/10/2019 1:10:00 PM

Client Sample ID: BG19-02 4' Matrix: SOIL

Analyses Result RL Qual Units DF Date Analyzed

EPA METHOD 300.0: ANIONS

Analyst: SRM

Chloride 3400 150 mg/Kg 50 9/12/2019 12:45:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Table with 2 columns: Qualifiers and their corresponding definitions. Includes codes like \*, D, H, ND, PQL, S, B, E, J, P, RL and their meanings.



# Certificate of Analysis Summary 641285

Marathon Oil Company, Tulsa, OK

Project Name: Trebuchet Fee 23 28 19 WXY 3H

Project Id: 19E-03840  
 Contact: Isaac Castro  
 Project Location:

Date Received in Lab: Mon Oct-28-19 01:45 pm  
 Report Date: 30-OCT-19  
 Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	641285-001	641285-002	641285-003	641285-004	641285-005	641285-006
	<i>Field Id:</i>	BG-19-02	BG-19-02	BG-19-02	BG-19-02	BG-19-02	BG-19-02
	<i>Depth:</i>	0- ft	2- ft	4- ft	6- ft	8- ft	10- ft
	<i>Matrix:</i>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
	<i>Sampled:</i>	Oct-26-19 10:00	Oct-26-19 10:10	Oct-26-19 10:20	Oct-26-19 10:30	Oct-26-19 10:40	Oct-26-19 10:50
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Oct-28-19 17:10	Oct-28-19 17:10	Oct-28-19 17:10	Oct-28-19 17:10	Oct-28-19 17:10	Oct-28-19 17:10
	<i>Analyzed:</i>	Oct-29-19 04:47	Oct-29-19 05:07	Oct-29-19 05:28	Oct-29-19 05:48	Oct-29-19 06:08	Oct-29-19 07:24
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Benzene	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994
Toluene	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994	
Ethylbenzene	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994	
m,p-Xylenes	<0.00202 0.00202	<0.00201 0.00201	<0.00198 0.00198	<0.00200 0.00200	<0.00202 0.00202	<0.00199 0.00199	
o-Xylene	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994	
Total Xylenes	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994	
Total BTEX	<0.00101 0.00101	<0.00101 0.00101	<0.000990 0.000990	<0.000998 0.000998	<0.00101 0.00101	<0.000994 0.000994	
<b>Inorganic Anions by EPA 300</b>	<i>Extracted:</i>	Oct-29-19 08:10	Oct-29-19 08:10	Oct-29-19 08:10	Oct-29-19 08:10	Oct-29-19 08:10	Oct-29-19 08:10
	<i>Analyzed:</i>	Oct-29-19 08:34	Oct-29-19 08:54	Oct-29-19 09:01	Oct-29-19 09:08	Oct-29-19 09:14	Oct-29-19 09:35
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Chloride	34.4 10.1	865 198	1530 198	1300 202	138 D 9.98	416 200
<b>TPH by SW8015 Mod</b>	<i>Extracted:</i>	Oct-28-19 16:00	Oct-28-19 16:00	Oct-28-19 16:00	Oct-28-19 16:00	Oct-28-19 16:00	Oct-28-19 16:00
	<i>Analyzed:</i>	Oct-28-19 19:27	Oct-28-19 19:46	Oct-28-19 19:46	Oct-28-19 20:06	Oct-28-19 20:06	Oct-28-19 20:26
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL	mg/kg RL
	Gasoline Range Hydrocarbons (GRO)	<50.1 50.1	<50.3 50.3	<50.3 50.3	<50.3 50.3	<50.0 50.0	<50.0 50.0
Diesel Range Organics (DRO)	<50.1 50.1	<50.3 50.3	<50.3 50.3	<50.3 50.3	<50.0 50.0	<50.0 50.0	
Motor Oil Range Hydrocarbons (MRO)	<50.1 50.1	<50.3 50.3	<50.3 50.3	<50.3 50.3	<50.0 50.0	<50.0 50.0	
Total TPH	<50.1 50.1	<50.3 50.3	<50.3 50.3	<50.3 50.3	<50.0 50.0	<50.0 50.0	

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer  
 Project Assistant



# Certificate of Analysis Summary 641285

Marathon Oil Company, Tulsa, OK

Project Name: Trebuchet Fee 23 28 19 WXY 3H

Project Id: 19E-03840  
 Contact: Isaac Castro  
 Project Location:

Date Received in Lab: Mon Oct-28-19 01:45 pm  
 Report Date: 30-OCT-19  
 Project Manager: Jessica Kramer

<i>Analysis Requested</i>	<i>Lab Id:</i>	641285-007	641285-008				
	<i>Field Id:</i>	BG-19-02	BG-19-02				
	<i>Depth:</i>	12- ft	14- ft				
	<i>Matrix:</i>	SOIL	SOIL				
	<i>Sampled:</i>	Oct-26-19 11:00	Oct-26-19 11:10				
<b>BTEX by EPA 8021B</b>	<i>Extracted:</i>	Oct-28-19 17:10	Oct-28-19 17:10				
	<i>Analyzed:</i>	Oct-29-19 07:44	Oct-29-19 08:05				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Benzene		<0.00100 0.00100	<0.000998 0.000998				
Toluene		<0.00100 0.00100	<0.000998 0.000998				
Ethylbenzene		<0.00100 0.00100	<0.000998 0.000998				
m,p-Xylenes		<0.00200 0.00200	<0.00200 0.00200				
o-Xylene		<0.00100 0.00100	<0.000998 0.000998				
Total Xylenes		<0.00100 0.00100	<0.000998 0.000998				
Total BTEX		<0.00100 0.00100	<0.000998 0.000998				
<b>Inorganic Anions by EPA 300</b>	<i>Extracted:</i>	Oct-29-19 08:10	Oct-29-19 08:10				
	<i>Analyzed:</i>	Oct-29-19 09:41	Oct-29-19 09:48				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Chloride		423 200	354 99.2				
<b>TPH by SW8015 Mod</b>	<i>Extracted:</i>	Oct-28-19 16:00	Oct-28-19 16:00				
	<i>Analyzed:</i>	Oct-28-19 20:26	Oct-28-19 20:46				
	<i>Units/RL:</i>	mg/kg RL	mg/kg RL				
Gasoline Range Hydrocarbons (GRO)		<50.3 50.3	<50.0 50.0				
Diesel Range Organics (DRO)		<50.3 50.3	<50.0 50.0				
Motor Oil Range Hydrocarbons (MRO)		<50.3 50.3	<50.0 50.0				
Total TPH		<50.3 50.3	<50.0 50.0				

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories. XENCO Laboratories assumes no responsibility and makes no warranty to the end use of the data hereby presented. Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing.

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Jessica Kramer  
 Project Assistant

# Analytical Report 641285

for  
**Marathon Oil Company**

**Project Manager: Isaac Castro**  
**Trebuchet Fee 23 28 19 WXY 3H**

**19E-03840**

**30-OCT-19**

Collected By: Client



**1089 N Canal Street**  
**Carlsbad, NM 88220**

Xenco-Houston (EPA Lab Code: TX00122):  
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)  
Oklahoma (2017-142), North Carolina (681)

Xenco-Dallas (EPA Lab Code: TX01468):  
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)  
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)  
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)  
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)  
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)  
Xenco-Tampa: Florida (E87429), North Carolina (483)



30-OCT-19

Project Manager: **Isaac Castro**  
**Marathon Oil Company**  
P. O. Box 22164  
Tulsa, OK 74121-2164

Reference: XENCO Report No(s): **641285**  
**Trebuchet Fee 23 28 19 WXY 3H**  
Project Address:

**Isaac Castro:**

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 641285. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 641285 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

A handwritten signature in black ink that reads 'Jessica Kramer'. The signature is written in a cursive, slightly slanted style.

---

**Jessica Kramer**  
Project Assistant

*Recipient of the Prestigious Small Business Administration Award of Excellence in 1994.*

*Certified and approved by numerous States and Agencies.*

*A Small Business and Minority Status Company that delivers SERVICE and QUALITY*

Houston - Dallas - Midland - San Antonio - Phoenix - Oklahoma - Latin America



## Sample Cross Reference 641285

### Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

<b>Sample Id</b>	<b>Matrix</b>	<b>Date Collected</b>	<b>Sample Depth</b>	<b>Lab Sample Id</b>
BG-19-02	S	10-26-19 10:00	0 ft	641285-001
BG-19-02	S	10-26-19 10:10	2 ft	641285-002
BG-19-02	S	10-26-19 10:20	4 ft	641285-003
BG-19-02	S	10-26-19 10:30	6 ft	641285-004
BG-19-02	S	10-26-19 10:40	8 ft	641285-005
BG-19-02	S	10-26-19 10:50	10 ft	641285-006
BG-19-02	S	10-26-19 11:00	12 ft	641285-007
BG-19-02	S	10-26-19 11:10	14 ft	641285-008



## CASE NARRATIVE

*Client Name: Marathon Oil Company*

*Project Name: Trebuchet Fee 23 28 19 WXY 3H*

Project ID: 19E-03840  
Work Order Number(s): 641285

Report Date: 30-OCT-19  
Date Received: 10/28/2019

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### **Sample receipt non conformances and comments:**

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### **Sample receipt non conformances and comments per sample:**

None

#### **Analytical non conformances and comments:**

Batch: LBA-3105680 BTEX by EPA 8021B

Soil samples were not received in Terracore kits and therefore were prepared by method 5030.

Batch: LBA-3105684 TPH by SW8015 Mod

Surrogate 1-Chlorooctane recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7689068-1-BKS.



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-001

Matrix: Soil  
 Date Collected: 10.26.19 10.00

Date Received: 10.28.19 13.45  
 Sample Depth: 0 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	34.4	10.1	mg/kg	10.29.19 08.34		1

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.1	50.1	mg/kg	10.28.19 19.27	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.1	50.1	mg/kg	10.28.19 19.27	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.1	50.1	mg/kg	10.28.19 19.27	U	1
Total TPH	PHC635	<50.1	50.1	mg/kg	10.28.19 19.27	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	120	%	70-135	10.28.19 19.27	
o-Terphenyl	84-15-1	109	%	70-135	10.28.19 19.27	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-001

Matrix: Soil  
 Date Collected: 10.26.19 10.00

Date Received: 10.28.19 13.45  
 Sample Depth: 0 ft

Analytical Method: BTEX by EPA 8021B

Tech: MAB

Analyst: MAB

Seq Number: 3105680

Date Prep: 10.28.19 17.10

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
Toluene	108-88-3	<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
Ethylbenzene	100-41-4	<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
m,p-Xylenes	179601-23-1	<0.00202	0.00202	mg/kg	10.29.19 04.47	U	1
o-Xylene	95-47-6	<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
Total Xylenes	1330-20-7	<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
Total BTEX		<0.00101	0.00101	mg/kg	10.29.19 04.47	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>		<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene	460-00-4	122		%	70-130	10.29.19 04.47	
1,4-Difluorobenzene	540-36-3	103		%	70-130	10.29.19 04.47	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-002

Matrix: Soil  
 Date Collected: 10.26.19 10.10

Date Received: 10.28.19 13.45  
 Sample Depth: 2 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	865	198	mg/kg	10.29.19 08.54		20

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	10.28.19 19.46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	110	%	70-135	10.28.19 19.46	
o-Terphenyl	84-15-1	111	%	70-135	10.28.19 19.46	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-002

Matrix: Soil  
 Date Collected: 10.26.19 10.10

Date Received: 10.28.19 13.45  
 Sample Depth: 2 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 10.28.19 17.10

Basis: Wet Weight

Seq Number: 3105680

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
Toluene	108-88-3	<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
Ethylbenzene	100-41-4	<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
m,p-Xylenes	179601-23-1	<0.00201	0.00201	mg/kg	10.29.19 05.07	U	1
o-Xylene	95-47-6	<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
Total Xylenes	1330-20-7	<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
Total BTEX		<0.00101	0.00101	mg/kg	10.29.19 05.07	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>		<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene	460-00-4	113		%	70-130	10.29.19 05.07	
1,4-Difluorobenzene	540-36-3	100		%	70-130	10.29.19 05.07	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-003

Matrix: Soil  
 Date Collected: 10.26.19 10.20

Date Received: 10.28.19 13.45  
 Sample Depth: 4 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1530	198	mg/kg	10.29.19 09.01		20

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	10.28.19 19.46	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	10.28.19 19.46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-135	10.28.19 19.46	
o-Terphenyl	84-15-1	106	%	70-135	10.28.19 19.46	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-003

Matrix: Soil  
 Date Collected: 10.26.19 10.20

Date Received: 10.28.19 13.45  
 Sample Depth: 4 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 10.28.19 17.10

Basis: Wet Weight

Seq Number: 3105680

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
Toluene	108-88-3	<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
Ethylbenzene	100-41-4	<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
m,p-Xylenes	179601-23-1	<0.00198	0.00198	mg/kg	10.29.19 05.28	U	1
o-Xylene	95-47-6	<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
Total Xylenes	1330-20-7	<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
Total BTEX		<0.000990	0.000990	mg/kg	10.29.19 05.28	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>		<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene	460-00-4	114		%	70-130	10.29.19 05.28	
1,4-Difluorobenzene	540-36-3	100		%	70-130	10.29.19 05.28	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-004

Matrix: Soil  
 Date Collected: 10.26.19 10.30

Date Received: 10.28.19 13.45  
 Sample Depth: 6 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1300	202	mg/kg	10.29.19 09.08		20

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	10.28.19 20.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	10.28.19 20.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	10.28.19 20.06	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	10.28.19 20.06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	10.28.19 20.06	
o-Terphenyl	84-15-1	104	%	70-135	10.28.19 20.06	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-004

Matrix: Soil  
 Date Collected: 10.26.19 10.30

Date Received: 10.28.19 13.45  
 Sample Depth: 6 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 10.28.19 17.10

Basis: Wet Weight

Seq Number: 3105680

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
Toluene	108-88-3	<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
Ethylbenzene	100-41-4	<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.29.19 05.48	U	1
o-Xylene	95-47-6	<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
Total Xylenes	1330-20-7	<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
Total BTEX		<0.000998	0.000998	mg/kg	10.29.19 05.48	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>		<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene	460-00-4	113		%	70-130	10.29.19 05.48	
1,4-Difluorobenzene	540-36-3	100		%	70-130	10.29.19 05.48	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-005

Matrix: Soil  
 Date Collected: 10.26.19 10.40

Date Received: 10.28.19 13.45  
 Sample Depth: 8 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	138	9.98	mg/kg	10.29.19 19.57	D	1

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.28.19 20.06	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.28.19 20.06	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.28.19 20.06	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.28.19 20.06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	108	%	70-135	10.28.19 20.06	
o-Terphenyl	84-15-1	112	%	70-135	10.28.19 20.06	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-005

Matrix: Soil  
 Date Collected: 10.26.19 10.40

Date Received: 10.28.19 13.45  
 Sample Depth: 8 ft

Analytical Method: BTEX by EPA 8021B

Tech: MAB

Analyst: MAB

Seq Number: 3105680

Date Prep: 10.28.19 17.10

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
Toluene	108-88-3	<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
Ethylbenzene	100-41-4	<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
m,p-Xylenes	179601-23-1	<0.00202	0.00202	mg/kg	10.29.19 06.08	U	1
o-Xylene	95-47-6	<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
Total Xylenes	1330-20-7	<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
Total BTEX		<0.00101	0.00101	mg/kg	10.29.19 06.08	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.29.19 06.08		
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.29.19 06.08		



