

August 23, 2016

EnCana Oil & Gas - Parachute, CO

Sample Delivery Group: L853661
Samples Received: 08/16/2016
Project Number: M23
Description: M23 Pit
Site: M23
Report To: Brett Middleton
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:



Shane Gambill
Technical Service Representative

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by ESC is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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¹ Cp
² Tc
³ Ss
⁴ Cn
⁵ Sr
⁶ Gl
⁷ Al
⁸ Sc

SAMPLE SUMMARY



20160815-M23 PIT SBN 5 FT L853661-01 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 10:40

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG900567	10	08/19/16 23:14	08/20/16 12:32	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 18:37	DWR

1
Cp

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Al

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20160815-M23 PIT SBN 8-10 FT L853661-02 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 10:50

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG899535	1	08/17/16 17:05	08/18/16 16:40	ST
Calculated Results	WG899779	1	08/20/16 08:40	08/22/16 12:58	CCE
Mercury by Method 7471A	WG899350	1	08/16/16 15:11	08/17/16 14:30	TRB
Metals (ICP) by Method 6010B	WG899779	1	08/20/16 08:40	08/22/16 12:58	CCE
Metals (ICP) by Method 6010B	WG899779	10	08/20/16 08:40	08/22/16 19:49	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG899836	10	08/18/16 00:33	08/19/16 06:16	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/18/16 23:12	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 19:00	DWR
Wet Chemistry by Method 3060A/7196A	WG899394	1	08/17/16 08:07	08/17/16 14:05	KK
Wet Chemistry by Method 9045D	WG899712	1	08/19/16 10:18	08/19/16 10:18	KK
Wet Chemistry by Method 9050AMod	WG899377	1	08/17/16 00:34	08/17/16 00:34	JLJ

20160815-M23 PIT SBN 13-15 FT L853661-03 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 10:55

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG899535	1	08/17/16 17:05	08/18/16 16:43	ST
Calculated Results	WG899779	1	08/20/16 08:40	08/22/16 13:01	CCE
Mercury by Method 7471A	WG899350	1	08/16/16 15:11	08/17/16 14:33	TRB
Metals (ICP) by Method 6010B	WG899779	1	08/20/16 08:40	08/22/16 13:01	CCE
Metals (ICP) by Method 6010B	WG899779	5	08/20/16 08:40	08/22/16 19:52	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG899836	2	08/18/16 00:33	08/19/16 04:52	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	20	08/18/16 12:42	08/19/16 02:45	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 19:22	DWR
Wet Chemistry by Method 3060A/7196A	WG899394	1	08/17/16 08:07	08/17/16 14:06	KK
Wet Chemistry by Method 9045D	WG899712	1	08/19/16 10:18	08/19/16 10:18	KK
Wet Chemistry by Method 9050AMod	WG899377	1	08/17/16 00:34	08/17/16 00:34	JLJ

20160815-M23 PIT SBS 5 FT L853661-04 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 11:40

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/19/16 01:26	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 19:45	DWR

20160815-M23 PIT SBS 9 FT L853661-05 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 12:00

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG900567	5	08/19/16 23:14	08/20/16 11:59	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 20:07	DWR

SAMPLE SUMMARY



20160815-M23 PIT SBS 13 FT L853661-06 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 12:15
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG899535	1	08/17/16 17:05	08/18/16 16:45	ST
Calculated Results	WG899779	1	08/20/16 08:40	08/22/16 13:10	CCE
Mercury by Method 7471A	WG899350	1	08/16/16 15:11	08/17/16 14:36	TRB
Metals (ICP) by Method 6010B	WG899779	1	08/20/16 08:40	08/22/16 13:10	CCE
Metals (ICP) by Method 6010B	WG899779	10	08/20/16 08:40	08/22/16 19:55	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG899836	10	08/18/16 00:33	08/19/16 07:19	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	20	08/18/16 12:42	08/19/16 03:18	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 20:29	DWR
Wet Chemistry by Method 3060A/7196A	WG899394	1	08/17/16 08:07	08/17/16 14:11	KK
Wet Chemistry by Method 9045D	WG899712	1	08/19/16 10:18	08/19/16 10:18	KK
Wet Chemistry by Method 9050AMod	WG899377	1	08/17/16 00:34	08/17/16 00:34	JLJ

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20160815-M23 PIT SBS 17 FT L853661-07 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 12:20
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG900567	10	08/19/16 23:14	08/20/16 12:44	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 20:52	DWR

20160815-M23 PIT SBNE1 6 FT L853661-08 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 12:35
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	20	08/18/16 12:42	08/19/16 03:07	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/20/16 21:14	DWR

20160815-M23 PIT SBNE1 12 FT L853661-09 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 13:10
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/19/16 02:00	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 14:32	DWR

20160815-M23 PIT SBNE2 6 FT L853661-10 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 13:35
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/18/16 23:57	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 14:55	DWR

20160815-M23 PIT SBNE2 12 FT L853661-11 Solid

Collected by
Matt Kasten
Collected date/time
08/15/16 13:45
Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG899535	1	08/17/16 17:05	08/18/16 16:48	ST
Calculated Results	WG899779	1	08/20/16 08:40	08/22/16 13:13	CCE
Mercury by Method 7471A	WG899350	1	08/16/16 15:11	08/17/16 14:38	TRB
Metals (ICP) by Method 6010B	WG899779	1	08/20/16 08:40	08/22/16 13:13	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG899836	2	08/18/16 00:33	08/19/16 05:13	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	1	08/18/16 12:42	08/18/16 22:39	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 15:17	DWR

SAMPLE SUMMARY



20160815-M23 PIT SBNE2 12 FT L853661-11 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 13:45

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 3060A/7196A	WG899394	1	08/17/16 08:07	08/17/16 14:11	KK
Wet Chemistry by Method 9045D	WG899712	1	08/19/16 10:18	08/19/16 10:18	KK
Wet Chemistry by Method 9050AMod	WG899377	1	08/17/16 00:34	08/17/16 00:34	JLJ

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20160815-M23 PIT SBSE2 6 FT L853661-12 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 14:15

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/19/16 00:08	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 15:39	DWR

20160815-M23 PIT SBSE2 12 FT L853661-13 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 14:20

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/19/16 00:53	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 16:02	DWR

20160815-M23 PIT SBSE1 6FT L853661-14 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 14:50

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Semi-Volatile Organic Compounds (GC) by Method 8015	WG900567	5	08/19/16 23:14	08/20/16 12:21	DMG
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 16:24	DWR