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: <b>BG-19-02</b>	Matrix: Soil	Date Received: 10.28.19 13.45
Lab Sample Id: 641285-006	Date Collected: 10.26.19 10.50	Sample Depth: 10 ft
Analytical Method: Inorganic Anions by EPA 300		Prep Method: E300P
Tech: MAB		% Moisture:
Analyst: MAB	Date Prep: 10.29.19 08.10	Basis: Wet Weight
Seq Number: 3105764		

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<b>416</b>	200	mg/kg	10.29.19 09.35		20

Analytical Method: TPH by SW8015 Mod	Prep Method: SW8015P
Tech: DTH	% Moisture:
Analyst: DTH	Date Prep: 10.28.19 16.00
Seq Number: 3105684	Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.28.19 20.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.28.19 20.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.28.19 20.26	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.28.19 20.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	10.28.19 20.26	
o-Terphenyl	84-15-1	106	%	70-135	10.28.19 20.26	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-006

Matrix: Soil  
 Date Collected: 10.26.19 10.50

Date Received: 10.28.19 13.45  
 Sample Depth: 10 ft

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5030B

Tech: MAB

% Moisture:

Analyst: MAB

Date Prep: 10.28.19 17.10

Basis: Wet Weight

Seq Number: 3105680

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
Toluene	108-88-3	<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
Ethylbenzene	100-41-4	<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
m,p-Xylenes	179601-23-1	<0.00199	0.00199	mg/kg	10.29.19 07.24	U	1
o-Xylene	95-47-6	<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
Total Xylenes	1330-20-7	<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
Total BTEX		<0.000994	0.000994	mg/kg	10.29.19 07.24	U	1
			%				
<b>Surrogate</b>	<b>Cas Number</b>	<b>Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.29.19 07.24		
4-Bromofluorobenzene	460-00-4	112	%	70-130	10.29.19 07.24		



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-007

Matrix: Soil  
 Date Collected: 10.26.19 11.00

Date Received: 10.28.19 13.45  
 Sample Depth: 12 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	423	200	mg/kg	10.29.19 09.41		20

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.3	50.3	mg/kg	10.28.19 20.26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.3	50.3	mg/kg	10.28.19 20.26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.3	50.3	mg/kg	10.28.19 20.26	U	1
Total TPH	PHC635	<50.3	50.3	mg/kg	10.28.19 20.26	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	107	%	70-135	10.28.19 20.26	
o-Terphenyl	84-15-1	108	%	70-135	10.28.19 20.26	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-007

Matrix: Soil  
 Date Collected: 10.26.19 11.00

Date Received: 10.28.19 13.45  
 Sample Depth: 12 ft

Analytical Method: BTEX by EPA 8021B

Tech: MAB

Analyst: MAB

Seq Number: 3105680

Date Prep: 10.28.19 17.10

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.29.19 07.44	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
Total BTEX		<0.00100	0.00100	mg/kg	10.29.19 07.44	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>	<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>	
4-Bromofluorobenzene	460-00-4	113	%	70-130	10.29.19 07.44		
1,4-Difluorobenzene	540-36-3	101	%	70-130	10.29.19 07.44		



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-008

Matrix: Soil  
 Date Collected: 10.26.19 11.10

Date Received: 10.28.19 13.45  
 Sample Depth: 14 ft

Analytical Method: Inorganic Anions by EPA 300  
 Tech: MAB  
 Analyst: MAB  
 Seq Number: 3105764

Date Prep: 10.29.19 08.10

Prep Method: E300P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	354	99.2	mg/kg	10.29.19 09.48		10

Analytical Method: TPH by SW8015 Mod  
 Tech: DTH  
 Analyst: DTH  
 Seq Number: 3105684

Date Prep: 10.28.19 16.00

Prep Method: SW8015P  
 % Moisture:  
 Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<50.0	50.0	mg/kg	10.28.19 20.46	U	1
Diesel Range Organics (DRO)	C10C28DRO	<50.0	50.0	mg/kg	10.28.19 20.46	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<50.0	50.0	mg/kg	10.28.19 20.46	U	1
Total TPH	PHC635	<50.0	50.0	mg/kg	10.28.19 20.46	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-135	10.28.19 20.46	
o-Terphenyl	84-15-1	105	%	70-135	10.28.19 20.46	



# Certificate of Analytical Results 641285

## Marathon Oil Company, Tulsa, OK

Trebuchet Fee 23 28 19 WXY 3H

Sample Id: **BG-19-02**  
 Lab Sample Id: 641285-008

Matrix: Soil  
 Date Collected: 10.26.19 11.10

Date Received: 10.28.19 13.45  
 Sample Depth: 14 ft

Analytical Method: BTEX by EPA 8021B

Tech: MAB

Analyst: MAB

Seq Number: 3105680

Date Prep: 10.28.19 17.10

Prep Method: SW5030B

% Moisture:

Basis: Wet Weight

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
Toluene	108-88-3	<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
Ethylbenzene	100-41-4	<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/kg	10.29.19 08.05	U	1
o-Xylene	95-47-6	<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
Total Xylenes	1330-20-7	<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
Total BTEX		<0.000998	0.000998	mg/kg	10.29.19 08.05	U	1
<b>Surrogate</b>	<b>Cas Number</b>	<b>% Recovery</b>		<b>Units</b>	<b>Limits</b>	<b>Analysis Date</b>	<b>Flag</b>
4-Bromofluorobenzene	460-00-4	114		%	70-130	10.29.19 08.05	
1,4-Difluorobenzene	540-36-3	102		%	70-130	10.29.19 08.05	





**QC Summary 641285**

**Marathon Oil Company**  
Trebuchet Fee 23 28 19 WXY 3H

**Analytical Method: Inorganic Anions by EPA 300**  
Seq Number: 3105764  
MB Sample Id: 7689120-1-BLK

Matrix: Solid  
LCS Sample Id: 7689120-1-BKS  
Prep Method: E300P  
Date Prep: 10.29.19  
LCSD Sample Id: 7689120-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<10.0	300	306	102	307	102	90-110	0	20	mg/kg	10.29.19 08:20	

**Analytical Method: Inorganic Anions by EPA 300**  
Seq Number: 3105764  
Parent Sample Id: 641285-001

Matrix: Soil  
MS Sample Id: 641285-001 S  
Prep Method: E300P  
Date Prep: 10.29.19  
MSD Sample Id: 641285-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	34.4	251	281	98	278	97	90-110	1	20	mg/kg	10.29.19 08:41	

**Analytical Method: Inorganic Anions by EPA 300**  
Seq Number: 3105764  
Parent Sample Id: 641338-003

Matrix: Soil  
MS Sample Id: 641338-003 S  
Prep Method: E300P  
Date Prep: 10.29.19  
MSD Sample Id: 641338-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	130	252	405	109	402	108	90-110	1	20	mg/kg	10.29.19 13:09	

**Analytical Method: TPH by SW8015 Mod**  
Seq Number: 3105684  
MB Sample Id: 7689068-1-BLK

Matrix: Solid  
LCS Sample Id: 7689068-1-BKS  
Prep Method: SW8015P  
Date Prep: 10.28.19  
LCSD Sample Id: 7689068-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.0	1000	911	91	904	90	70-135	1	35	mg/kg	10.28.19 17:08	
Diesel Range Organics (DRO)	<50.0	1000	777	78	760	76	70-135	2	35	mg/kg	10.28.19 17:08	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	104		137	**	126		70-135	%	10.28.19 17:08
o-Terphenyl	104		119		119		70-135	%	10.28.19 17:08

**Analytical Method: TPH by SW8015 Mod**  
Seq Number: 3105684

Matrix: Solid  
MB Sample Id: 7689068-1-BLK  
Prep Method: SW8015P  
Date Prep: 10.28.19

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<50.0	mg/kg	10.28.19 17:08	

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

[D] = 100\*(C-A) / B  
RPD = 200\* |(C-E) / (C+E)|  
[D] = 100 \* (C) / [B]  
Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD Result

MS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec



# QC Summary 641285

## Marathon Oil Company Trebuchet Fee 23 28 19 WXY 3H

**Analytical Method:** TPH by SW8015 Mod  
Seq Number: 3105684  
Parent Sample Id: 641213-006

Matrix: Soil  
MS Sample Id: 641213-006 S

Prep Method: SW8015P  
Date Prep: 10.28.19  
MSD Sample Id: 641213-006 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<50.3	1010	855	85	845	85	70-135	1	35	mg/kg	10.28.19 17:48	
Diesel Range Organics (DRO)	<50.3	1010	711	70	713	71	70-135	0	35	mg/kg	10.28.19 17:48	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	114		130		70-135	%	10.28.19 17:48
o-Terphenyl	111		112		70-135	%	10.28.19 17:48

**Analytical Method:** BTEX by EPA 8021B  
Seq Number: 3105680  
MB Sample Id: 7689078-1-BLK

Matrix: Solid  
LCS Sample Id: 7689078-1-BKS

Prep Method: SW5030B  
Date Prep: 10.28.19  
LCSD Sample Id: 7689078-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0977	98	0.0916	92	70-130	6	35	mg/kg	10.29.19 01:09	
Toluene	<0.00100	0.100	0.0963	96	0.0895	90	70-130	7	35	mg/kg	10.29.19 01:09	
Ethylbenzene	<0.00100	0.100	0.0988	99	0.0911	91	71-129	8	35	mg/kg	10.29.19 01:09	
m,p-Xylenes	<0.00200	0.200	0.198	99	0.183	92	70-135	8	35	mg/kg	10.29.19 01:09	
o-Xylene	<0.00100	0.100	0.0998	100	0.0936	94	71-133	6	35	mg/kg	10.29.19 01:09	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	100		101		100		70-130	%	10.29.19 01:09
4-Bromofluorobenzene	108		106		109		70-130	%	10.29.19 01:09

**Analytical Method:** BTEX by EPA 8021B  
Seq Number: 3105680  
Parent Sample Id: 641213-014

Matrix: Soil  
MS Sample Id: 641213-014 S

Prep Method: SW5030B  
Date Prep: 10.28.19  
MSD Sample Id: 641213-014 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000996	0.0996	0.0901	90	0.0802	80	70-130	12	35	mg/kg	10.29.19 01:50	
Toluene	<0.000996	0.0996	0.0885	89	0.0783	78	70-130	12	35	mg/kg	10.29.19 01:50	
Ethylbenzene	<0.000996	0.0996	0.0903	91	0.0798	80	71-129	12	35	mg/kg	10.29.19 01:50	
m,p-Xylenes	<0.00199	0.199	0.181	91	0.160	80	70-135	12	35	mg/kg	10.29.19 01:50	
o-Xylene	<0.000996	0.0996	0.0909	91	0.0805	81	71-133	12	35	mg/kg	10.29.19 01:50	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		101		70-130	%	10.29.19 01:50
4-Bromofluorobenzene	115		113		70-130	%	10.29.19 01:50

MS/MSD Percent Recovery  
Relative Percent Difference  
LCS/LCSD Recovery  
Log Difference

$[D] = 100 * (C - A) / B$   
 $RPD = 200 * |(C - E) / (C + E)|$   
 $[D] = 100 * (C) / [B]$   
 Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample  
A = Parent Result  
C = MS/LCS Result  
E = MSD/LCSD Result

MS = Matrix Spike  
B = Spike Added  
D = MSD/LCSD % Rec



**XENCO Laboratories**  
**Prelogin/Nonconformance Report- Sample Log-In**

**Client:** Marathon Oil Company

**Date/ Time Received:** 10.28.2019 01.45.00 PM

**Work Order #:** 641285

**Acceptable Temperature Range: 0 - 6 degC**  
**Air and Metal samples Acceptable Range: Ambient**

**Temperature Measuring device used : T-NM-007**

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	4
#2 *Shipping container in good condition?	Yes
#3 *Samples received on ice?	Yes
#4 *Custody Seals intact on shipping container/ cooler?	Yes
#5 Custody Seals intact on sample bottles?	Yes
#6*Custody Seals Signed and dated?	Yes
#7 *Chain of Custody present?	Yes
#8 Any missing/extra samples?	No
#9 Chain of Custody signed when relinquished/ received?	Yes
#10 Chain of Custody agrees with sample labels/matrix?	Yes
#11 Container label(s) legible and intact?	Yes
#12 Samples in proper container/ bottle?	Yes
#13 Samples properly preserved?	Yes
#14 Sample container(s) intact?	Yes
#15 Sufficient sample amount for indicated test(s)?	Yes
#16 All samples received within hold time?	Yes
#17 Subcontract of sample(s)?	No
#18 Water VOC samples have zero headspace?	No

**\* Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst:

PH Device/Lot#:

**Checklist completed by:**  Date: 10.29.2019  
Jessica Kramer

**Checklist reviewed by:**  Date: 10.29.2019  
Elizabeth McClellan



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

October 11, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX

RE: Trebuchet Fee 23 28 19 WXY

OrderNo.: 1910367

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 22 sample(s) on 10/6/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BG19-31 0'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 9:10:00 AM

**Lab ID:** 1910367-001

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	10/9/2019 12:13:11 AM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/9/2019 12:13:11 AM
Surr: DNOP	96.3	70-130		%Rec	1	10/9/2019 12:13:11 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/8/2019 2:49:18 PM
Surr: BFB	97.5	77.4-118		%Rec	1	10/8/2019 2:49:18 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 2:49:18 PM
Toluene	ND	0.048		mg/Kg	1	10/8/2019 2:49:18 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/8/2019 2:49:18 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/8/2019 2:49:18 PM
Surr: 4-Bromofluorobenzene	95.2	80-120		%Rec	1	10/8/2019 2:49:18 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	ND	59		mg/Kg	20	10/9/2019 2:51:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-31 2'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 9:20:00 AM

**Lab ID:** 1910367-002

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1800	60		mg/Kg	20	10/9/2019 3:03:52 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-31 4'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 9:30:00 AM

**Lab ID:** 1910367-003

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1400	59		mg/Kg	20	10/9/2019 3:16:17 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-31 6'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 9:40:00 AM

**Lab ID:** 1910367-004

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	10/9/2019 10:39:43 AM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	10/9/2019 10:39:43 AM
Surr: DNOP	95.1	70-130		%Rec	1	10/9/2019 10:39:43 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/8/2019 4:20:28 PM
Surr: BFB	95.6	77.4-118		%Rec	1	10/8/2019 4:20:28 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 4:20:28 PM
Toluene	ND	0.048		mg/Kg	1	10/8/2019 4:20:28 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/8/2019 4:20:28 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/8/2019 4:20:28 PM
Surr: 4-Bromofluorobenzene	92.4	80-120		%Rec	1	10/8/2019 4:20:28 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	980	60		mg/Kg	20	10/9/2019 3:28:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-28 4'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 10:15:00 AM

**Lab ID:** 1910367-005

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1900	150		mg/Kg	50	10/10/2019 6:40:45 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-28 6'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 10:25:00 AM

**Lab ID:** 1910367-006

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1200	60		mg/Kg	20	10/9/2019 4:18:19 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-28 8'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 10:35:00 AM

**Lab ID:** 1910367-007

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	10/9/2019 11:52:46 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/9/2019 11:52:46 AM
Surr: DNOP	92.6	70-130		%Rec	1	10/9/2019 11:52:46 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/8/2019 4:43:13 PM
Surr: BFB	96.9	77.4-118		%Rec	1	10/8/2019 4:43:13 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 4:43:13 PM
Toluene	ND	0.048		mg/Kg	1	10/8/2019 4:43:13 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/8/2019 4:43:13 PM
Xylenes, Total	ND	0.095		mg/Kg	1	10/8/2019 4:43:13 PM
Surr: 4-Bromofluorobenzene	94.1	80-120		%Rec	1	10/8/2019 4:43:13 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	590	60		mg/Kg	20	10/9/2019 4:30:44 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-30 8'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 11:30:00 AM

**Lab ID:** 1910367-008

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	10/9/2019 12:17:08 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/9/2019 12:17:08 PM
Surr: DNOP	89.5	70-130		%Rec	1	10/9/2019 12:17:08 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/8/2019 5:06:00 PM
Surr: BFB	95.2	77.4-118		%Rec	1	10/8/2019 5:06:00 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/8/2019 5:06:00 PM
Toluene	ND	0.047		mg/Kg	1	10/8/2019 5:06:00 PM
Ethylbenzene	ND	0.047		mg/Kg	1	10/8/2019 5:06:00 PM
Xylenes, Total	ND	0.094		mg/Kg	1	10/8/2019 5:06:00 PM
Surr: 4-Bromofluorobenzene	92.1	80-120		%Rec	1	10/8/2019 5:06:00 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	880	60		mg/Kg	20	10/9/2019 4:43:08 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-32 0'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 12:00:00 PM

**Lab ID:** 1910367-009

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/9/2019 12:41:28 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/9/2019 12:41:28 PM
Surr: DNOP	117	70-130		%Rec	1	10/9/2019 12:41:28 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/8/2019 5:28:56 PM
Surr: BFB	92.1	77.4-118		%Rec	1	10/8/2019 5:28:56 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/8/2019 5:28:56 PM
Toluene	ND	0.049		mg/Kg	1	10/8/2019 5:28:56 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/8/2019 5:28:56 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/8/2019 5:28:56 PM
Surr: 4-Bromofluorobenzene	88.4	80-120		%Rec	1	10/8/2019 5:28:56 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	ND	60		mg/Kg	20	10/9/2019 4:55:33 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-32 2'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 12:10:00 PM

**Lab ID:** 1910367-010

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	510	60		mg/Kg	20	10/9/2019 5:57:36 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-32 4'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 12:20:00 PM

**Lab ID:** 1910367-011

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1200	60		mg/Kg	20	10/10/2019 7:17:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-32 6'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 12:30:00 PM

**Lab ID:** 1910367-012

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	10/9/2019 1:05:57 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/9/2019 1:05:57 PM
Surr: DNOP	82.0	70-130		%Rec	1	10/9/2019 1:05:57 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/8/2019 5:51:43 PM
Surr: BFB	94.4	77.4-118		%Rec	1	10/8/2019 5:51:43 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 5:51:43 PM
Toluene	ND	0.048		mg/Kg	1	10/8/2019 5:51:43 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/8/2019 5:51:43 PM
Xylenes, Total	ND	0.096		mg/Kg	1	10/8/2019 5:51:43 PM
Surr: 4-Bromofluorobenzene	90.5	80-120		%Rec	1	10/8/2019 5:51:43 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	590	60		mg/Kg	20	10/9/2019 6:59:41 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-33 8'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 1:10:00 PM

**Lab ID:** 1910367-013

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	10/9/2019 1:30:22 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	10/9/2019 1:30:22 PM
Surr: DNOP	83.6	70-130		%Rec	1	10/9/2019 1:30:22 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/8/2019 6:14:25 PM
Surr: BFB	94.6	77.4-118		%Rec	1	10/8/2019 6:14:25 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 6:14:25 PM
Toluene	ND	0.049		mg/Kg	1	10/8/2019 6:14:25 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/8/2019 6:14:25 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/8/2019 6:14:25 PM
Surr: 4-Bromofluorobenzene	90.0	80-120		%Rec	1	10/8/2019 6:14:25 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	520	60		mg/Kg	20	10/9/2019 7:24:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-20 0'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 2:00:00 PM

**Lab ID:** 1910367-014

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	6700	300		mg/Kg	100	10/10/2019 7:30:23 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-20 2'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 2:10:00 PM

**Lab ID:** 1910367-015

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	2300	150		mg/Kg	50	10/10/2019 7:42:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-20 4'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 2:20:00 PM

**Lab ID:** 1910367-016

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1800	59		mg/Kg	20	10/9/2019 8:01:44 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-20 6'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 2:30:00 PM

**Lab ID:** 1910367-017

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	10/9/2019 1:54:49 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	10/9/2019 1:54:49 PM
Surr: DNOP	82.3	70-130		%Rec	1	10/9/2019 1:54:49 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/8/2019 6:37:06 PM
Surr: BFB	94.1	77.4-118		%Rec	1	10/8/2019 6:37:06 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 6:37:06 PM
Toluene	ND	0.048		mg/Kg	1	10/8/2019 6:37:06 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/8/2019 6:37:06 PM
Xylenes, Total	ND	0.096		mg/Kg	1	10/8/2019 6:37:06 PM
Surr: 4-Bromofluorobenzene	90.2	80-120		%Rec	1	10/8/2019 6:37:06 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	760	60		mg/Kg	20	10/9/2019 8:14:08 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21 0'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 2:50:00 PM

**Lab ID:** 1910367-018

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	8800	590		mg/Kg	200	10/10/2019 10:11:42 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910367**

Date Reported: **10/11/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21 2'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 3:00:00 PM

**Lab ID:** 1910367-019

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1900	150		mg/Kg	50	10/10/2019 10:24:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21 4'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 3:10:00 PM

**Lab ID:** 1910367-020

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	3400	150		mg/Kg	50	10/10/2019 7:55:11 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21 6'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 3:20:00 PM

**Lab ID:** 1910367-021

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1200	60		mg/Kg	20	10/9/2019 9:28:34 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910367

Date Reported: 10/11/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21 8'

**Project:** Trebuchet Fee 23 28 19 WXY

**Collection Date:** 10/5/2019 3:30:00 PM

**Lab ID:** 1910367-022

**Matrix:** SOIL

**Received Date:** 10/6/2019 12:15:00 PM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	10/9/2019 2:19:12 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	10/9/2019 2:19:12 PM
Surr: DNOP	85.5	70-130		%Rec	1	10/9/2019 2:19:12 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/8/2019 6:59:51 PM
Surr: BFB	96.8	77.4-118		%Rec	1	10/8/2019 6:59:51 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/8/2019 6:59:51 PM
Toluene	ND	0.049		mg/Kg	1	10/8/2019 6:59:51 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/8/2019 6:59:51 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/8/2019 6:59:51 PM
Surr: 4-Bromofluorobenzene	93.0	80-120		%Rec	1	10/8/2019 6:59:51 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	450	60		mg/Kg	20	10/9/2019 9:40:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910367

11-Oct-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY

Sample ID: <b>MB-48035</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>48035</b>	RunNo: <b>63533</b>								
Prep Date: <b>10/9/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2171599</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-48035</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>48035</b>	RunNo: <b>63533</b>								
Prep Date: <b>10/9/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2171600</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	98.9	90	110			

Sample ID: <b>MB-48052</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>48052</b>	RunNo: <b>63533</b>								
Prep Date: <b>10/9/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2171632</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-48052</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>48052</b>	RunNo: <b>63533</b>								
Prep Date: <b>10/9/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2171633</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	15	1.5	15.00	0	99.6	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910367

11-Oct-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY

Sample ID: <b>LCS-47973</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47973</b>	RunNo: <b>63485</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2170017</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.00	0	90.8	63.9	124			
Surr: DNOP	4.9		5.000		98.6	70	130			

Sample ID: <b>MB-47973</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47973</b>	RunNo: <b>63485</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2170018</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		105	70	130			

Sample ID: <b>LCS-48012</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>48012</b>	RunNo: <b>63525</b>								
Prep Date: <b>10/8/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2170483</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	52	10	50.00	0	103	63.9	124			
Surr: DNOP	4.6		5.000		92.1	70	130			

Sample ID: <b>MB-48012</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>48012</b>	RunNo: <b>63525</b>								
Prep Date: <b>10/8/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2170486</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.0		10.00		90.2	70	130			

Sample ID: <b>1910367-004AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BH19-31 6'</b>	Batch ID: <b>48012</b>	RunNo: <b>63525</b>								
Prep Date: <b>10/8/2019</b>	Analysis Date: <b>10/9/2019</b>	SeqNo: <b>2170925</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	8.7	43.48	0	104	57	142			
Surr: DNOP	4.0		4.348		91.0	70	130			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910367

11-Oct-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY

Sample ID: **1910367-004AMSD** SampType: **MSD** TestCode: **EPA Method 8015M/D: Diesel Range Organics**  
Client ID: **BH19-31 6'** Batch ID: **48012** RunNo: **63525**  
Prep Date: **10/8/2019** Analysis Date: **10/9/2019** SeqNo: **2170927** Units: **mg/Kg**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	9.5	47.53	0	93.2	57	142	1.97	20	
Surr: DNOP	3.8		4.753		79.5	70	130	0	0	

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910367

11-Oct-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY

Sample ID: <b>MB-47976</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47976</b>	RunNo: <b>63496</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2169919</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1000		1000		102	77.4	118			

Sample ID: <b>LCS-47976</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47976</b>	RunNo: <b>63496</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2169920</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	102	80	120			
Surr: BFB	1100		1000		114	77.4	118			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910367

11-Oct-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 23 28 19 WXY

Sample ID: <b>MB-47976</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47976</b>	RunNo: <b>63496</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2169939</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.98		1.000		98.4	80	120			

Sample ID: <b>LCS-47976</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47976</b>	RunNo: <b>63496</b>								
Prep Date: <b>10/7/2019</b>	Analysis Date: <b>10/8/2019</b>	SeqNo: <b>2169940</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.95	0.025	1.000	0	95.0	80	120			
Toluene	0.99	0.050	1.000	0	99.4	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.9	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.8	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

**Sample Log-In Check List**

Client Name: VERTEX CARLSBAD

Work Order Number: 1910367

RcptNo: 1

Received By: Erin Melendrez 10/6/2019 12:15:00 PM *EM*

Completed By: Erin Melendrez 10/6/2019 1:41:21 PM *EM*

Reviewed By: *IO* 10/07/19

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: DAD 10/7/19

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.8	Good	Not Present			
2	4.0	Good	Not Present			

# Chain-of-Custody Record

Client: VERTEX

Mailing Address: 213 S MESA ST  
CARLSBAD NM 88220

Phone #: 575 725 5001

email or Fax#: PERMIAN@VERTEX.CA

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  AZ Compliance  
 NELAC  Other  
 EDD (Type)

Turn-Around Time: 5-day turn around

Standard  Rush

Project Name: TREBUCHET FEE 23 28 19  
WOXY

Project #: 19E-0004-009 D

Project Manager: DANIS WILLIAMS  
DWILLIAMS@VERTEX.CA

Sampler: Shir Harvester

On Ice:  Yes  No

# of Coolers: 2

Cooler Temp (including CP): 4.6 (TD, ZCF) = 4.8 (°C)  
3.8 (TD, ZCF) = 4.0

Container Type and # Jar Preservative Type ICE HEAL No. 1910367

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.
10/5	9:10	S	BH19-31 0'	Jar	ICE	-0081
	9:20		BH19-31 2'			-002
	9:30		BH19-31 4'			-003
	9:40		BH19-31 6'			-004
	10:15		BH19-28 4'			-005
	10:25		BH19-28 6'			-000
	10:35		BH19-28 8'			-007
	11:30		BH19-30 8'			-008
	12:00		BH19-32 0'			-009
	12:10		BH19-32 2'			-010
	12:20		BH19-32 4'			-011
	12:30		BH19-32 6'			-012

Date: 10/5 Time: 10:20 Relinquished by: [Signature]

Date: 10/6/19 Time: 0930 Relinquished by: [Signature]

Received by: [Signature] Date: 10/5/19 Time: 1700

Received by: [Signature] Date: 10/6/19 Time: 1215

Via: Courier



www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Analysis Request	8081 Pesticides/8082 PCB's	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>3-</sup> , SO <sub>4</sub> <sup>2-</sup>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
TPH:8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
BTEX / MTBE / TMB's (8021)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Chain-of-Custody Record

Client: VERTEX

Mailing Address: 213 S Mesa St  
Cambria NM 88220

Phone #: 575 726 5001

email or Fax#: PERMIAN@VERTEX.CA

QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation:  Az Compliance  
 NELAC  Other  
 EDD (Type) \_\_\_\_\_

Turn-Around Time:  
 Standard  Rush  
5-day turn around

Project Name:  
TREBUCHET FEE 23 29 19  
WXY

Project #:  
198-00614-008 D

Project Manager:  
DENNIS WILLIAMS  
dwilliams@vertex.ca  
dwilston@vertex.ca

Sampler: Shar Harvestor

On Ice:  Yes  No

# of Coolers: 2

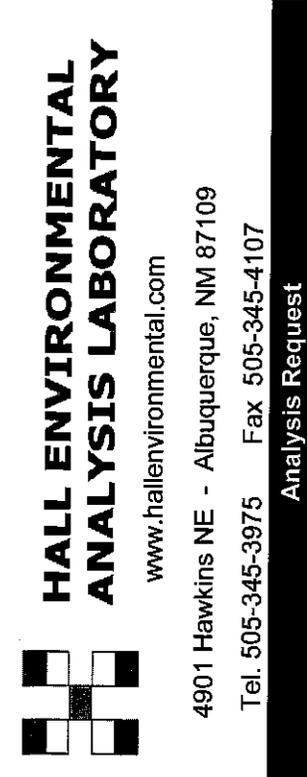
Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Cooler Temp (including cap) (°C)
10/5	13:10	S	BH19-33 8'	Jaw	Ice	1910367	3.8 (0-2CF) = 4.8 (°C)
	14:00		BH19-20 0'				
	14:10		BH19-20 2'				
	14:20		BH19-20 4'				
	14:30		BH19-20 6'				
	14:50		BH19-21 0'				
	15:00		BH19-21 2'				
	15:10		BH19-21 4'				
	15:20		BH19-21 6'				
	15:30		BH19-21 8'				

Date: 10/5 Time: 16:30 Relinquished by: [Signature]

Date: 10/6/19 Time: 0930 Relinquished by: [Signature]

Received by: [Signature] Date: 10/5/19 Time: 1630

Received by: [Signature] Date: 10/6/19 Time: 1715



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com  
 4901 Hawkins NE - Albuquerque, NM 87109  
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

Analysis Request	Result
BTEX / MTBE / TMB's (8021)	XX
TPH:8015D(GRO / DRO / MRO)	XX
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	XX
Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>3-</sup> , SO <sub>4</sub> <sup>2-</sup>	XX
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-39 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:20:00 AM

**Lab ID:** 1910122-001

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	27	8.7		mg/Kg	1	10/4/2019 11:59:01 AM
Motor Oil Range Organics (MRO)	120	44		mg/Kg	1	10/4/2019 11:59:01 AM
Surr: DNOP	107	70-130		%Rec	1	10/4/2019 11:59:01 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/3/2019 2:53:03 PM
Surr: BFB	94.1	77.4-118		%Rec	1	10/3/2019 2:53:03 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 2:53:03 PM
Toluene	ND	0.049		mg/Kg	1	10/3/2019 2:53:03 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/3/2019 2:53:03 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/3/2019 2:53:03 PM
Surr: 4-Bromofluorobenzene	95.0	80-120		%Rec	1	10/3/2019 2:53:03 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	68	60		mg/Kg	20	10/6/2019 7:51:14 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-39 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:30:00 AM

**Lab ID:** 1910122-002

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1100	59		mg/Kg	20	10/6/2019 9:13:19 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-39 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:40:00 AM

**Lab ID:** 1910122-003

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2600	150		mg/Kg	50	10/8/2019 7:08:50 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-39 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:50:00 AM