20160815-M23 PIT SBSE1 12 FT L853661-15 Solid

Collected by
Matt Kasten

Collected date/time
08/15/16 15:00

Received date/time
08/16/16 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Calculated Results	WG899535	1	08/17/16 17:05	08/18/16 16:51	ST
Calculated Results	WG899779	1	08/20/16 08:40	08/22/16 13:16	CCE
Mercury by Method 7471A	WG899350	1	08/16/16 15:11	08/17/16 14:41	TRB
Metals (ICP) by Method 6010B	WG899779	1	08/20/16 08:40	08/22/16 13:16	CCE
Metals (ICP) by Method 6010B	WG899779	5	08/20/16 08:40	08/22/16 19:57	CCE
Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM	WG899836	10	08/18/16 00:33	08/19/16 07:40	KMP
Semi-Volatile Organic Compounds (GC) by Method 8015	WG899832	10	08/18/16 12:42	08/18/16 23:35	ACM
Volatile Organic Compounds (GC) by Method 8015/8021	WG900603	1	08/20/16 09:52	08/21/16 16:46	DWR
Wet Chemistry by Method 3060A/7196A	WG899394	1	08/17/16 08:07	08/17/16 14:12	KK
Wet Chemistry by Method 9045D	WG899712	1	08/19/16 10:18	08/19/16 10:18	KK
Wet Chemistry by Method 9050AMod	WG899377	1	08/17/16 00:34	08/17/16 00:34	JLJ



All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Shane Gambill
 Technical Service Representative

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Gl
- ⁷ Al
- ⁸ Sc

Sample Handling and Receiving

The following samples were prepared and/or analyzed past recommended holding time. Concentrations should be considered minimum values.

<u>ESC Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L853661-02	20160815-M23 PIT SBN 8-10 FT	9045D
L853661-03	20160815-M23 PIT SBN 13-15 FT	9045D
L853661-06	20160815-M23 PIT SBS 13 FT	9045D
L853661-11	20160815-M23 PIT SBNE2 12 FT	9045D
L853661-15	20160815-M23 PIT SBSE1 12 FT	9045D



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00115	<u>J6</u>	0.000500	1	08/20/2016 18:37	WG900603
Toluene	ND	<u>J6</u>	0.00500	1	08/20/2016 18:37	WG900603
Ethylbenzene	0.000780	<u>J3</u>	0.000500	1	08/20/2016 18:37	WG900603
Total Xylene	0.00294	<u>B J6</u>	0.00150	1	08/20/2016 18:37	WG900603
TPH (GC/FID) Low Fraction	0.102		0.100	1	08/20/2016 18:37	WG900603
(S) a,a,a-Trifluorotoluene(FID)	98.2		59.0-128		08/20/2016 18:37	WG900603
(S) a,a,a-Trifluorotoluene(PID)	90.3		54.0-144		08/20/2016 18:37	WG900603

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	109		40.0	10	08/20/2016 12:32	WG900567
(S) o-Terphenyl	60.6		50.0-150		08/20/2016 12:32	WG900567



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	13.0		1	08/18/2016 16:40	WG899535

1 Cp

2 Tc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Trivalent	21.6		2.00	1	08/22/2016 12:58	WG899779

3 Ss

4 Cn

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	08/17/2016 14:05	WG899394

5 Sr

6 Gl

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.70		1	08/19/2016 10:18	WG899712

7 Al

8 Sc

Sample Narrative:

9045D L853661-02 WG899712: 8.70 at 20.2c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	2040		1	08/17/2016 00:34	WG899377

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0752		0.0200	1	08/17/2016 14:30	WG899350

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.64		2.00	1	08/22/2016 12:58	WG899779
Barium	4700		5.00	10	08/22/2016 19:49	WG899779
Cadmium	ND		0.500	1	08/22/2016 12:58	WG899779
Chromium	21.6		1.00	1	08/22/2016 12:58	WG899779
Copper	13.6		2.00	1	08/22/2016 12:58	WG899779
Lead	10.4		0.500	1	08/22/2016 12:58	WG899779
Nickel	14.3		2.00	1	08/22/2016 12:58	WG899779
Selenium	ND		2.00	1	08/22/2016 12:58	WG899779
Silver	ND		1.00	1	08/22/2016 12:58	WG899779
Zinc	35.5		5.00	1	08/22/2016 12:58	WG899779

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00176		0.000500	1	08/20/2016 19:00	WG900603
Toluene	ND		0.00500	1	08/20/2016 19:00	WG900603
Ethylbenzene	0.00181		0.000500	1	08/20/2016 19:00	WG900603
Total Xylene	0.00627		0.00150	1	08/20/2016 19:00	WG900603
TPH (GC/FID) Low Fraction	0.389		0.100	1	08/20/2016 19:00	WG900603



Collected date/time: 08/15/16 10:50

L853661

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) a,a,a-Trifluorotoluene(FID)	95.0		59.0-128		08/20/2016 19:00	WG900603
(S) a,a,a-Trifluorotoluene(PID)	88.8		54.0-144		08/20/2016 19:00	WG900603

1 Cp

2 Tc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	94.1		40.0	10	08/18/2016 23:12	WG899832
(S) o-Terphenyl	55.2		50.0-150		08/18/2016 23:12	WG899832

3 Ss

4 Cn

5 Sr

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0600	10	08/19/2016 06:16	WG899836
Acenaphthene	ND		0.0600	10	08/19/2016 06:16	WG899836
Acenaphthylene	ND		0.0600	10	08/19/2016 06:16	WG899836
Benzo(a)anthracene	ND		0.0600	10	08/19/2016 06:16	WG899836
Benzo(a)pyrene	ND		0.0600	10	08/19/2016 06:16	WG899836
Benzo(b)fluoranthene	ND		0.0600	10	08/19/2016 06:16	WG899836
Benzo(g,h,i)perylene	ND		0.0600	10	08/19/2016 06:16	WG899836
Benzo(k)fluoranthene	ND		0.0600	10	08/19/2016 06:16	WG899836
Chrysene	ND		0.0600	10	08/19/2016 06:16	WG899836
Dibenz(a,h)anthracene	ND		0.0600	10	08/19/2016 06:16	WG899836
Fluoranthene	0.0675	J3	0.0600	10	08/19/2016 06:16	WG899836
Fluorene	ND		0.0600	10	08/19/2016 06:16	WG899836
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	08/19/2016 06:16	WG899836
Naphthalene	0.241		0.200	10	08/19/2016 06:16	WG899836
Phenanthrene	0.0767		0.0600	10	08/19/2016 06:16	WG899836
Pyrene	ND		0.0600	10	08/19/2016 06:16	WG899836
1-Methylnaphthalene	0.233		0.200	10	08/19/2016 06:16	WG899836
2-Methylnaphthalene	0.360		0.200	10	08/19/2016 06:16	WG899836
2-Chloronaphthalene	ND		0.200	10	08/19/2016 06:16	WG899836
(S) p-Terphenyl-d14	69.9		32.2-131		08/19/2016 06:16	WG899836
(S) Nitrobenzene-d5	197	J1	22.1-146		08/19/2016 06:16	WG899836
(S) 2-Fluorobiphenyl	96.1		40.6-122		08/19/2016 06:16	WG899836