**Lab ID:** 1910122-004

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	10/4/2019 1:04:51 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/4/2019 1:04:51 PM
Surr: DNOP	100	70-130		%Rec	1	10/4/2019 1:04:51 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/3/2019 4:01:30 PM
Surr: BFB	92.9	77.4-118		%Rec	1	10/3/2019 4:01:30 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/3/2019 4:01:30 PM
Toluene	ND	0.047		mg/Kg	1	10/3/2019 4:01:30 PM
Ethylbenzene	ND	0.047		mg/Kg	1	10/3/2019 4:01:30 PM
Xylenes, Total	ND	0.094		mg/Kg	1	10/3/2019 4:01:30 PM
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	10/3/2019 4:01:30 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	950	60		mg/Kg	20	10/6/2019 8:28:16 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-33 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:12:00 AM

**Lab ID:** 1910122-005

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/4/2019 1:26:49 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/4/2019 1:26:49 PM
Surr: DNOP	103	70-130		%Rec	1	10/4/2019 1:26:49 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/3/2019 5:09:48 PM
Surr: BFB	93.7	77.4-118		%Rec	1	10/3/2019 5:09:48 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/3/2019 5:09:48 PM
Toluene	ND	0.050		mg/Kg	1	10/3/2019 5:09:48 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/3/2019 5:09:48 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/3/2019 5:09:48 PM
Surr: 4-Bromofluorobenzene	93.7	80-120		%Rec	1	10/3/2019 5:09:48 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	540	59		mg/Kg	20	10/6/2019 8:40:36 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-33 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:22:00 AM

**Lab ID:** 1910122-006

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	5300	300		mg/Kg	100	10/8/2019 7:21:14 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-33 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:32:00 AM

**Lab ID:** 1910122-007

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	2300	60		mg/Kg	20	10/6/2019 11:05:02 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-33 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 10:52:00 AM

**Lab ID:** 1910122-008

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1700	60		mg/Kg	20	10/6/2019 11:17:26 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Vertex Resource Group Ltd.**Client Sample ID:** BH19-38 0'**Project:** Trebuchet Fee 23 28 18**Collection Date:** 9/30/2019 12:00:00 PM**Lab ID:** 1910122-009**Matrix:** SOIL**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	35	9.5		mg/Kg	1	10/4/2019 1:48:52 PM
Motor Oil Range Organics (MRO)	57	47		mg/Kg	1	10/4/2019 1:48:52 PM
Surr: DNOP	106	70-130		%Rec	1	10/4/2019 1:48:52 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 5:32:36 PM
Surr: BFB	95.5	77.4-118		%Rec	1	10/3/2019 5:32:36 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 5:32:36 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 5:32:36 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 5:32:36 PM
Xylenes, Total	ND	0.096		mg/Kg	1	10/3/2019 5:32:36 PM
Surr: 4-Bromofluorobenzene	95.4	80-120		%Rec	1	10/3/2019 5:32:36 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	ND	60		mg/Kg	20	10/6/2019 8:52:56 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-38 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 12:10:00 PM

**Lab ID:** 1910122-010

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	620	60		mg/Kg	20	10/6/2019 11:29:50 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-38 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 12:20:00 PM

**Lab ID:** 1910122-011

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2900	150		mg/Kg	50	10/8/2019 7:33:39 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-38 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 12:30:00 PM

**Lab ID:** 1910122-012

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	1800	60		mg/Kg	20	10/7/2019 12:19:30 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-38 8'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 12:50:00 PM

**Lab ID:** 1910122-013

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	10/4/2019 2:55:57 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/4/2019 2:55:57 PM
Surr: DNOP	102	70-130		%Rec	1	10/4/2019 2:55:57 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/3/2019 5:55:22 PM
Surr: BFB	96.8	77.4-118		%Rec	1	10/3/2019 5:55:22 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/3/2019 5:55:22 PM
Toluene	ND	0.049		mg/Kg	1	10/3/2019 5:55:22 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/3/2019 5:55:22 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/3/2019 5:55:22 PM
Surr: 4-Bromofluorobenzene	96.3	80-120		%Rec	1	10/3/2019 5:55:22 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	570	60		mg/Kg	20	10/6/2019 9:29:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:30:00 PM

**Lab ID:** 1910122-014

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	45	9.2		mg/Kg	1	10/4/2019 3:17:57 PM
Motor Oil Range Organics (MRO)	110	46		mg/Kg	1	10/4/2019 3:17:57 PM
Surr: DNOP	107	70-130		%Rec	1	10/4/2019 3:17:57 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 6:18:03 PM
Surr: BFB	94.4	77.4-118		%Rec	1	10/3/2019 6:18:03 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 6:18:03 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 6:18:03 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 6:18:03 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/3/2019 6:18:03 PM
Surr: 4-Bromofluorobenzene	93.0	80-120		%Rec	1	10/3/2019 6:18:03 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	140	60		mg/Kg	20	10/6/2019 9:42:17 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:40:00 PM

**Lab ID:** 1910122-015

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	310	61		mg/Kg	20	10/7/2019 12:31:54 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:50:00 PM

**Lab ID:** 1910122-016

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	2300	60		mg/Kg	20	10/6/2019 10:15:23 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 2:00:00 PM

**Lab ID:** 1910122-017

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	3700	150		mg/Kg	50	10/8/2019 7:46:04 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 8'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 2:20:00 PM

**Lab ID:** 1910122-018

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/4/2019 3:40:08 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/4/2019 3:40:08 PM
Surr: DNOP	102	70-130		%Rec	1	10/4/2019 3:40:08 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 7:49:08 PM
Surr: BFB	97.7	77.4-118		%Rec	1	10/3/2019 7:49:08 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 7:49:08 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 7:49:08 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 7:49:08 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/3/2019 7:49:08 PM
Surr: 4-Bromofluorobenzene	97.7	80-120		%Rec	1	10/3/2019 7:49:08 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	490	61		mg/Kg	20	10/6/2019 10:19:19 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-30 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:10:00 PM

**Lab ID:** 1910122-019

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	10/4/2019 4:02:10 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/4/2019 4:02:10 PM
Surr: DNOP	89.9	70-130		%Rec	1	10/4/2019 4:02:10 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/3/2019 8:11:52 PM
Surr: BFB	98.9	77.4-118		%Rec	1	10/3/2019 8:11:52 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/3/2019 8:11:52 PM
Toluene	ND	0.047		mg/Kg	1	10/3/2019 8:11:52 PM
Ethylbenzene	ND	0.047		mg/Kg	1	10/3/2019 8:11:52 PM
Xylenes, Total	ND	0.093		mg/Kg	1	10/3/2019 8:11:52 PM
Surr: 4-Bromofluorobenzene	98.5	80-120		%Rec	1	10/3/2019 8:11:52 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	500	60		mg/Kg	20	10/6/2019 10:31:39 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-30 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:20:00 PM

**Lab ID:** 1910122-020

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	4300	150		mg/Kg	50	10/8/2019 7:58:28 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-30 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:30:00 PM

**Lab ID:** 1910122-021

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	3600	150		mg/Kg	50	10/8/2019 8:10:54 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-30 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 1:40:00 PM

**Lab ID:** 1910122-022

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	980	60		mg/Kg	20	10/5/2019 12:31:36 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-28 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 3:00:00 PM

**Lab ID:** 1910122-023

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	10/4/2019 4:24:13 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/4/2019 4:24:13 PM
Surr: DNOP	110	70-130		%Rec	1	10/4/2019 4:24:13 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/3/2019 8:34:40 PM
Surr: BFB	93.8	77.4-118		%Rec	1	10/3/2019 8:34:40 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/3/2019 8:34:40 PM
Toluene	ND	0.049		mg/Kg	1	10/3/2019 8:34:40 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/3/2019 8:34:40 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/3/2019 8:34:40 PM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	10/3/2019 8:34:40 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2400	150		mg/Kg	50	10/8/2019 8:23:18 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-28 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/30/2019 3:20:00 PM

**Lab ID:** 1910122-024

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2700	150		mg/Kg	50	10/8/2019 8:35:43 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Vertex Resource Group Ltd.**Client Sample ID:** BH19-25 0'**Project:** Trebuchet Fee 23 28 18**Collection Date:** 9/27/2019 11:20:00 AM**Lab ID:** 1910122-025**Matrix:** SOIL**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	12	9.9		mg/Kg	1	10/4/2019 4:46:21 PM
Motor Oil Range Organics (MRO)	63	50		mg/Kg	1	10/4/2019 4:46:21 PM
Surr: DNOP	131	70-130	S	%Rec	1	10/4/2019 4:46:21 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/3/2019 8:57:30 PM
Surr: BFB	93.9	77.4-118		%Rec	1	10/3/2019 8:57:30 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/3/2019 8:57:30 PM
Toluene	ND	0.050		mg/Kg	1	10/3/2019 8:57:30 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/3/2019 8:57:30 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/3/2019 8:57:30 PM
Surr: 4-Bromofluorobenzene	92.0	80-120		%Rec	1	10/3/2019 8:57:30 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	830	60		mg/Kg	20	10/6/2019 10:56:20 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-25 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 11:21:00 AM

**Lab ID:** 1910122-026

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	4100	150		mg/Kg	50	10/8/2019 9:12:58 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-25 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 2:16:00 PM

**Lab ID:** 1910122-027

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1500	60		mg/Kg	20	10/5/2019 1:58:02 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-25 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 2:30:00 PM

**Lab ID:** 1910122-028

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1100	59		mg/Kg	20	10/5/2019 2:35:04 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

**Hall Environmental Analysis Laboratory, Inc.****CLIENT:** Vertex Resource Group Ltd.**Client Sample ID:** BH19-25 8'**Project:** Trebuchet Fee 23 28 18**Collection Date:** 9/27/2019 2:45:00 PM**Lab ID:** 1910122-029**Matrix:** SOIL**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	10/4/2019 5:30:30 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/4/2019 5:30:30 PM
Surr: DNOP	102	70-130		%Rec	1	10/4/2019 5:30:30 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	10/3/2019 9:20:21 PM
Surr: BFB	93.9	77.4-118		%Rec	1	10/3/2019 9:20:21 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/3/2019 9:20:21 PM
Toluene	ND	0.047		mg/Kg	1	10/3/2019 9:20:21 PM
Ethylbenzene	ND	0.047		mg/Kg	1	10/3/2019 9:20:21 PM
Xylenes, Total	ND	0.094		mg/Kg	1	10/3/2019 9:20:21 PM
Surr: 4-Bromofluorobenzene	92.6	80-120		%Rec	1	10/3/2019 9:20:21 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	950	60		mg/Kg	20	10/6/2019 11:08:40 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-23 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 3:00:00 PM

**Lab ID:** 1910122-030

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	31000	1500		mg/Kg	500	10/8/2019 9:25:22 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-23 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 3:15:00 PM

**Lab ID:** 1910122-031

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	4600	150		mg/Kg	50	10/8/2019 9:37:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-23 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 3:30:00 PM

**Lab ID:** 1910122-032

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	3400	150		mg/Kg	50	10/8/2019 9:50:12 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-23 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 3:35:00 PM

**Lab ID:** 1910122-033

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.6		mg/Kg	1	10/4/2019 5:52:34 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	10/4/2019 5:52:34 PM
Surr: DNOP	103	70-130		%Rec	1	10/4/2019 5:52:34 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 9:43:13 PM
Surr: BFB	94.3	77.4-118		%Rec	1	10/3/2019 9:43:13 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 9:43:13 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 9:43:13 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 9:43:13 PM
Xylenes, Total	ND	0.095		mg/Kg	1	10/3/2019 9:43:13 PM
Surr: 4-Bromofluorobenzene	92.5	80-120		%Rec	1	10/3/2019 9:43:13 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	540	59		mg/Kg	20	10/6/2019 11:21:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 0'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 4:00:00 PM

**Lab ID:** 1910122-034

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	40000	3000		mg/Kg	1000	10/8/2019 10:02:36 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910122**

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 2'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 4:10:00 PM

**Lab ID:** 1910122-035

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1800	60		mg/Kg	20	10/5/2019 4:01:27 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 4'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 4:20:00 PM

**Lab ID:** 1910122-036

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1700	60		mg/Kg	20	10/5/2019 4:13:48 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 6'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 4:30:00 PM

**Lab ID:** 1910122-037

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2000	61		mg/Kg	20	10/5/2019 4:26:10 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 8'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 4:40:00 PM

**Lab ID:** 1910122-038

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1800	60		mg/Kg	20	10/5/2019 4:38:30 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910122

Date Reported:

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-22 10'

**Project:** Trebuchet Fee 23 28 18

**Collection Date:** 9/27/2019 5:00:00 PM

**Lab ID:** 1910122-039

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	10/4/2019 11:31:58 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	10/4/2019 11:31:58 AM
Surr: DNOP	108	70-130		%Rec	1	10/4/2019 11:31:58 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 10:06:09 PM
Surr: BFB	95.1	77.4-118		%Rec	1	10/3/2019 10:06:09 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 10:06:09 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 10:06:09 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 10:06:09 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/3/2019 10:06:09 PM
Surr: 4-Bromofluorobenzene	92.7	80-120		%Rec	1	10/3/2019 10:06:09 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1700	60		mg/Kg	20	10/6/2019 11:33:21 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

October 09, 2019

Dennis Williams  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX

RE: Trebuchet 23 28 19

OrderNo.: 1910129

Dear Dennis Williams:

Hall Environmental Analysis Laboratory received 32 sample(s) on 10/2/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a white background.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-24 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 8:25:00 AM

**Lab ID:** 1910129-001

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/4/2019 11:55:54 AM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/4/2019 11:55:54 AM
Surr: DNOP	107	70-130		%Rec	1	10/4/2019 11:55:54 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/3/2019 10:52:32 PM
Surr: BFB	105	77.4-118		%Rec	1	10/3/2019 10:52:32 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/3/2019 10:52:32 PM
Toluene	ND	0.049		mg/Kg	1	10/3/2019 10:52:32 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/3/2019 10:52:32 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/3/2019 10:52:32 PM
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	10/3/2019 10:52:32 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	14000	600		mg/Kg	200	10/8/2019 1:23:08 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-24 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 8:40:00 AM

**Lab ID:** 1910129-002

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: SRM
Chloride	4700	150		mg/Kg	50	10/8/2019 1:35:33 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-24 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 8:55:00 AM

**Lab ID:** 1910129-003

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	840	61		mg/Kg	20	10/7/2019 12:10:23 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-24 8'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 10:04:00 AM

**Lab ID:** 1910129-004

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.9		mg/Kg	1	10/4/2019 12:19:57 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	10/4/2019 12:19:57 PM
Surr: DNOP	96.8	70-130		%Rec	1	10/4/2019 12:19:57 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/3/2019 11:15:34 PM
Surr: BFB	102	77.4-118		%Rec	1	10/3/2019 11:15:34 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/3/2019 11:15:34 PM
Toluene	ND	0.048		mg/Kg	1	10/3/2019 11:15:34 PM
Ethylbenzene	ND	0.048		mg/Kg	1	10/3/2019 11:15:34 PM
Xylenes, Total	ND	0.097		mg/Kg	1	10/3/2019 11:15:34 PM
Surr: 4-Bromofluorobenzene	96.9	80-120		%Rec	1	10/3/2019 11:15:34 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	460	60		mg/Kg	20	10/7/2019 12:47:24 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-26 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 10:21:00 AM

**Lab ID:** 1910129-005

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	10/4/2019 12:43:50 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/4/2019 12:43:50 PM
Surr: DNOP	98.2	70-130		%Rec	1	10/4/2019 12:43:50 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/4/2019 12:47:39 AM
Surr: BFB	96.7	77.4-118		%Rec	1	10/4/2019 12:47:39 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/4/2019 12:47:39 AM
Toluene	ND	0.050		mg/Kg	1	10/4/2019 12:47:39 AM
Ethylbenzene	ND	0.050		mg/Kg	1	10/4/2019 12:47:39 AM
Xylenes, Total	ND	0.099		mg/Kg	1	10/4/2019 12:47:39 AM
Surr: 4-Bromofluorobenzene	93.2	80-120		%Rec	1	10/4/2019 12:47:39 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	24000	1500		mg/Kg	500	10/8/2019 1:47:58 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-26 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 10:40:00 AM