6 Gl

7 Al

8 Sc

Sample Narrative:

8270C-SIM L853661-02 WG899836: Dilution due to matrix



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	24.9		1	08/18/2016 16:43	WG899535

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Trivalent	29.1		2.00	1	08/22/2016 13:01	WG899779

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND	J6 O1	2.00	1	08/17/2016 14:06	WG899394

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.52		1	08/19/2016 10:18	WG899712

Sample Narrative:

9045D L853661-03 WG899712: 7.52 at 20.3c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	1630		1	08/17/2016 00:34	WG899377

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.0307		0.0200	1	08/17/2016 14:33	WG899350

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.02		2.00	1	08/22/2016 13:01	WG899779
Barium	1040		2.50	5	08/22/2016 19:52	WG899779
Cadmium	ND		0.500	1	08/22/2016 13:01	WG899779
Chromium	29.1		1.00	1	08/22/2016 13:01	WG899779
Copper	15.3		2.00	1	08/22/2016 13:01	WG899779
Lead	14.1		0.500	1	08/22/2016 13:01	WG899779
Nickel	17.9		2.00	1	08/22/2016 13:01	WG899779
Selenium	2.15		2.00	1	08/22/2016 13:01	WG899779
Silver	ND		1.00	1	08/22/2016 13:01	WG899779
Zinc	52.2		5.00	1	08/22/2016 13:01	WG899779

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00220		0.000500	1	08/20/2016 19:22	WG900603
Toluene	ND		0.00500	1	08/20/2016 19:22	WG900603
Ethylbenzene	0.0361		0.000500	1	08/20/2016 19:22	WG900603
Total Xylene	ND		0.00150	1	08/20/2016 19:22	WG900603
TPH (GC/FID) Low Fraction	9.06		0.100	1	08/20/2016 19:22	WG900603



Collected date/time: 08/15/16 10:55

L853661

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) a,a,a-Trifluorotoluene(FID)	86.5		59.0-128		08/20/2016 19:22	WG900603
(S) a,a,a-Trifluorotoluene(PID)	81.2		54.0-144		08/20/2016 19:22	WG900603

1 Cp

2 Tc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	1190		80.0	20	08/19/2016 02:45	WG899832
(S) o-Terphenyl	138		50.0-150		08/19/2016 02:45	WG899832

3 Ss

4 Cn

5 Sr

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0642		0.0120	2	08/19/2016 04:52	WG899836
Acenaphthene	0.0657		0.0120	2	08/19/2016 04:52	WG899836
Acenaphthylene	0.0161		0.0120	2	08/19/2016 04:52	WG899836
Benzo(a)anthracene	ND		0.0120	2	08/19/2016 04:52	WG899836
Benzo(a)pyrene	ND		0.0120	2	08/19/2016 04:52	WG899836
Benzo(b)fluoranthene	ND		0.0120	2	08/19/2016 04:52	WG899836
Benzo(g,h,i)perylene	ND		0.0120	2	08/19/2016 04:52	WG899836
Benzo(k)fluoranthene	ND		0.0120	2	08/19/2016 04:52	WG899836
Chrysene	ND		0.0120	2	08/19/2016 04:52	WG899836
Dibenz(a,h)anthracene	ND		0.0120	2	08/19/2016 04:52	WG899836
Fluoranthene	ND	J3	0.0120	2	08/19/2016 04:52	WG899836
Fluorene	0.239		0.0120	2	08/19/2016 04:52	WG899836
Indeno(1,2,3-cd)pyrene	ND		0.0120	2	08/19/2016 04:52	WG899836
Naphthalene	0.439		0.0400	2	08/19/2016 04:52	WG899836
Phenanthrene	0.171		0.0120	2	08/19/2016 04:52	WG899836
Pyrene	0.0259		0.0120	2	08/19/2016 04:52	WG899836
1-Methylnaphthalene	0.751		0.0400	2	08/19/2016 04:52	WG899836
2-Methylnaphthalene	1.28		0.0400	2	08/19/2016 04:52	WG899836
2-Chloronaphthalene	ND		0.0400	2	08/19/2016 04:52	WG899836
(S) p-Terphenyl-d14	64.9		32.2-131		08/19/2016 04:52	WG899836
(S) Nitrobenzene-d5	94.7		22.1-146		08/19/2016 04:52	WG899836
(S) 2-Fluorobiphenyl	91.1		40.6-122		08/19/2016 04:52	WG899836

6 Gl

7 Al

8 Sc

Sample Narrative:

8270C-SIM L853661-03 WG899836: Dilution due to matrix



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00160		0.000500	1	08/20/2016 19:45	WG900603
Toluene	ND		0.00500	1	08/20/2016 19:45	WG900603
Ethylbenzene	0.00156		0.000500	1	08/20/2016 19:45	WG900603
Total Xylene	0.00565		0.00150	1	08/20/2016 19:45	WG900603
TPH (GC/FID) Low Fraction	0.262		0.100	1	08/20/2016 19:45	WG900603
(S) a,a,a-Trifluorotoluene(FID)	96.5		59.0-128		08/20/2016 19:45	WG900603
(S) a,a,a-Trifluorotoluene(PID)	89.7		54.0-144		08/20/2016 19:45	WG900603

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	66.7		40.0	10	08/19/2016 01:26	WG899832
(S) o-Terphenyl	66.5		50.0-150		08/19/2016 01:26	WG899832



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00147		0.000500	1	08/20/2016 20:07	WG900603
Toluene	ND		0.00500	1	08/20/2016 20:07	WG900603
Ethylbenzene	0.00246		0.000500	1	08/20/2016 20:07	WG900603
Total Xylene	0.00875		0.00150	1	08/20/2016 20:07	WG900603
TPH (GC/FID) Low Fraction	0.443		0.100	1	08/20/2016 20:07	WG900603
(S) a,a,a-Trifluorotoluene(FID)	92.7		59.0-128		08/20/2016 20:07	WG900603
(S) a,a,a-Trifluorotoluene(PID)	87.9		54.0-144		08/20/2016 20:07	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	53.1		20.0	5	08/20/2016 11:59	WG900567
(S) o-Terphenyl	44.2	J2	50.0-150		08/20/2016 11:59	WG900567

6 Gl

7 Al

8 Sc

Sample Narrative:

8015 L853661-05 WG900567: Duplicate analysis was performed.



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	9.22		1	08/18/2016 16:45	WG899535

1 Cp

2 Tc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Trivalent	19.0		2.00	1	08/22/2016 13:10	WG899779

3 Ss

4 Cn

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	08/17/2016 14:11	WG899394

5 Sr

6 Gl

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.54		1	08/19/2016 10:18	WG899712

7 Al

8 Sc

Sample Narrative:

9045D L853661-06 WG899712: 8.54 at 19.7c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	1070		1	08/17/2016 00:34	WG899377

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	08/17/2016 14:36	WG899350

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	4.28		2.00	1	08/22/2016 13:10	WG899779
Barium	7230		5.00	10	08/22/2016 19:55	WG899779
Cadmium	0.616		0.500	1	08/22/2016 13:10	WG899779
Chromium	19.0		1.00	1	08/22/2016 13:10	WG899779
Copper	13.4		2.00	1	08/22/2016 13:10	WG899779
Lead	15.0		0.500	1	08/22/2016 13:10	WG899779
Nickel	12.6		2.00	1	08/22/2016 13:10	WG899779
Selenium	2.41		2.00	1	08/22/2016 13:10	WG899779
Silver	ND		1.00	1	08/22/2016 13:10	WG899779
Zinc	44.3		5.00	1	08/22/2016 13:10	WG899779

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00443		0.000500	1	08/20/2016 20:29	WG900603
Toluene	ND		0.00500	1	08/20/2016 20:29	WG900603
Ethylbenzene	0.00181		0.000500	1	08/20/2016 20:29	WG900603
Total Xylene	0.00735		0.00150	1	08/20/2016 20:29	WG900603
TPH (GC/FID) Low Fraction	0.782		0.100	1	08/20/2016 20:29	WG900603



Collected date/time: 08/15/16 12:15

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Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) a,a,a-Trifluorotoluene(FID)	92.1		59.0-128		08/20/2016 20:29	WG900603
(S) a,a,a-Trifluorotoluene(PID)	85.0		54.0-144		08/20/2016 20:29	WG900603

1 Cp

2 Tc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	261		80.0	20	08/19/2016 03:18	WG899832
(S) o-Terphenyl	0.000	J7	50.0-150		08/19/2016 03:18	WG899832

3 Ss

4 Cn

5 Sr

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0600	10	08/19/2016 07:19	WG899836
Acenaphthene	ND		0.0600	10	08/19/2016 07:19	WG899836
Acenaphthylene	ND		0.0600	10	08/19/2016 07:19	WG899836
Benzo(a)anthracene	ND		0.0600	10	08/19/2016 07:19	WG899836
Benzo(a)pyrene	ND		0.0600	10	08/19/2016 07:19	WG899836
Benzo(b)fluoranthene	ND		0.0600	10	08/19/2016 07:19	WG899836
Benzo(g,h,i)perylene	ND		0.0600	10	08/19/2016 07:19	WG899836
Benzo(k)fluoranthene	ND		0.0600	10	08/19/2016 07:19	WG899836
Chrysene	ND		0.0600	10	08/19/2016 07:19	WG899836
Dibenz(a,h)anthracene	ND		0.0600	10	08/19/2016 07:19	WG899836
Fluoranthene	ND	J3	0.0600	10	08/19/2016 07:19	WG899836
Fluorene	0.0765		0.0600	10	08/19/2016 07:19	WG899836
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	08/19/2016 07:19	WG899836
Naphthalene	0.240		0.200	10	08/19/2016 07:19	WG899836
Phenanthrene	0.0877		0.0600	10	08/19/2016 07:19	WG899836
Pyrene	ND		0.0600	10	08/19/2016 07:19	WG899836
1-Methylnaphthalene	0.307		0.200	10	08/19/2016 07:19	WG899836
2-Methylnaphthalene	0.549		0.200	10	08/19/2016 07:19	WG899836
2-Chloronaphthalene	ND		0.200	10	08/19/2016 07:19	WG899836
(S) p-Terphenyl-d14	74.1		32.2-131		08/19/2016 07:19	WG899836
(S) Nitrobenzene-d5	243	J1	22.1-146		08/19/2016 07:19	WG899836
(S) 2-Fluorobiphenyl	106		40.6-122		08/19/2016 07:19	WG899836

6 Gl

7 Al

8 Sc

Sample Narrative:

8270C-SIM L853661-06 WG899836: Dilution due to matrix



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00309		0.000500	1	08/20/2016 20:52	WG900603
Toluene	ND		0.00500	1	08/20/2016 20:52	WG900603
Ethylbenzene	0.00126		0.000500	1	08/20/2016 20:52	WG900603
Total Xylene	0.00472		0.00150	1	08/20/2016 20:52	WG900603
TPH (GC/FID) Low Fraction	0.242		0.100	1	08/20/2016 20:52	WG900603
(S) a,a,a-Trifluorotoluene(FID)	95.7		59.0-128		08/20/2016 20:52	WG900603
(S) a,a,a-Trifluorotoluene(PID)	88.6		54.0-144		08/20/2016 20:52	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	124		40.0	10	08/20/2016 12:44	WG900567
(S) o-Terphenyl	60.5		50.0-150		08/20/2016 12:44	WG900567

6 Gl

7 Al

8 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00172		0.000500	1	08/20/2016 21:14	WG900603
Toluene	ND		0.00500	1	08/20/2016 21:14	WG900603
Ethylbenzene	0.00131		0.000500	1	08/20/2016 21:14	WG900603
Total Xylene	0.00522		0.00150	1	08/20/2016 21:14	WG900603
TPH (GC/FID) Low Fraction	0.338		0.100	1	08/20/2016 21:14	WG900603
(S) a,a,a-Trifluorotoluene(FID)	96.6		59.0-128		08/20/2016 21:14	WG900603
(S) a,a,a-Trifluorotoluene(PID)	89.8		54.0-144		08/20/2016 21:14	WG900603