**Lab ID:** 1910129-006

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	4600	150		mg/Kg	50	10/8/2019 2:00:23 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-26 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 11:02:00 AM

**Lab ID:** 1910129-007

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1100	60		mg/Kg	20	10/7/2019 1:24:24 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-26 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 11:20:00 AM

**Lab ID:** 1910129-008

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	600	59		mg/Kg	20	10/6/2019 3:50:40 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-26 8'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 11:48:00 AM

**Lab ID:** 1910129-009

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	10/4/2019 1:08:01 PM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	10/4/2019 1:08:01 PM
Surr: DNOP	97.7	70-130		%Rec	1	10/4/2019 1:08:01 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	10/4/2019 1:10:39 AM
Surr: BFB	96.4	77.4-118		%Rec	1	10/4/2019 1:10:39 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/4/2019 1:10:39 AM
Toluene	ND	0.046		mg/Kg	1	10/4/2019 1:10:39 AM
Ethylbenzene	ND	0.046		mg/Kg	1	10/4/2019 1:10:39 AM
Xylenes, Total	ND	0.093		mg/Kg	1	10/4/2019 1:10:39 AM
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	10/4/2019 1:10:39 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	440	60		mg/Kg	20	10/6/2019 4:03:05 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-24 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 9:10:00 AM

**Lab ID:** 1910129-010

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: CAS
Chloride	530	60		mg/Kg	20	10/6/2019 4:15:29 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-27 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 12:45:00 PM

**Lab ID:** 1910129-011

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	ND	60		mg/Kg	20	10/6/2019 4:52:43 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-27 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 12:52:00 PM

**Lab ID:** 1910129-012

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2600	150		mg/Kg	50	10/8/2019 10:15:01 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-27 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 12:57:00 PM

**Lab ID:** 1910129-013

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	1300	60		mg/Kg	20	10/6/2019 5:42:22 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-27 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 1:11:00 PM

**Lab ID:** 1910129-014

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.0		mg/Kg	1	10/4/2019 1:32:11 PM
Motor Oil Range Organics (MRO)	ND	45		mg/Kg	1	10/4/2019 1:32:11 PM
Surr: DNOP	92.4	70-130		%Rec	1	10/4/2019 1:32:11 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/4/2019 1:33:32 AM
Surr: BFB	99.4	77.4-118		%Rec	1	10/4/2019 1:33:32 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/4/2019 1:33:32 AM
Toluene	ND	0.049		mg/Kg	1	10/4/2019 1:33:32 AM
Ethylbenzene	ND	0.049		mg/Kg	1	10/4/2019 1:33:32 AM
Xylenes, Total	ND	0.097		mg/Kg	1	10/4/2019 1:33:32 AM
Surr: 4-Bromofluorobenzene	94.6	80-120		%Rec	1	10/4/2019 1:33:32 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CAS</b>
Chloride	930	60		mg/Kg	20	10/6/2019 5:54:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-36 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 2:00:00 PM

**Lab ID:** 1910129-015

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: SRM
Chloride	6400	300		mg/Kg	100	10/8/2019 2:12:48 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-36 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 2:05:00 PM

**Lab ID:** 1910129-016

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	2900	150		mg/Kg	50	10/8/2019 2:25:13 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-36 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 2:09:00 PM

**Lab ID:** 1910129-017

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1800	60		mg/Kg	20	10/6/2019 1:41:00 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-36 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 2:21:00 PM

**Lab ID:** 1910129-018

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1100	60		mg/Kg	20	10/6/2019 1:53:21 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-35 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 3:00:00 PM

**Lab ID:** 1910129-019

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	10/4/2019 1:56:29 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/4/2019 1:56:29 PM
Surr: DNOP	49.5	70-130	S	%Rec	1	10/4/2019 1:56:29 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	10/4/2019 1:56:39 AM
Surr: BFB	96.1	77.4-118		%Rec	1	10/4/2019 1:56:39 AM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/4/2019 1:56:39 AM
Toluene	ND	0.048		mg/Kg	1	10/4/2019 1:56:39 AM
Ethylbenzene	ND	0.048		mg/Kg	1	10/4/2019 1:56:39 AM
Xylenes, Total	ND	0.096		mg/Kg	1	10/4/2019 1:56:39 AM
Surr: 4-Bromofluorobenzene	91.5	80-120		%Rec	1	10/4/2019 1:56:39 AM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1300	60		mg/Kg	20	10/6/2019 2:05:42 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-35 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 3:17:00 PM

**Lab ID:** 1910129-020

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: SRM
Chloride	3700	150		mg/Kg	50	10/8/2019 2:37:38 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-35 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 3:22:00 PM

**Lab ID:** 1910129-021

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	2700	150		mg/Kg	50	10/8/2019 2:50:02 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-35 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 3:34:00 PM

**Lab ID:** 1910129-022

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/4/2019 2:20:44 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/4/2019 2:20:44 PM
Surr: DNOP	60.7	70-130	S	%Rec	1	10/4/2019 2:20:44 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/4/2019 12:11:20 PM
Surr: BFB	92.4	77.4-118		%Rec	1	10/4/2019 12:11:20 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/4/2019 12:11:20 PM
Toluene	ND	0.050		mg/Kg	1	10/4/2019 12:11:20 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/4/2019 12:11:20 PM
Xylenes, Total	ND	0.10		mg/Kg	1	10/4/2019 12:11:20 PM
Surr: 4-Bromofluorobenzene	89.0	80-120		%Rec	1	10/4/2019 12:11:20 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1500	60		mg/Kg	20	10/6/2019 3:07:24 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-34 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 4:11:00 PM

**Lab ID:** 1910129-023

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	10/4/2019 2:44:57 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	10/4/2019 2:44:57 PM
Surr: DNOP	73.8	70-130		%Rec	1	10/4/2019 2:44:57 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	10/4/2019 1:19:56 PM
Surr: BFB	94.5	77.4-118		%Rec	1	10/4/2019 1:19:56 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/4/2019 1:19:56 PM
Toluene	ND	0.050		mg/Kg	1	10/4/2019 1:19:56 PM
Ethylbenzene	ND	0.050		mg/Kg	1	10/4/2019 1:19:56 PM
Xylenes, Total	ND	0.099		mg/Kg	1	10/4/2019 1:19:56 PM
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	10/4/2019 1:19:56 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	ND	60		mg/Kg	20	10/6/2019 3:19:45 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-34 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 4:16:00 PM

**Lab ID:** 1910129-024

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2100	61		mg/Kg	20	10/6/2019 3:32:05 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-34 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 4:24:00 PM

**Lab ID:** 1910129-025

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>SRM</b>
Chloride	2500	150		mg/Kg	50	10/8/2019 3:02:26 AM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-34 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 4:31:00 PM

**Lab ID:** 1910129-026

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1400	60		mg/Kg	20	10/6/2019 3:56:45 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-34 8'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 4:41:00 PM

**Lab ID:** 1910129-027

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	10/4/2019 3:09:08 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	10/4/2019 3:09:08 PM
Surr: DNOP	71.4	70-130		%Rec	1	10/4/2019 3:09:08 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	10/4/2019 1:42:52 PM
Surr: BFB	95.1	77.4-118		%Rec	1	10/4/2019 1:42:52 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	10/4/2019 1:42:52 PM
Toluene	ND	0.046		mg/Kg	1	10/4/2019 1:42:52 PM
Ethylbenzene	ND	0.046		mg/Kg	1	10/4/2019 1:42:52 PM
Xylenes, Total	ND	0.092		mg/Kg	1	10/4/2019 1:42:52 PM
Surr: 4-Bromofluorobenzene	92.2	80-120		%Rec	1	10/4/2019 1:42:52 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	320	60		mg/Kg	20	10/6/2019 4:09:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-29 0'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 5:10:00 PM

**Lab ID:** 1910129-028

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	10/4/2019 3:33:31 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	10/4/2019 3:33:31 PM
Surr: DNOP	74.0	70-130		%Rec	1	10/4/2019 3:33:31 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/4/2019 2:05:47 PM
Surr: BFB	93.2	77.4-118		%Rec	1	10/4/2019 2:05:47 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	10/4/2019 2:05:47 PM
Toluene	ND	0.049		mg/Kg	1	10/4/2019 2:05:47 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/4/2019 2:05:47 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/4/2019 2:05:47 PM
Surr: 4-Bromofluorobenzene	89.4	80-120		%Rec	1	10/4/2019 2:05:47 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	4500	150		mg/Kg	50	10/8/2019 10:27:25 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-29 2'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 5:16:00 PM

**Lab ID:** 1910129-029

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	3500	150		mg/Kg	50	10/8/2019 10:39:49 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-29 4'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 5:21:00 PM

**Lab ID:** 1910129-030

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1200	60		mg/Kg	20	10/6/2019 4:46:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

**Analytical Report**

Lab Order **1910129**

Date Reported: **10/9/2019**

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-29 6'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 5:37:00 PM

**Lab ID:** 1910129-031

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	700	60		mg/Kg	20	10/6/2019 5:23:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1910129

Date Reported: 10/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-29 8'

**Project:** Trebuchet 23 28 19

**Collection Date:** 9/28/2019 5:40:00 PM

**Lab ID:** 1910129-032

**Matrix:** SOIL

**Received Date:** 10/2/2019 9:30:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.6		mg/Kg	1	10/4/2019 3:57:50 PM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	10/4/2019 3:57:50 PM
Surr: DNOP	70.2	70-130		%Rec	1	10/4/2019 3:57:50 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	10/4/2019 2:28:41 PM
Surr: BFB	96.3	77.4-118		%Rec	1	10/4/2019 2:28:41 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	10/4/2019 2:28:41 PM
Toluene	ND	0.049		mg/Kg	1	10/4/2019 2:28:41 PM
Ethylbenzene	ND	0.049		mg/Kg	1	10/4/2019 2:28:41 PM
Xylenes, Total	ND	0.098		mg/Kg	1	10/4/2019 2:28:41 PM
Surr: 4-Bromofluorobenzene	92.3	80-120		%Rec	1	10/4/2019 2:28:41 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	380	60		mg/Kg	20	10/6/2019 5:35:29 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910129

09-Oct-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47966</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47966</b>	RunNo: <b>63454</b>								
Prep Date: <b>10/6/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167361</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47966</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47966</b>	RunNo: <b>63454</b>								
Prep Date: <b>10/6/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167362</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	92.5	90	110			

Sample ID: <b>MB-47953</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47953</b>	RunNo: <b>63454</b>								
Prep Date: <b>10/4/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167393</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47953</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47953</b>	RunNo: <b>63454</b>								
Prep Date: <b>10/4/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167394</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.6	90	110			

Sample ID: <b>MB-47964</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47964</b>	RunNo: <b>63456</b>								
Prep Date: <b>10/6/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167522</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-47964</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47964</b>	RunNo: <b>63456</b>								
Prep Date: <b>10/6/2019</b>	Analysis Date: <b>10/6/2019</b>	SeqNo: <b>2167523</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.9	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910129

09-Oct-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>LCS-47935</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47935</b>		RunNo: <b>63422</b>							
Prep Date: <b>10/4/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2165732</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	10	50.00	0	106	63.9	124			
Surr: DNOP	4.9		5.000		97.6	70	130			

Sample ID: <b>MB-47935</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47935</b>		RunNo: <b>63422</b>							
Prep Date: <b>10/4/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2165733</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		99.7	70	130			

Sample ID: <b>LCS-47905</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47905</b>		RunNo: <b>63422</b>							
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2166359</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	50	10	50.00	0	99.4	63.9	124			
Surr: DNOP	4.8		5.000		96.1	70	130			

Sample ID: <b>MB-47905</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47905</b>		RunNo: <b>63422</b>							
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2166360</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	13		10.00		132	70	130			S

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910129

09-Oct-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47891</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47891</b>		RunNo: <b>63411</b>							
Prep Date: <b>10/2/2019</b>	Analysis Date: <b>10/3/2019</b>		SeqNo: <b>2165168</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	960		1000		96.3	77.4	118			

Sample ID: <b>LCS-47891</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47891</b>		RunNo: <b>63411</b>							
Prep Date: <b>10/2/2019</b>	Analysis Date: <b>10/3/2019</b>		SeqNo: <b>2165169</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	96.9	80	120			
Surr: BFB	1100		1000		106	77.4	118			

Sample ID: <b>MB-47919</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>47919</b>		RunNo: <b>63433</b>							
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2166815</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	980		1000		98.1	77.4	118			

Sample ID: <b>LCS-47919</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>47919</b>		RunNo: <b>63433</b>							
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>		SeqNo: <b>2166816</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	26	5.0	25.00	0	105	80	120			
Surr: BFB	1100		1000		110	77.4	118			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910129

09-Oct-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>MB-47891</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47891</b>	RunNo: <b>63411</b>								
Prep Date: <b>10/2/2019</b>	Analysis Date: <b>10/3/2019</b>	SeqNo: <b>2165206</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.95		1.000		95.5	80	120			

Sample ID: <b>LCS-47891</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47891</b>	RunNo: <b>63411</b>								
Prep Date: <b>10/2/2019</b>	Analysis Date: <b>10/3/2019</b>	SeqNo: <b>2165207</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	1.000	0	91.5	80	120			
Toluene	0.95	0.050	1.000	0	95.0	80	120			
Ethylbenzene	0.95	0.050	1.000	0	95.2	80	120			
Xylenes, Total	2.8	0.10	3.000	0	93.8	80	120			
Surr: 4-Bromofluorobenzene	0.94		1.000		93.8	80	120			

Sample ID: <b>MB-47919</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>47919</b>	RunNo: <b>63433</b>								
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>	SeqNo: <b>2166837</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	0.96		1.000		95.5	80	120			

Sample ID: <b>LCS-47919</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>47919</b>	RunNo: <b>63433</b>								
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>	SeqNo: <b>2166838</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.4	80	120			
Toluene	0.99	0.050	1.000	0	98.8	80	120			
Ethylbenzene	0.99	0.050	1.000	0	98.9	80	120			
Xylenes, Total	2.9	0.10	3.000	0	97.5	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1910129

09-Oct-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19

Sample ID: <b>1910129-022AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BH19-35 6'</b>	Batch ID: <b>47919</b>	RunNo: <b>63433</b>								
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>	SeqNo: <b>2166840</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.79	0.023	0.9242	0.01022	84.6	76	123			
Toluene	0.83	0.046	0.9242	0.007946	88.9	80.3	127			
Ethylbenzene	0.84	0.046	0.9242	0	90.7	80.2	131			
Xylenes, Total	2.4	0.092	2.773	0.02787	87.0	78	133			
Surr: 4-Bromofluorobenzene	0.86		0.9242		93.6	80	120			

Sample ID: <b>1910129-022AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BH19-35 6'</b>	Batch ID: <b>47919</b>	RunNo: <b>63433</b>								
Prep Date: <b>10/3/2019</b>	Analysis Date: <b>10/4/2019</b>	SeqNo: <b>2166841</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.91	0.025	0.9960	0.01022	90.6	76	123	14.2	20	
Toluene	0.96	0.050	0.9960	0.007946	95.4	80.3	127	14.4	20	
Ethylbenzene	0.97	0.050	0.9960	0	97.1	80.2	131	14.3	20	
Xylenes, Total	2.9	0.10	2.988	0.02787	94.9	78	133	16.0	20	
Surr: 4-Bromofluorobenzene	0.97		0.9960		97.7	80	120	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