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	326		80.0	20	08/19/2016 03:07	WG899832
(S) o-Terphenyl	0.000	J7	50.0-150		08/19/2016 03:07	WG899832



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Benzene	0.00207		0.000500	1	08/21/2016 14:32	WG900603
Toluene	ND		0.00500	1	08/21/2016 14:32	WG900603
Ethylbenzene	0.00128		0.000500	1	08/21/2016 14:32	WG900603
Total Xylene	0.00488		0.00150	1	08/21/2016 14:32	WG900603
TPH (GC/FID) Low Fraction	0.258		0.100	1	08/21/2016 14:32	WG900603
(S) a,a,a-Trifluorotoluene(FID)	97.4		59.0-128		08/21/2016 14:32	WG900603
(S) a,a,a-Trifluorotoluene(PID)	90.3		54.0-144		08/21/2016 14:32	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	68.2		40.0	10	08/19/2016 02:00	WG899832
(S) o-Terphenyl	67.2		50.0-150		08/19/2016 02:00	WG899832

6 Gl

7 Al

8 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00232		0.000500	1	08/21/2016 14:55	WG900603
Toluene	0.00662		0.00500	1	08/21/2016 14:55	WG900603
Ethylbenzene	0.00349		0.000500	1	08/21/2016 14:55	WG900603
Total Xylene	0.0148		0.00150	1	08/21/2016 14:55	WG900603
TPH (GC/FID) Low Fraction	0.716		0.100	1	08/21/2016 14:55	WG900603
<i>(S) a,a,a-Trifluorotoluene(FID)</i>	92.2		59.0-128		08/21/2016 14:55	WG900603
<i>(S) a,a,a-Trifluorotoluene(PID)</i>	89.4		54.0-144		08/21/2016 14:55	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	238		40.0	10	08/18/2016 23:57	WG899832
<i>(S) o-Terphenyl</i>	62.4		50.0-150		08/18/2016 23:57	WG899832

6 Gl

7 Al

8 Sc



Collected date/time: 08/15/16 13:45

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Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	16.8		1	08/18/2016 16:48	WG899535

1 Cp

2 Tc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Trivalent	29.4		2.00	1	08/22/2016 13:13	WG899779

3 Ss

4 Cn

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	08/17/2016 14:11	WG899394

5 Sr

6 Gl

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	7.34		1	08/19/2016 10:18	WG899712

7 Al

8 Sc

Sample Narrative:

9045D L853661-11 WG899712: 7.34 at 19.8c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	1450		1	08/17/2016 00:34	WG899377

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	08/17/2016 14:38	WG899350

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	3.28		2.00	1	08/22/2016 13:13	WG899779
Barium	721		0.500	1	08/22/2016 13:13	WG899779
Cadmium	ND		0.500	1	08/22/2016 13:13	WG899779
Chromium	29.4		1.00	1	08/22/2016 13:13	WG899779
Copper	14.4		2.00	1	08/22/2016 13:13	WG899779
Lead	14.0		0.500	1	08/22/2016 13:13	WG899779
Nickel	17.5		2.00	1	08/22/2016 13:13	WG899779
Selenium	2.16		2.00	1	08/22/2016 13:13	WG899779
Silver	ND		1.00	1	08/22/2016 13:13	WG899779
Zinc	50.7		5.00	1	08/22/2016 13:13	WG899779

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00214		0.000500	1	08/21/2016 15:17	WG900603
Toluene	ND		0.00500	1	08/21/2016 15:17	WG900603
Ethylbenzene	0.000879		0.000500	1	08/21/2016 15:17	WG900603
Total Xylene	0.00325		0.00150	1	08/21/2016 15:17	WG900603
TPH (GC/FID) Low Fraction	0.961		0.100	1	08/21/2016 15:17	WG900603



Collected date/time: 08/15/16 13:45

L853661

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) a,a,a-Trifluorotoluene(FID)	97.9		59.0-128		08/21/2016 15:17	WG900603
(S) a,a,a-Trifluorotoluene(PID)	91.1		54.0-144		08/21/2016 15:17	WG900603

1 Cp

2 Tc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	63.3		4.00	1	08/18/2016 22:39	WG899832
(S) o-Terphenyl	70.8		50.0-150		08/18/2016 22:39	WG899832

3 Ss

4 Cn

5 Sr

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	0.0169		0.0120	2	08/19/2016 05:13	WG899836
Acenaphthene	0.0201		0.0120	2	08/19/2016 05:13	WG899836
Acenaphthylene	ND		0.0120	2	08/19/2016 05:13	WG899836
Benzo(a)anthracene	ND		0.0120	2	08/19/2016 05:13	WG899836
Benzo(a)pyrene	ND		0.0120	2	08/19/2016 05:13	WG899836
Benzo(b)fluoranthene	ND		0.0120	2	08/19/2016 05:13	WG899836
Benzo(g,h,i)perylene	ND		0.0120	2	08/19/2016 05:13	WG899836
Benzo(k)fluoranthene	ND		0.0120	2	08/19/2016 05:13	WG899836
Chrysene	ND		0.0120	2	08/19/2016 05:13	WG899836
Dibenz(a,h)anthracene	ND		0.0120	2	08/19/2016 05:13	WG899836
Fluoranthene	ND	J3	0.0120	2	08/19/2016 05:13	WG899836
Fluorene	0.0585		0.0120	2	08/19/2016 05:13	WG899836
Indeno(1,2,3-cd)pyrene	ND		0.0120	2	08/19/2016 05:13	WG899836
Naphthalene	0.0704		0.0400	2	08/19/2016 05:13	WG899836
Phenanthrene	0.0441		0.0120	2	08/19/2016 05:13	WG899836
Pyrene	ND		0.0120	2	08/19/2016 05:13	WG899836
1-Methylnaphthalene	0.154		0.0400	2	08/19/2016 05:13	WG899836
2-Methylnaphthalene	0.254		0.0400	2	08/19/2016 05:13	WG899836
2-Chloronaphthalene	ND		0.0400	2	08/19/2016 05:13	WG899836
(S) p-Terphenyl-d14	57.9		32.2-131		08/19/2016 05:13	WG899836
(S) Nitrobenzene-d5	234	J1	22.1-146		08/19/2016 05:13	WG899836
(S) 2-Fluorobiphenyl	77.6		40.6-122		08/19/2016 05:13	WG899836

6 Gl

7 Al

8 Sc

Sample Narrative:

8270C-SIM L853661-11 WG899836: Dilution due to matrix



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00216		0.000500	1	08/21/2016 15:39	WG900603
Toluene	0.00660		0.00500	1	08/21/2016 15:39	WG900603
Ethylbenzene	0.00413		0.000500	1	08/21/2016 15:39	WG900603
Total Xylene	0.0212		0.00150	1	08/21/2016 15:39	WG900603
TPH (GC/FID) Low Fraction	1.28		0.100	1	08/21/2016 15:39	WG900603
(S) a,a,a-Trifluorotoluene(FID)	90.4		59.0-128		08/21/2016 15:39	WG900603
(S) a,a,a-Trifluorotoluene(PID)	88.0		54.0-144		08/21/2016 15:39	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	133		40.0	10	08/19/2016 00:08	WG899832
(S) o-Terphenyl	55.5		50.0-150		08/19/2016 00:08	WG899832

6 Gl

7 Al

8 Sc



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00359		0.000500	1	08/21/2016 16:02	WG900603
Toluene	ND		0.00500	1	08/21/2016 16:02	WG900603
Ethylbenzene	0.00189		0.000500	1	08/21/2016 16:02	WG900603
Total Xylene	0.00619		0.00150	1	08/21/2016 16:02	WG900603
TPH (GC/FID) Low Fraction	1.54		0.100	1	08/21/2016 16:02	WG900603
(S) a,a,a-Trifluorotoluene(FID)	97.3		59.0-128		08/21/2016 16:02	WG900603
(S) a,a,a-Trifluorotoluene(PID)	91.2		54.0-144		08/21/2016 16:02	WG900603

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	378	V	40.0	10	08/19/2016 00:53	WG899832
(S) o-Terphenyl	98.4		50.0-150		08/19/2016 00:53	WG899832



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
Benzene	0.00269		0.000500	1	08/21/2016 16:24	WG900603
Toluene	ND		0.00500	1	08/21/2016 16:24	WG900603
Ethylbenzene	0.00213		0.000500	1	08/21/2016 16:24	WG900603
Total Xylene	0.00888		0.00150	1	08/21/2016 16:24	WG900603
TPH (GC/FID) Low Fraction	0.527		0.100	1	08/21/2016 16:24	WG900603
(S) a,a,a-Trifluorotoluene(FID)	95.8		59.0-128		08/21/2016 16:24	WG900603
(S) a,a,a-Trifluorotoluene(PID)	90.6		54.0-144		08/21/2016 16:24	WG900603

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Gl
- 7 Al
- 8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result mg/kg	Qualifier	RDL mg/kg	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	59.9		20.0	5	08/20/2016 12:21	WG900567
(S) o-Terphenyl	43.5	J2	50.0-150		08/20/2016 12:21	WG900567

Sample Narrative:

8015 L853661-14 WG900567: Duplicate analysis was performed.



Calculated Results

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Sodium Adsorption Ratio	10.2		1	08/18/2016 16:51	WG899535

1 Cp

2 Tc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Trivalent	23.0		2.00	1	08/22/2016 13:16	WG899779

3 Ss

4 Cn

Wet Chemistry by Method 3060A/7196A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Chromium,Hexavalent	ND		2.00	1	08/17/2016 14:12	WG899394

5 Sr

6 Gl

Wet Chemistry by Method 9045D

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
pH	8.45		1	08/19/2016 10:18	WG899712

7 Al

8 Sc

Sample Narrative:

9045D L853661-15 WG899712: 8.45 at 19.8c

Wet Chemistry by Method 9050AMod

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Specific Conductance	1820 umhos/cm		1	08/17/2016 00:34	WG899377

Mercury by Method 7471A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.0200	1	08/17/2016 14:41	WG899350

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Arsenic	5.92		2.00	1	08/22/2016 13:16	WG899779
Barium	2130		2.50	5	08/22/2016 19:57	WG899779
Cadmium	0.755		0.500	1	08/22/2016 13:16	WG899779
Chromium	23.0		1.00	1	08/22/2016 13:16	WG899779
Copper	20.0		2.00	1	08/22/2016 13:16	WG899779
Lead	23.1		0.500	1	08/22/2016 13:16	WG899779
Nickel	16.8		2.00	1	08/22/2016 13:16	WG899779
Selenium	2.79		2.00	1	08/22/2016 13:16	WG899779
Silver	ND		1.00	1	08/22/2016 13:16	WG899779
Zinc	56.3		5.00	1	08/22/2016 13:16	WG899779

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	0.00355		0.000500	1	08/21/2016 16:46	WG900603
Toluene	ND		0.00500	1	08/21/2016 16:46	WG900603
Ethylbenzene	0.00159		0.000500	1	08/21/2016 16:46	WG900603
Total Xylene	0.00628		0.00150	1	08/21/2016 16:46	WG900603
TPH (GC/FID) Low Fraction	0.312		0.100	1	08/21/2016 16:46	WG900603



Collected date/time: 08/15/16 15:00

L853661

Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
(S) a,a,a-Trifluorotoluene(FID)	97.9		59.0-128		08/21/2016 16:46	WG900603
(S) a,a,a-Trifluorotoluene(PID)	91.4		54.0-144		08/21/2016 16:46	WG900603

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Gl

7 Al

8 Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
TPH (GC/FID) High Fraction	207		40.0	10	08/18/2016 23:35	WG899832
(S) o-Terphenyl	90.6		50.0-150		08/18/2016 23:35	WG899832

Semi Volatile Organic Compounds (GC/MS) by Method 8270C-SIM

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/kg		mg/kg		date / time	
Anthracene	ND		0.0600	10	08/19/2016 07:40	WG899836
Acenaphthene	ND		0.0600	10	08/19/2016 07:40	WG899836
Acenaphthylene	ND		0.0600	10	08/19/2016 07:40	WG899836
Benzo(a)anthracene	ND		0.0600	10	08/19/2016 07:40	WG899836
Benzo(a)pyrene	ND		0.0600	10	08/19/2016 07:40	WG899836
Benzo(b)fluoranthene	ND		0.0600	10	08/19/2016 07:40	WG899836
Benzo(g,h,i)perylene	ND		0.0600	10	08/19/2016 07:40	WG899836
Benzo(k)fluoranthene	ND		0.0600	10	08/19/2016 07:40	WG899836
Chrysene	ND		0.0600	10	08/19/2016 07:40	WG899836
Dibenz(a,h)anthracene	ND		0.0600	10	08/19/2016 07:40	WG899836
Fluoranthene	ND	J3	0.0600	10	08/19/2016 07:40	WG899836
Fluorene	0.118		0.0600	10	08/19/2016 07:40	WG899836
Indeno(1,2,3-cd)pyrene	ND		0.0600	10	08/19/2016 07:40	WG899836
Naphthalene	0.364		0.200	10	08/19/2016 07:40	WG899836
Phenanthrene	0.157		0.0600	10	08/19/2016 07:40	WG899836
Pyrene	ND		0.0600	10	08/19/2016 07:40	WG899836
1-Methylnaphthalene	0.468		0.200	10	08/19/2016 07:40	WG899836
2-Methylnaphthalene	0.816		0.200	10	08/19/2016 07:40	WG899836
2-Chloronaphthalene	ND		0.200	10	08/19/2016 07:40	WG899836
(S) p-Terphenyl-d14	74.9		32.2-131		08/19/2016 07:40	WG899836
(S) Nitrobenzene-d5	294	J1	22.1-146		08/19/2016 07:40	WG899836
(S) 2-Fluorobiphenyl	113		40.6-122		08/19/2016 07:40	WG899836