**Sample Log-In Check List**

Client Name: **VERTEX CARLSBAD** Work Order Number: **1910129** RcptNo: 1

Received By: **JUAN ROJAS** 10/2/2019 9:30:00 AM  
 Completed By: **Yazmine Garduno** 10/2/2019 11:24:13 AM  
 Reviewed By: **Dm 10/2/19**

*Yazmine Garduno*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present   
 2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA   
 4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA   
 5. Sample(s) in proper container(s)? Yes  No   
 6. Sufficient sample volume for indicated test(s)? Yes  No   
 7. Are samples (except VOA and ONG) properly preserved? Yes  No   
 8. Was preservative added to bottles? Yes  No  NA   
 9. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 12. Are matrices correctly identified on Chain of Custody? Yes  No   
 13. Is it clear what analyses were requested? Yes  No   
 14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH:  
 (<2 or >12 unless noted)  
 Adjusted?  
 Checked by: **YG 10/2/19**

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**17. Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.4	Good				

# Chain-of-Custody Record

Client: Vertex Marathon

Mailing Address: on file

Phone #: on file

email or Fax#: on file

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance

NELAC  Other

EDD (Type)

Turn-Around Time: 5 day

Standard  Rush

Project Name:

Trebracket 23 28 19

Project #:

19E-00614

Project Manager: Dennis Williams

Permin@Vertex.ca; Isaac Castro

icastro@marathonoil.com

Sampler: Jason Crabtree

On Ice:  Yes  No

# of Coolers:

Cooler Temp (including CF): 1.6-0.2 = 1.4 (°C)

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No
09/28	8:25	soil	BH19-24 0'	glass jar	ice	191029
	9:40	soil	BH19-24 2'	glass jar	ice	-001
	9:55	soil	BH19-24 4'	glass jar	ice	-002
	10:04	soil	BH19-24 8'	glass jar	ice	-003
	10:21	soil	" 26 0'	" "	" "	-004
	10:40	soil	" 26 2'	" "	" "	-005
	11:02	soil	" 26 4'	" "	" "	-006
	11:20	soil	" 26 6'	" "	" "	-007
	11:48	soil	" 26 8'	" "	" "	-008
	09:10	soil	BH19-24 6'	" "	" "	-009
	12:45	soil	BH19-27 0'	" "	" "	-010
	12:52	soil	BH19-27 2'	" "	" "	-012
Date:	Time:	Relinquished by:	Received by: <u>[Signature]</u> Date: <u>10/1/19</u> Time: <u>0900</u>			
Date:	Time:	Relinquished by:	Received by: <u>[Signature]</u> Date: <u>10/2/19</u> Time: <u>9:30</u>			

## Analysis Request

BTEX / MTBE / TMB's (8021)	X
TPH:8015D(GRO / DRO / MRO)	X
8081 Pesticides/8082 PCB's	
EDB (Method 504.1)	
PAHs by 8310 or 8270SIMS	
RCRA 8 Metals	
(Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	X
8260 (VOA)	
8270 (Semi-VOA)	
Total Coliform (Present/Absent)	

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.







Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

December 06, 2019

Natalie Gordon  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX

RE: Trebuchet Fee 232819 WXY

OrderNo.: 1911C59

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 14 sample(s) on 11/27/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-37 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/21/2019

**Lab ID:** 1911C59-001

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/3/2019 11:05:39 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/3/2019 11:05:39 AM
Surr: DNOP	130	70-130	S	%Rec	1	12/3/2019 11:05:39 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/2/2019 8:27:55 PM
Surr: BFB	81.4	77.4-118		%Rec	1	12/2/2019 8:27:55 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 8:27:55 PM
Toluene	ND	0.049		mg/Kg	1	12/2/2019 8:27:55 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/2/2019 8:27:55 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/2/2019 8:27:55 PM
Surr: 4-Bromofluorobenzene	99.3	80-120		%Rec	1	12/2/2019 8:27:55 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	890	60		mg/Kg	20	12/4/2019 7:30:04 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-38 2'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/21/2019

**Lab ID:** 1911C59-002

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	16	9.4		mg/Kg	1	12/3/2019 11:14:53 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/3/2019 11:14:53 AM
Surr: DNOP	94.4	70-130		%Rec	1	12/3/2019 11:14:53 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/2/2019 8:50:45 PM
Surr: BFB	78.9	77.4-118		%Rec	1	12/2/2019 8:50:45 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 8:50:45 PM
Toluene	ND	0.047		mg/Kg	1	12/2/2019 8:50:45 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/2/2019 8:50:45 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/2/2019 8:50:45 PM
Surr: 4-Bromofluorobenzene	95.9	80-120		%Rec	1	12/2/2019 8:50:45 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1100	60		mg/Kg	20	12/4/2019 8:07:06 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-03 2'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/21/2019

**Lab ID:** 1911C59-003

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	30	10		mg/Kg	1	12/3/2019 11:24:05 AM
Motor Oil Range Organics (MRO)	65	50		mg/Kg	1	12/3/2019 11:24:05 AM
Surr: DNOP	83.3	70-130		%Rec	1	12/3/2019 11:24:05 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/2/2019 9:13:35 PM
Surr: BFB	79.3	77.4-118		%Rec	1	12/2/2019 9:13:35 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	12/2/2019 9:13:35 PM
Toluene	ND	0.049		mg/Kg	1	12/2/2019 9:13:35 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/2/2019 9:13:35 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/2/2019 9:13:35 PM
Surr: 4-Bromofluorobenzene	96.4	80-120		%Rec	1	12/2/2019 9:13:35 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	890	60		mg/Kg	20	12/4/2019 8:19:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-39 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 11:35:00 AM

**Lab ID:** 1911C59-004

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/3/2019 11:33:18 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/3/2019 11:33:18 AM
Surr: DNOP	94.0	70-130		%Rec	1	12/3/2019 11:33:18 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/2/2019 9:36:24 PM
Surr: BFB	79.3	77.4-118		%Rec	1	12/2/2019 9:36:24 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 9:36:24 PM
Toluene	ND	0.048		mg/Kg	1	12/2/2019 9:36:24 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/2/2019 9:36:24 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/2/2019 9:36:24 PM
Surr: 4-Bromofluorobenzene	96.2	80-120		%Rec	1	12/2/2019 9:36:24 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1500	60		mg/Kg	20	12/4/2019 8:31:48 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-04 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 1:45:00 PM

**Lab ID:** 1911C59-005

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/3/2019 11:42:29 AM
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/3/2019 11:42:29 AM
Surr: DNOP	90.8	70-130		%Rec	1	12/3/2019 11:42:29 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/2/2019 9:59:10 PM
Surr: BFB	80.0	77.4-118		%Rec	1	12/2/2019 9:59:10 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	12/2/2019 9:59:10 PM
Toluene	ND	0.050		mg/Kg	1	12/2/2019 9:59:10 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/2/2019 9:59:10 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/2/2019 9:59:10 PM
Surr: 4-Bromofluorobenzene	96.5	80-120		%Rec	1	12/2/2019 9:59:10 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2400	60		mg/Kg	20	12/4/2019 8:44:09 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-05 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 2:00:00 PM

**Lab ID:** 1911C59-006

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/3/2019 12:37:31 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/3/2019 12:37:31 PM
Surr: DNOP	90.2	70-130		%Rec	1	12/3/2019 12:37:31 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/2/2019 11:30:08 PM
Surr: BFB	79.4	77.4-118		%Rec	1	12/2/2019 11:30:08 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	12/2/2019 11:30:08 PM
Toluene	ND	0.047		mg/Kg	1	12/2/2019 11:30:08 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/2/2019 11:30:08 PM
Xylenes, Total	ND	0.093		mg/Kg	1	12/2/2019 11:30:08 PM
Surr: 4-Bromofluorobenzene	98.3	80-120		%Rec	1	12/2/2019 11:30:08 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2200	60		mg/Kg	20	12/4/2019 8:56:30 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-20 6'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 2:50:00 PM

**Lab ID:** 1911C59-007

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	12/3/2019 1:05:03 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/3/2019 1:05:03 PM
Surr: DNOP	87.8	70-130		%Rec	1	12/3/2019 1:05:03 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	1100	60		mg/Kg	20	12/4/2019 9:08:51 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 2:39:57 PM
Toluene	ND	0.048		mg/Kg	1	12/2/2019 2:39:57 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/2/2019 2:39:57 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/2/2019 2:39:57 PM
Surr: 1,2-Dichloroethane-d4	98.7	70-130		%Rec	1	12/2/2019 2:39:57 PM
Surr: 4-Bromofluorobenzene	91.3	70-130		%Rec	1	12/2/2019 2:39:57 PM
Surr: Dibromofluoromethane	115	70-130		%Rec	1	12/2/2019 2:39:57 PM
Surr: Toluene-d8	102	70-130		%Rec	1	12/2/2019 2:39:57 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/2/2019 2:39:57 PM
Surr: BFB	94.9	70-130		%Rec	1	12/2/2019 2:39:57 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-10 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 4:55:00 PM

**Lab ID:** 1911C59-008

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	10		mg/Kg	1	12/3/2019 1:14:15 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/3/2019 1:14:15 PM
Surr: DNOP	138	70-130	S	%Rec	1	12/3/2019 1:14:15 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2400	150		mg/Kg	50	12/6/2019 1:41:43 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 4:06:03 PM
Toluene	ND	0.049		mg/Kg	1	12/2/2019 4:06:03 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/2/2019 4:06:03 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/2/2019 4:06:03 PM
Surr: 1,2-Dichloroethane-d4	98.3	70-130		%Rec	1	12/2/2019 4:06:03 PM
Surr: 4-Bromofluorobenzene	90.2	70-130		%Rec	1	12/2/2019 4:06:03 PM
Surr: Dibromofluoromethane	115	70-130		%Rec	1	12/2/2019 4:06:03 PM
Surr: Toluene-d8	101	70-130		%Rec	1	12/2/2019 4:06:03 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/2/2019 4:06:03 PM
Surr: BFB	93.7	70-130		%Rec	1	12/2/2019 4:06:03 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-09 4'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/22/2019 5:05:00 PM

**Lab ID:** 1911C59-009

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/3/2019 1:23:25 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/3/2019 1:23:25 PM
Surr: DNOP	95.9	70-130		%Rec	1	12/3/2019 1:23:25 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	2700	150		mg/Kg	50	12/6/2019 1:54:04 AM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.025		mg/Kg	1	12/2/2019 4:34:43 PM
Toluene	ND	0.050		mg/Kg	1	12/2/2019 4:34:43 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/2/2019 4:34:43 PM
Xylenes, Total	ND	0.099		mg/Kg	1	12/2/2019 4:34:43 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	12/2/2019 4:34:43 PM
Surr: 4-Bromofluorobenzene	91.1	70-130		%Rec	1	12/2/2019 4:34:43 PM
Surr: Dibromofluoromethane	117	70-130		%Rec	1	12/2/2019 4:34:43 PM
Surr: Toluene-d8	103	70-130		%Rec	1	12/2/2019 4:34:43 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/2/2019 4:34:43 PM
Surr: BFB	95.1	70-130		%Rec	1	12/2/2019 4:34:43 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-25 5'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/25/2019 3:53:00 PM

**Lab ID:** 1911C59-010

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.3		mg/Kg	1	12/3/2019 1:32:37 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/3/2019 1:32:37 PM
Surr: DNOP	120	70-130		%Rec	1	12/3/2019 1:32:37 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	530	60		mg/Kg	20	12/4/2019 10:10:36 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.023		mg/Kg	1	12/2/2019 5:03:27 PM
Toluene	ND	0.047		mg/Kg	1	12/2/2019 5:03:27 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/2/2019 5:03:27 PM
Xylenes, Total	ND	0.093		mg/Kg	1	12/2/2019 5:03:27 PM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	12/2/2019 5:03:27 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	12/2/2019 5:03:27 PM
Surr: Dibromofluoromethane	118	70-130		%Rec	1	12/2/2019 5:03:27 PM
Surr: Toluene-d8	104	70-130		%Rec	1	12/2/2019 5:03:27 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/2/2019 5:03:27 PM
Surr: BFB	94.0	70-130		%Rec	1	12/2/2019 5:03:27 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-26 5'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/25/2019 4:45:00 PM

**Lab ID:** 1911C59-011

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.8		mg/Kg	1	12/3/2019 1:41:47 PM
Motor Oil Range Organics (MRO)	ND	44		mg/Kg	1	12/3/2019 1:41:47 PM
Surr: DNOP	96.0	70-130		%Rec	1	12/3/2019 1:41:47 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	660	60		mg/Kg	20	12/4/2019 10:22:56 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 5:32:05 PM
Toluene	ND	0.048		mg/Kg	1	12/2/2019 5:32:05 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/2/2019 5:32:05 PM
Xylenes, Total	ND	0.096		mg/Kg	1	12/2/2019 5:32:05 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	12/2/2019 5:32:05 PM
Surr: 4-Bromofluorobenzene	89.7	70-130		%Rec	1	12/2/2019 5:32:05 PM
Surr: Dibromofluoromethane	119	70-130		%Rec	1	12/2/2019 5:32:05 PM
Surr: Toluene-d8	102	70-130		%Rec	1	12/2/2019 5:32:05 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/2/2019 5:32:05 PM
Surr: BFB	95.2	70-130		%Rec	1	12/2/2019 5:32:05 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-22 5'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/25/2019 4:50:00 PM

**Lab ID:** 1911C59-012

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.3		mg/Kg	1	12/3/2019 1:50:59 PM
Motor Oil Range Organics (MRO)	ND	41		mg/Kg	1	12/3/2019 1:50:59 PM
Surr: DNOP	92.1	70-130		%Rec	1	12/3/2019 1:50:59 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	410	60		mg/Kg	20	12/4/2019 10:35:17 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 6:00:40 PM
Toluene	ND	0.048		mg/Kg	1	12/2/2019 6:00:40 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/2/2019 6:00:40 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/2/2019 6:00:40 PM
Surr: 1,2-Dichloroethane-d4	101	70-130		%Rec	1	12/2/2019 6:00:40 PM
Surr: 4-Bromofluorobenzene	87.5	70-130		%Rec	1	12/2/2019 6:00:40 PM
Surr: Dibromofluoromethane	120	70-130		%Rec	1	12/2/2019 6:00:40 PM
Surr: Toluene-d8	102	70-130		%Rec	1	12/2/2019 6:00:40 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/2/2019 6:00:40 PM
Surr: BFB	92.3	70-130		%Rec	1	12/2/2019 6:00:40 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-34 5'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/25/2019 5:28:00 PM

**Lab ID:** 1911C59-013

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.6		mg/Kg	1	12/3/2019 2:00:13 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/3/2019 2:00:13 PM
Surr: DNOP	96.3	70-130		%Rec	1	12/3/2019 2:00:13 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	900	60		mg/Kg	20	12/4/2019 10:47:39 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.023		mg/Kg	1	12/2/2019 6:29:17 PM
Toluene	ND	0.047		mg/Kg	1	12/2/2019 6:29:17 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/2/2019 6:29:17 PM
Xylenes, Total	ND	0.094		mg/Kg	1	12/2/2019 6:29:17 PM
Surr: 1,2-Dichloroethane-d4	103	70-130		%Rec	1	12/2/2019 6:29:17 PM
Surr: 4-Bromofluorobenzene	89.6	70-130		%Rec	1	12/2/2019 6:29:17 PM
Surr: Dibromofluoromethane	120	70-130		%Rec	1	12/2/2019 6:29:17 PM
Surr: Toluene-d8	103	70-130		%Rec	1	12/2/2019 6:29:17 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/2/2019 6:29:17 PM
Surr: BFB	96.8	70-130		%Rec	1	12/2/2019 6:29:17 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911C59