Sample Narrative:

8270C-SIM L853661-15 WG899836: Dilution due to matrix



Abbreviations and Definitions

SDG	Sample Delivery Group.
RDL	Reported Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.

Qualifier	Description
B	The same analyte is found in the associated blank.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
J7	Surrogate recovery cannot be used for control limit evaluation due to dilution.
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc



ESC Lab Sciences is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our "one location" design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be **YOUR LAB OF CHOICE**.
 * Not all certifications held by the laboratory are applicable to the results reported in the attached report.

State Accreditations

Alabama	40660	Nevada	TN-03-2002-34
Alaska	UST-080	New Hampshire	2975
Arizona	AZ0612	New Jersey–NELAP	TN002
Arkansas	88-0469	New Mexico	TN00003
California	01157CA	New York	11742
Colorado	TN00003	North Carolina	Env375
Connecticut	PH-0197	North Carolina ¹	DW21704
Florida	E87487	North Carolina ²	41
Georgia	NELAP	North Dakota	R-140
Georgia ¹	923	Ohio–VAP	CL0069
Idaho	TN00003	Oklahoma	9915
Illinois	200008	Oregon	TN200002
Indiana	C-TN-01	Pennsylvania	68-02979
Iowa	364	Rhode Island	221
Kansas	E-10277	South Carolina	84004
Kentucky ¹	90010	South Dakota	n/a
Kentucky ²	16	Tennessee ¹⁴	2006
Louisiana	AI30792	Texas	T 104704245-07-TX
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	6157585858
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	109
Minnesota	047-999-395	Washington	C1915
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA
Nebraska	NE-OS-15-05		

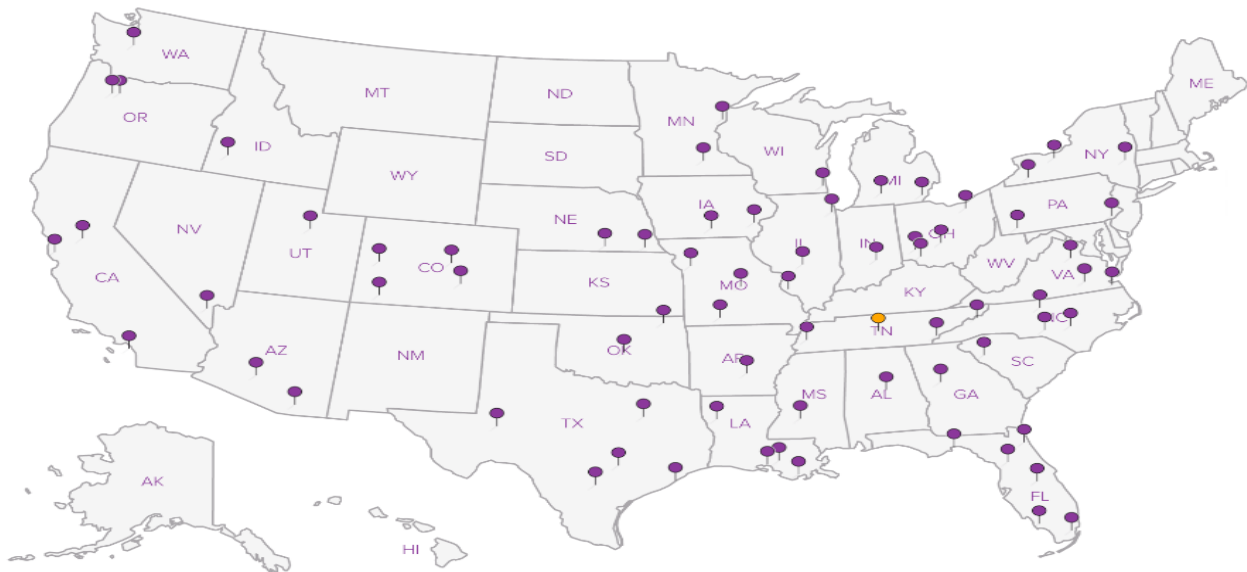
Third Party & Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ^{n/a} Accreditation not applicable

Our Locations

ESC Lab Sciences has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. **ESC Lab Sciences performs all testing at our central laboratory.**



¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Gl

⁷ Al

⁸ Sc

Company Name/Address:
Encana Oil & Gas (USA)
 143 Diamond Avenue
 Parachute, CO 81635
 ENCANACO

Billing Information:
Brett Middleton
 143 Diamond Avenue
 Parachute, CO 81635
 970-285-2653

Analysis / Container / Preservative

Chain of Custody Page 1 of 2



L.A.B S.C.I.E.N.C.E.S

YOUR LAB OF CHOICE

12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Report to:
Brett Middleton

Email To:
brett.middleton@encana.com

Project Description:
M23 PIT

City/State Collected:
Parachute, CO

Phone: **970-285-2739**
 Fax:

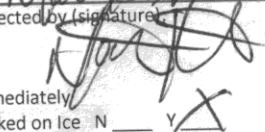
Client Project #
M23

Lab Project #

Collected by (print):
Matthew K...