Date Reported: 12/6/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-33 5'

**Project:** Trebuchet Fee 232819 WXY

**Collection Date:** 11/25/2019 5:35:00 PM

**Lab ID:** 1911C59-014

**Matrix:** SOIL

**Received Date:** 11/27/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.8		mg/Kg	1	12/3/2019 2:09:27 PM
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/3/2019 2:09:27 PM
Surr: DNOP	95.3	70-130		%Rec	1	12/3/2019 2:09:27 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	600	60		mg/Kg	20	12/4/2019 11:00:00 PM
<b>EPA METHOD 8260B: VOLATILES SHORT LIST</b>						Analyst: <b>JMR</b>
Benzene	ND	0.024		mg/Kg	1	12/2/2019 6:57:51 PM
Toluene	ND	0.049		mg/Kg	1	12/2/2019 6:57:51 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/2/2019 6:57:51 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/2/2019 6:57:51 PM
Surr: 1,2-Dichloroethane-d4	102	70-130		%Rec	1	12/2/2019 6:57:51 PM
Surr: 4-Bromofluorobenzene	90.3	70-130		%Rec	1	12/2/2019 6:57:51 PM
Surr: Dibromofluoromethane	121	70-130		%Rec	1	12/2/2019 6:57:51 PM
Surr: Toluene-d8	102	70-130		%Rec	1	12/2/2019 6:57:51 PM
<b>EPA METHOD 8015D MOD: GASOLINE RANGE</b>						Analyst: <b>JMR</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/2/2019 6:57:51 PM
Surr: BFB	94.1	70-130		%Rec	1	12/2/2019 6:57:51 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix

- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>MB-49160</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49160</b>	RunNo: <b>64920</b>								
Prep Date: <b>12/4/2019</b>	Analysis Date: <b>12/4/2019</b>	SeqNo: <b>2227398</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-49160</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49160</b>	RunNo: <b>64920</b>								
Prep Date: <b>12/4/2019</b>	Analysis Date: <b>12/4/2019</b>	SeqNo: <b>2227400</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.4	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>LCS-49070</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49070</b>		RunNo: <b>64876</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2224173</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	43	10	50.00	0	85.8	63.9	124			
Surr: DNOP	4.0		5.000		79.0	70	130			

Sample ID: <b>MB-49070</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49070</b>		RunNo: <b>64876</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2224174</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	10		10.00		105	70	130			

Sample ID: <b>LCS-49089</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49089</b>		RunNo: <b>64876</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2224924</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.9	63.9	124			
Surr: DNOP	4.1		5.000		82.7	70	130			

Sample ID: <b>MB-49089</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49089</b>		RunNo: <b>64876</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2224925</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	8.5		10.00		85.3	70	130			

Sample ID: <b>1911C59-006AMS</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>WS19-05 4'</b>	Batch ID: <b>49089</b>		RunNo: <b>64876</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225731</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.0	45.25	0	113	57	142			
Surr: DNOP	3.8		4.525		84.1	70	130			

### Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>1911C59-006AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>WS19-05 4'</b>	Batch ID: <b>49089</b>	RunNo: <b>64876</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225732</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	45	10	50.40	0	88.9	57	142	12.9	20	
Surr: DNOP	4.1		5.040		80.6	70	130	0	0	

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>MB-49063</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49063</b>		RunNo: <b>64862</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2223698</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	840		1000		84.2	77.4	118			

Sample ID: <b>LCS-49063</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49063</b>		RunNo: <b>64862</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2223699</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	23	5.0	25.00	0	92.6	80	120			
Surr: BFB	920		1000		91.5	77.4	118			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>MB-49063</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49063</b>	RunNo: <b>64862</b>								
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>	SeqNo: <b>2223746</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		107	80	120			

Sample ID: <b>LCS-49063</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49063</b>	RunNo: <b>64862</b>								
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>	SeqNo: <b>2223747</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.96	0.025	1.000	0	96.5	80	120			
Toluene	0.97	0.050	1.000	0	96.5	80	120			
Ethylbenzene	0.97	0.050	1.000	0	97.1	80	120			
Xylenes, Total	2.9	0.10	3.000	0	96.7	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>ics-49064</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8260B: Volatiles Short List</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224128</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	104	68	135			
Toluene	0.99	0.050	1.000	0	99.1	70	130			
Surr: 1,2-Dichloroethane-d4	0.50		0.5000		101	70	130			
Surr: 4-Bromofluorobenzene	0.43		0.5000		85.9	70	130			
Surr: Dibromofluoromethane	0.58		0.5000		116	70	130			
Surr: Toluene-d8	0.50		0.5000		99.5	70	130			

Sample ID: <b>mb-49064</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8260B: Volatiles Short List</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224129</b>				Units: <b>mg/Kg</b>			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 1,2-Dichloroethane-d4	0.49		0.5000		98.6	70	130			
Surr: 4-Bromofluorobenzene	0.45		0.5000		89.2	70	130			
Surr: Dibromofluoromethane	0.55		0.5000		110	70	130			
Surr: Toluene-d8	0.50		0.5000		99.4	70	130			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911C59

06-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet Fee 232819 WXY

Sample ID: <b>1911c59-007ams</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>BH19-20 6'</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224141</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	4.6	22.91	0	95.7	70	130			
Surr: BFB	430		458.3		94.8	70	130			

Sample ID: <b>1911c59-007amsd</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>BH19-20 6'</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224143</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	24.95	0	99.2	70	130	12.1	20	
Surr: BFB	490		499.0		97.8	70	130	0	0	

Sample ID: <b>lcs-49064</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224171</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	87.4	70	130			
Surr: BFB	470		500.0		94.5	70	130			

Sample ID: <b>mb-49064</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D Mod: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49064</b>		RunNo: <b>64875</b>							
Prep Date: <b>11/27/2019</b>	Analysis Date: <b>12/2/2019</b>		SeqNo: <b>2224172</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	470		500.0		93.0	70	130			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

**Sample Log-In Check List**

Client Name: VERTEX CARLSBAD

Work Order Number: 1911C59

RcptNo: 1

Received By: *Juan Rojas* 11/27/2019 9:00:00 AM

Completed By: Leah Baca 11/27/2019 9:46:30 AM

Reviewed By: *dm 11/27/19*

*Leah Baca*

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? Courier

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *ENM 11/27/19*

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified: \_\_\_\_\_ Date \_\_\_\_\_  
 By Whom: \_\_\_\_\_ Via:  eMail  Phone  Fax  In Person  
 Regarding: \_\_\_\_\_  
 Client Instructions: \_\_\_\_\_

16. Additional remarks:

**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.2	Good				
2	1.7	Good				

# Chain-of-Custody Record

Client: Vertex Resource Services

Mailing Address: ON FILE

Phone #: ON FILE

email or Fax#: ON FILE

QA/QC Package:

Standard  Level 4 (Full Validation)

Accreditation:  AZ Compliance

NELAC  Other

EDD (Type)

Turn-Around Time: 5 Day

Standard  Rush

Project Name: TREBUCKET FEE 232819 WXY

Project #: 19E-03840-005/E

Project Manager: NATALIE GORDON  
NGORDON@VERTEX.CA

Sampler: SHAR HATVEESTER

On Ice:  Yes  No

# of Coolers: 2

Cooler Temp (including CF): 0.4-0.2=0.2 (°C)

Container Type and #

Preservative Type

HEAL No.

19-02=17  
191CS9

JAR ICE

|

-001

|

-002

|

-003

JAR ICE

|

-004

|

-005

|

-006

|

-007

|

-008

|

-009

JAR ICE

|

-010

|

-011

-012

Received by: Chapman Good Date: 11/26/14

Via: air

Received by: Shirley Green Date: 11/26/14

Via: air

Received by: Shirley Green Date: 11/26/14

Via: air



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

## Analysis Request

8081 Pesticides/8082 PCBs	EDB (Method 504.1)	PAHs by 8310 or 8270SIMS	RCRA 8 Metals	Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	8260 (VOA)	8270 (Semi-VOA)	Total Coliform (Present/Absent)
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# Chain-of-Custody Record

Client: Vertex Resource Services

Mailing Address: on file

Phone #: on file

email or Fax#: on file

QA/QC Package:  
 Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance  
 NELAC  Other

EDD (Type) \_\_\_\_\_

Turn-Around Time: 5 Days  
 Standard  Rush

Project Name: \_\_\_\_\_

Project #: TREBUCAH FEE 232819 WXY

Project #: 19E-03840-005/E

Project Manager:  
NATALIE GORDON  
ngordon@vertex.ca

Sampler: SHAR ARRIETA

On Ice:  Yes  No

# of Coolers: 2

Cooler Temp (including CF): 0.1-0.2=0.2 (°C)

Container Type and #

Preservative Type

HEAL No. 19-02-1.7  
19115A

Container Type and #

Preservative Type

HEAL No. -013

Container Type and #

Preservative Type

HEAL No. -014

Container Type and #

Preservative Type

HEAL No.



# HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request	
TPH:8015D(GRO / DRO / MRO)	<input checked="" type="checkbox"/>
8081 Pesticides/8082 PCB's	<input type="checkbox"/>
EDB (Method 504.1)	<input type="checkbox"/>
PAHs by 8310 or 8270SIMS	<input type="checkbox"/>
RCRA 8 Metals	<input checked="" type="checkbox"/>
Cl, F, Br, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub>	<input checked="" type="checkbox"/>
8260 (VOA)	<input type="checkbox"/>
8270 (Semi-VOA)	<input type="checkbox"/>
Total Coliform (Present/Absent)	<input type="checkbox"/>

Remarks:

Received by: Chad... Date: 11/26/19 Time: 1400  
 Received by: ... Date: 11/27/19 Time: 9:00

Send results to permian@vertex.ca and ngordon@vertex.ca

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.



Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

December 09, 2019

Natalie Gordon  
Vertex Resource Group Ltd.  
213 S. Mesa St  
Carlsbad, NM 88220  
TEL:  
FAX

RE: Trebuchet 23 28 19 Way 10H

OrderNo.: 1911D07

Dear Natalie Gordon:

Hall Environmental Analysis Laboratory received 10 sample(s) on 11/30/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** WS19-13

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 2:50:00 PM

**Lab ID:** 1911D07-001

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	20	9.9		mg/Kg	1	12/3/2019 7:04:49 PM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/3/2019 7:04:49 PM
Surr: DNOP	88.1	70-130		%Rec	1	12/3/2019 7:04:49 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	5.0		mg/Kg	1	12/3/2019 6:35:00 PM
Surr: BFB	78.3	77.4-118		%Rec	1	12/3/2019 6:35:00 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.025		mg/Kg	1	12/3/2019 6:35:00 PM
Toluene	ND	0.050		mg/Kg	1	12/3/2019 6:35:00 PM
Ethylbenzene	ND	0.050		mg/Kg	1	12/3/2019 6:35:00 PM
Xylenes, Total	ND	0.10		mg/Kg	1	12/3/2019 6:35:00 PM
Surr: 4-Bromofluorobenzene	94.4	80-120		%Rec	1	12/3/2019 6:35:00 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	1100	60		mg/Kg	20	12/5/2019 9:34:42 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-04

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 3:55:00 PM

**Lab ID:** 1911D07-002

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/3/2019 7:13:58 PM
Motor Oil Range Organics (MRO)	ND	48		mg/Kg	1	12/3/2019 7:13:58 PM
Surr: DNOP	85.6	70-130		%Rec	1	12/3/2019 7:13:58 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/3/2019 6:57:55 PM
Surr: BFB	78.1	77.4-118		%Rec	1	12/3/2019 6:57:55 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 6:57:55 PM
Toluene	ND	0.048		mg/Kg	1	12/3/2019 6:57:55 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/3/2019 6:57:55 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/3/2019 6:57:55 PM
Surr: 4-Bromofluorobenzene	93.4	80-120		%Rec	1	12/3/2019 6:57:55 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	440	60		mg/Kg	20	12/5/2019 9:47:02 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-07

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:00:00 PM

**Lab ID:** 1911D07-003

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	7.9		mg/Kg	1	12/3/2019 7:23:05 PM
Motor Oil Range Organics (MRO)	ND	40		mg/Kg	1	12/3/2019 7:23:05 PM
Surr: DNOP	123	70-130		%Rec	1	12/3/2019 7:23:05 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/3/2019 7:20:37 PM
Surr: BFB	83.8	77.4-118		%Rec	1	12/3/2019 7:20:37 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 7:20:37 PM
Toluene	ND	0.047		mg/Kg	1	12/3/2019 7:20:37 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/3/2019 7:20:37 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/3/2019 7:20:37 PM
Surr: 4-Bromofluorobenzene	100	80-120		%Rec	1	12/3/2019 7:20:37 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	830	60		mg/Kg	20	12/5/2019 9:59:23 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-08

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:05:00 PM

**Lab ID:** 1911D07-004

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.2		mg/Kg	1	12/3/2019 7:32:09 PM
Motor Oil Range Organics (MRO)	ND	41		mg/Kg	1	12/3/2019 7:32:09 PM
Surr: DNOP	88.0	70-130		%Rec	1	12/3/2019 7:32:09 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/3/2019 7:43:31 PM
Surr: BFB	79.2	77.4-118		%Rec	1	12/3/2019 7:43:31 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 7:43:31 PM
Toluene	ND	0.049		mg/Kg	1	12/3/2019 7:43:31 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/3/2019 7:43:31 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/3/2019 7:43:31 PM
Surr: 4-Bromofluorobenzene	95.1	80-120		%Rec	1	12/3/2019 7:43:31 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	740	60		mg/Kg	20	12/5/2019 10:11:44 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-01

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:15:00 PM

**Lab ID:** 1911D07-005

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.4		mg/Kg	1	12/3/2019 7:41:12 PM
Motor Oil Range Organics (MRO)	ND	42		mg/Kg	1	12/3/2019 7:41:12 PM
Surr: DNOP	76.5	70-130		%Rec	1	12/3/2019 7:41:12 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/3/2019 8:06:24 PM
Surr: BFB	79.3	77.4-118		%Rec	1	12/3/2019 8:06:24 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 8:06:24 PM
Toluene	ND	0.049		mg/Kg	1	12/3/2019 8:06:24 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/3/2019 8:06:24 PM
Xylenes, Total	ND	0.097		mg/Kg	1	12/3/2019 8:06:24 PM
Surr: 4-Bromofluorobenzene	95.4	80-120		%Rec	1	12/3/2019 8:06:24 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	680	60		mg/Kg	20	12/5/2019 10:48:49 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-03

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:20:00 PM

**Lab ID:** 1911D07-006

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	12/3/2019 7:50:14 PM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/3/2019 7:50:14 PM
Surr: DNOP	87.5	70-130		%Rec	1	12/3/2019 7:50:14 PM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	12/3/2019 8:29:17 PM
Surr: BFB	82.1	77.4-118		%Rec	1	12/3/2019 8:29:17 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.023		mg/Kg	1	12/3/2019 8:29:17 PM
Toluene	ND	0.046		mg/Kg	1	12/3/2019 8:29:17 PM
Ethylbenzene	ND	0.046		mg/Kg	1	12/3/2019 8:29:17 PM
Xylenes, Total	ND	0.092		mg/Kg	1	12/3/2019 8:29:17 PM
Surr: 4-Bromofluorobenzene	97.6	80-120		%Rec	1	12/3/2019 8:29:17 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	960	59		mg/Kg	20	12/5/2019 11:01:11 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-05

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:25:00 PM

**Lab ID:** 1911D07-007

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	12/5/2019 7:46:42 AM
Motor Oil Range Organics (MRO)	ND	50		mg/Kg	1	12/5/2019 7:46:42 AM
Surr: DNOP	94.2	70-130		%Rec	1	12/5/2019 7:46:42 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/3/2019 12:11:34 PM
Surr: BFB	82.9	77.4-118		%Rec	1	12/3/2019 12:11:34 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 12:11:34 PM
Toluene	ND	0.048		mg/Kg	1	12/3/2019 12:11:34 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/3/2019 12:11:34 PM
Xylenes, Total	ND	0.096		mg/Kg	1	12/3/2019 12:11:34 PM
Surr: 4-Bromofluorobenzene	96.6	80-120		%Rec	1	12/3/2019 12:11:34 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	790	60		mg/Kg	20	12/5/2019 11:13:32 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BS19-02

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:40:00 PM

**Lab ID:** 1911D07-008

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	8.7		mg/Kg	1	12/5/2019 8:14:12 AM
Motor Oil Range Organics (MRO)	ND	43		mg/Kg	1	12/5/2019 8:14:12 AM
Surr: DNOP	93.6	70-130		%Rec	1	12/5/2019 8:14:12 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	12/3/2019 1:22:12 PM
Surr: BFB	81.4	77.4-118		%Rec	1	12/3/2019 1:22:12 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 1:22:12 PM
Toluene	ND	0.049		mg/Kg	1	12/3/2019 1:22:12 PM
Ethylbenzene	ND	0.049		mg/Kg	1	12/3/2019 1:22:12 PM
Xylenes, Total	ND	0.098		mg/Kg	1	12/3/2019 1:22:12 PM
Surr: 4-Bromofluorobenzene	94.5	80-120		%Rec	1	12/3/2019 1:22:12 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>CJS</b>
Chloride	450	60		mg/Kg	20	12/5/2019 11:25:53 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21a

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:45:00 PM

**Lab ID:** 1911D07-009

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	12/5/2019 8:23:20 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/5/2019 8:23:20 AM
Surr: DNOP	91.6	70-130		%Rec	1	12/5/2019 8:23:20 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/3/2019 2:33:06 PM
Surr: BFB	88.5	77.4-118		%Rec	1	12/3/2019 2:33:06 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 2:33:06 PM
Toluene	ND	0.048		mg/Kg	1	12/3/2019 2:33:06 PM
Ethylbenzene	ND	0.048		mg/Kg	1	12/3/2019 2:33:06 PM
Xylenes, Total	ND	0.096		mg/Kg	1	12/3/2019 2:33:06 PM
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	12/3/2019 2:33:06 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	3000	150		mg/Kg	50	12/6/2019 3:39:26 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
	D Sample Diluted Due to Matrix	E Value above quantitation range
	H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
	ND Not Detected at the Reporting Limit	P Sample pH Not In Range
	PQL Practical Quantitative Limit	RL Reporting Limit
	S % Recovery outside of range due to dilution or matrix	

# Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1911D07

Date Reported: 12/9/2019

**CLIENT:** Vertex Resource Group Ltd.

**Client Sample ID:** BH19-21b

**Project:** Trebuchet 23 28 19 Way 10H

**Collection Date:** 11/26/2019 4:50:00 PM

**Lab ID:** 1911D07-010

**Matrix:** SOIL

**Received Date:** 11/30/2019 11:10:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>						Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.2		mg/Kg	1	12/5/2019 8:32:27 AM
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/5/2019 8:32:27 AM
Surr: DNOP	91.1	70-130		%Rec	1	12/5/2019 8:32:27 AM
<b>EPA METHOD 8015D: GASOLINE RANGE</b>						Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	12/3/2019 2:56:30 PM
Surr: BFB	82.9	77.4-118		%Rec	1	12/3/2019 2:56:30 PM
<b>EPA METHOD 8021B: VOLATILES</b>						Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/3/2019 2:56:30 PM
Toluene	ND	0.047		mg/Kg	1	12/3/2019 2:56:30 PM
Ethylbenzene	ND	0.047		mg/Kg	1	12/3/2019 2:56:30 PM
Xylenes, Total	ND	0.095		mg/Kg	1	12/3/2019 2:56:30 PM
Surr: 4-Bromofluorobenzene	97.4	80-120		%Rec	1	12/3/2019 2:56:30 PM
<b>EPA METHOD 300.0: ANIONS</b>						Analyst: <b>MRA</b>
Chloride	2900	150		mg/Kg	50	12/6/2019 3:51:47 PM

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
 D Sample Diluted Due to Matrix  
 H Holding times for preparation or analysis exceeded  
 ND Not Detected at the Reporting Limit  
 PQL Practical Quantitative Limit  
 S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
 E Value above quantitation range  
 J Analyte detected below quantitation limits  
 P Sample pH Not In Range  
 RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>MB-49183</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49183</b>	RunNo: <b>64987</b>								
Prep Date: <b>12/5/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2228990</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-49183</b>	SampType: <b>ics</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49183</b>	RunNo: <b>64987</b>								
Prep Date: <b>12/5/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2228991</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	95.5	90	110			

**Qualifiers:**

- |   |   |
|---|---|
| * Value exceeds Maximum Contaminant Level.              | B Analyte detected in the associated Method Blank |
| D Sample Diluted Due to Matrix                          | E Value above quantitation range                  |
| H Holding times for preparation or analysis exceeded    | J Analyte detected below quantitation limits      |
| ND Not Detected at the Reporting Limit                  | P Sample pH Not In Range                          |
| PQL Practical Quantitative Limit                        | RL Reporting Limit                                |
| S % Recovery outside of range due to dilution or matrix |   |

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>LCS-49093</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49093</b>	RunNo: <b>64876</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225772</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	44	10	50.00	0	88.2	63.9	124			
Surr: DNOP	3.7		5.000		74.5	70	130			

Sample ID: <b>MB-49093</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49093</b>	RunNo: <b>64876</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225773</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	7.9		10.00		79.3	70	130			

Sample ID: <b>1911D07-007AMS</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS19-05</b>	Batch ID: <b>49112</b>	RunNo: <b>64960</b>								
Prep Date: <b>12/3/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2227794</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	9.7	48.69	0	105	57	142			
Surr: DNOP	5.2		4.869		106	70	130			

Sample ID: <b>1911D07-007AMSD</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>BS19-05</b>	Batch ID: <b>49112</b>	RunNo: <b>64960</b>								
Prep Date: <b>12/3/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2227795</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	53	9.3	46.25	0	115	57	142	4.37	20	
Surr: DNOP	5.8		4.625		125	70	130	0	0	

Sample ID: <b>LCS-49112</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49112</b>	RunNo: <b>64960</b>								
Prep Date: <b>12/3/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2227817</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	58	10	50.00	0	117	63.9	124			
Surr: DNOP	5.2		5.000		105	70	130			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>MB-49112</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49112</b>	RunNo: <b>64960</b>								
Prep Date: <b>12/3/2019</b>	Analysis Date: <b>12/5/2019</b>	SeqNo: <b>2227818</b>			Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	11		10.00		108	70	130			

## Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>mb-49082</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49082</b>		RunNo: <b>64903</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225312</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	880		1000		88.3	77.4	118			

Sample ID: <b>lcs-49082</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49082</b>		RunNo: <b>64903</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225313</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	25.00	0	97.2	80	120			
Surr: BFB	970		1000		96.8	77.4	118			

Sample ID: <b>mb-49097</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49097</b>		RunNo: <b>64902</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225386</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	860		1000		86.4	77.4	118			

Sample ID: <b>lcs-49097</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49097</b>		RunNo: <b>64902</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225387</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	86.3	80	120			
Surr: BFB	960		1000		95.9	77.4	118			

Sample ID: <b>1911d07-007ams</b>	SampType: <b>MS</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>BS19-05</b>	Batch ID: <b>49097</b>		RunNo: <b>64902</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225389</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	24.78	0	96.8	69.1	142			
Surr: BFB	920		991.1		92.9	77.4	118			

Sample ID: <b>1911d07-007amsd</b>	SampType: <b>MSD</b>		TestCode: <b>EPA Method 8015D: Gasoline Range</b>							
Client ID: <b>BS19-05</b>	Batch ID: <b>49097</b>		RunNo: <b>64902</b>							
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>		SeqNo: <b>2225390</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.

**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>1911d07-007amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>BS19-05</b>	Batch ID: <b>49097</b>	RunNo: <b>64902</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225390</b> Units: <b>mg/Kg</b>								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	24	5.0	24.83	0	98.6	69.1	142	2.08	20	
Surr: BFB	930		993.0		93.6	77.4	118	0	0	

## Qualifiers:

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>mb-49082</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49082</b>	RunNo: <b>64903</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225359</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID: <b>LCS-49082</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49082</b>	RunNo: <b>64903</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225360</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.98	0.025	1.000	0	98.4	80	120			
Toluene	0.98	0.050	1.000	0	97.7	80	120			
Ethylbenzene	0.98	0.050	1.000	0	98.4	80	120			
Xylenes, Total	3.0	0.10	3.000	0	99.1	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		110	80	120			

Sample ID: <b>mb-49097</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49097</b>	RunNo: <b>64902</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225412</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		101	80	120			

Sample ID: <b>LCS-49097</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49097</b>	RunNo: <b>64902</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225413</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.93	0.025	1.000	0	93.0	80	120			
Toluene	0.95	0.050	1.000	0	94.8	80	120			
Ethylbenzene	0.95	0.050	1.000	0	94.5	80	120			
Xylenes, Total	2.9	0.10	3.000	0	95.1	80	120			
Surr: 4-Bromofluorobenzene	1.1		1.000		108	80	120			

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: 1911D07

09-Dec-19

**Client:** Vertex Resource Group Ltd.  
**Project:** Trebuchet 23 28 19 Way 10H

Sample ID: <b>1911d07-008ams</b>	SampType: <b>MS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS19-02</b>	Batch ID: <b>49097</b>	RunNo: <b>64902</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225416</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	0.9940	0	104	76	123			
Toluene	1.1	0.050	0.9940	0.01106	107	80.3	127			
Ethylbenzene	1.1	0.050	0.9940	0	110	80.2	131			
Xylenes, Total	3.3	0.099	2.982	0.01595	111	78	133			
Surr: 4-Bromofluorobenzene	0.99		0.9940		99.4	80	120			

Sample ID: <b>1911d07-008amsd</b>	SampType: <b>MSD</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>BS19-02</b>	Batch ID: <b>49097</b>	RunNo: <b>64902</b>								
Prep Date: <b>12/2/2019</b>	Analysis Date: <b>12/3/2019</b>	SeqNo: <b>2225417</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.99	0.025	0.9901	0	99.9	76	123	4.52	20	
Toluene	1.0	0.050	0.9901	0.01106	104	80.3	127	3.33	20	
Ethylbenzene	1.0	0.050	0.9901	0	106	80.2	131	4.12	20	
Xylenes, Total	3.2	0.099	2.970	0.01595	107	78	133	4.12	20	
Surr: 4-Bromofluorobenzene	0.95		0.9901		95.5	80	120	0	0	

**Qualifiers:**

- \* Value exceeds Maximum Contaminant Level.
- D Sample Diluted Due to Matrix
- H Holding times for preparation or analysis exceeded
- ND Not Detected at the Reporting Limit
- PQL Practical Quantitative Limit
- S % Recovery outside of range due to dilution or matrix
- B Analyte detected in the associated Method Blank
- E Value above quantitation range
- J Analyte detected below quantitation limits
- P Sample pH Not In Range
- RL Reporting Limit

Client Name: VERTEX CARLSBAD

Work Order Number: 1911D07

RcptNo: 1

Received By: Erin Melendrez

11/30/2019 11:10:00 AM

*EM*

Completed By: Erin Melendrez

11/30/2019 2:37:14 PM

*EM*

Reviewed By: ENM

12/2/19

**Chain of Custody**

1. Is Chain of Custody complete? Yes  No  Not Present
2. How was the sample delivered? FedEx

**Log In**

3. Was an attempt made to cool the samples? Yes  No  NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes  No  NA
5. Sample(s) in proper container(s)? Yes  No
6. Sufficient sample volume for indicated test(s)? Yes  No
7. Are samples (except VOA and ONG) properly preserved? Yes  No
8. Was preservative added to bottles? Yes  No  NA
9. VOA vials have zero headspace? Yes  No  No VOA Vials
10. Were any sample containers received broken? Yes  No
11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)
12. Are matrices correctly identified on Chain of Custody? Yes  No
13. Is it clear what analyses were requested? Yes  No
14. Were all holding times able to be met? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: JR #12/2/19

**Special Handling (if applicable)**

15. Was client notified of all discrepancies with this order? Yes  No  NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	3.0	Good	Yes			
2	3.6	Good	Yes			

# Chain-of-Custody Record

Client: **VECTRA RESOURCE SERVICES**

Mailing Address: **ON FILE**

Phone #: **ON FILE**

email or Fax#: **ON FILE**

QA/QC Package:  
 Standard  Level 4 (Full Validation)

Accreditation:  Az Compliance  
 NELAC  Other

EDD (Type)

Turn-Around Time: **5 day Turn**  
 Standard  Rush

Project Name: **TREBUCKET 23 2819 WAY IDH**

Project #: **19E-03840-6051E**

Project Manager: **NATHALIE GORDON**

Sampler: **SPARC HARVESTER**  
 On Ice:  Yes  No

# of Coolers: **2**  
 Cooler Temp (indicate on): **3.0-0.0CF = 3.0°C**

Container Preservative Type: **ICE**

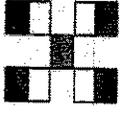
Container Type and #

HEAL No. **9110057**

Date	Time	Matrix	Sample Name	Container Type and #	Preservative Type	HEAL No.	Analysis Request
11/26	14:50	S	WS19-13	JAR	ICE	-001	BTEX MTBE / TMB's (8021) <input checked="" type="checkbox"/> TPH:8015D(GRO / DRO / MRO) <input checked="" type="checkbox"/> 8081 Pesticides/8082 PCBs <input checked="" type="checkbox"/> EDB (Method 504.1) <input checked="" type="checkbox"/> PAHs by 8310 or 8270SIMS <input checked="" type="checkbox"/> RCRA 8 Metals <input checked="" type="checkbox"/> Cl <sup>-</sup> , Br <sup>-</sup> , NO <sub>3</sub> <sup>-</sup> , NO <sub>2</sub> <sup>-</sup> , PO <sub>4</sub> <sup>-</sup> , SO <sub>4</sub> <sup>-</sup> <input checked="" type="checkbox"/> 8260 (VOA) <input checked="" type="checkbox"/> 8270 (Semi-VOA) <input checked="" type="checkbox"/> Total Coliform (Present/Absent) <input checked="" type="checkbox"/>
	15:55		BS19-04			-002	<input checked="" type="checkbox"/>
	16:00		BS19-07			-003	<input checked="" type="checkbox"/>
	16:05		BS19-08			-004	<input checked="" type="checkbox"/>
	16:15		BS19-01			-005	<input checked="" type="checkbox"/>
	16:20		BS19-03			-006	<input checked="" type="checkbox"/>
	16:25		BS19-05			-007	<input checked="" type="checkbox"/>
	16:40		BS19-02			-008	<input checked="" type="checkbox"/>
	16:45		BH19-21a			-009	<input checked="" type="checkbox"/>
	16:50		BH19-21b			-010	<input checked="" type="checkbox"/>

Date: **11/27 11:45** Relinquished by: *[Signature]*  
 Date: **11/27 11:50** Received by: *[Signature]*  
 Date: **11/27 17:00** Relinquished by: *[Signature]*  
 Date: **11/30/19 11:10** Received by: *[Signature]*  
 Via: **FEDEX**

Remarks:



**HALL ENVIRONMENTAL ANALYSIS LABORATORY**

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4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request