Site/Facility ID #
M23

P.O. #

Collected by (signature):


Rush? (Lab MUST Be Notified)
 ___ Same Day200%
 ___ Next Day100%
 ___ Two Day50%
 ___ Three Day25%

Date Results Needed
 Email? ___ No Yes
 FAX? No ___ Yes

Immediately Packed on Ice N ___ Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEXGRO/DRO - 8021/8015	SV8270PAHSIM - 8270SIM	SPCON - 9050AMod	SAR - Calc.	RCRA8 Metals + Cu, Ni, and Zn - 6010/7470	CR6SS - 3060A/7196	CR3 - Calc.
20160815 - M23 Pit SBN (5')	Grab	SS	5'	8/15/16	1040	2	X						
20160815 M23 Pit SBN (8-10')	Grab	SS	8-10'		1050	3	X	X	X	X	X	X	X
20160815 M23 Pit SBN (13-15')			13-15'		1055	3	X	X	X	X	X	X	X
20160815 M23 Pit SBS (5')			5'		1140	3	X						
20160815 M23 Pit SBS (9')			9'		1200	2	X						
20160815 M23 Pit SBS (13')			13-15'		1215	3	X	X	X	X	X	X	X
20160815 M23 Pit SBS (17')			17'		1220	1	X						
20160815 M23 Pit SBNEL (6')			6'		1235	2	X						
20160815 - M23 Pit SBNEL (12')			12'		1310	2	X						
20160815 - M23 Pit SBNEL (6')			6'		1335	2	X						

L# **053661**
1088

Acctnum:
 Template:
 Prelogin:
 TSR:
 PB:

Shipped Via:

Rem./Contaminant	Sample # (lab only)
	01
	02
	03
	04
	05
	06
	07
	08
	09
	10

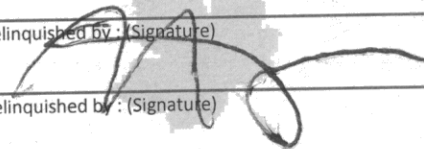
* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other

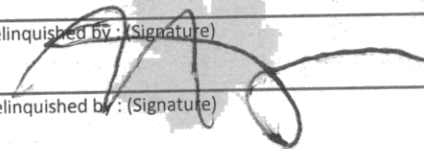
MW 8-16-16

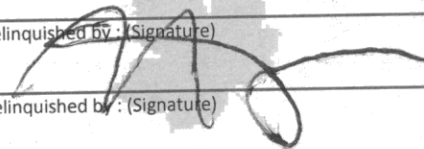
pH _____ Temp _____
 Flow _____ Other _____

68271102 9723

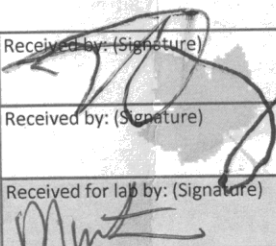
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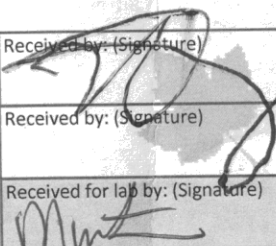
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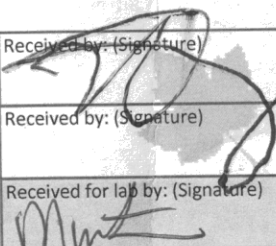
Relinquished by: (Signature)


Relinquished by: (Signature)


Date: **8/15/16** Time: **1700**
 Date: **8/15/16** Time: **1800**
 Date: **8/15/16** Time: **1800**

Received by: (Signature)


Received by: (Signature)


Received by lab by: (Signature)


Samples returned via: UPS
 FedEx Courier _____

Temp: **2.9** °C Bottles Received: **35=402**

Date: **8-16-16** Time: **9:00**

Hold #

Condition: (lab use only)
a JWP

COC Seal Intact: ___ Y ___ N ___ NA

pH Checked: NCF:

Company Name/Address:
Encana Oil & Gas (USA)
 143 Diamond Avenue
 Parachute, CO 81635
 ENCANACO

Billing Information:
Brett Middleton
 143 Diamond Avenue
 Parachute, CO 81635
 970-285-2653

Analysis / Container / Preservative

Chain of Custody Page 2 of 2



YOUR LAB OF CHOICE

12065 Lebanon Rd
 Mount Juliet, TN 37122
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Report to:
Brett Middleton

Email To:
brett.middleton@encana.com

Project Description:
M23 Pit

City/State Collected:
Parachute, CO

Phone: **970-285-2739**
 Fax:

Client Project #
M23

Lab Project #

Collected by (print):
Matthew

Site/Facility ID #
M23

P.O. #

Collected by (signature):
[Signature]
 Immediately Packed on Ice N Y

Rush? (Lab MUST Be Notified)
 ___ Same Day200%
 ___ Next Day100%
 ___ Two Day50%
 ___ Three Day25%

Date Results Needed
 Email? ___ No Yes
 FAX? No ___ Yes
 No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEXGRO/DRO - 8021/8015	SV8270PAHSIM - 8270SIM	SPCON - 9050AMod	SAR - Calc.	RCRA8 Metals + Cu, Ni, and Zn - 6010/7470	CR6SS - 3060A/7196	CR3 - Calc.	Rem./Contaminant	Sample # (lab only)
20160815-M23 Pit SBSEZ (12')	Grds	SS	12'	8/15/16	1345	3	X	X	X	X	X	X	X		11
20160815-M23 Pit SBSEZ (6')	↓	↓	6'	↓	1415	2	X								12
20160815-M23 Pit SBSEZ (12')	↓	↓	12'	↓	1420	2	X								13
20160815-M23 Pit SBSE1 (6')	↓	↓	6'	↓	1450	2	X								14
20160815-M23 Pit SBSE1 (12')	↓	↓	12'	↓	1500	3	X	X	X	X	X	X	X		15

* Matrix: SS - Soil GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other _____

pH _____ Temp _____

Remarks:

Relinquished by: (Signature) <i>[Signature]</i>	Date: 8/15/16	Time: 1500	Received by: (Signature) <i>[Signature]</i>	Samples returned via: <input type="checkbox"/> UPS <input checked="" type="checkbox"/> FedEx <input type="checkbox"/> Courier <input type="checkbox"/> _____	Hold #
Relinquished by: (Signature) <i>[Signature]</i>	Date: 8/15/16	Time: 1800	Received by: (Signature) <i>[Signature]</i>	Temp: °C 2.9	Bottles Received: 35 = 402
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 8-16-16	Time: 9:00

Condition: (lab use only)
 COC Seal Intact: ___ Y ___ N ___ NA
 pH Checked: _____ NCF: _____

Cooler Receipt Checklist

Client: ENCARGO SDG# 853661

Cooler Received/Opened On: 8-16-16 By: Michael Witherspoon

Temperature Upon Receipt: 2.9 °c  (Signature)

Cooler Receipt Check List			Yes	No	N/A
Were custody seals on outside of cooler and intact?					<input checked="" type="checkbox"/>
Were custody papers properly filled out (ink, signed, etc.)?				<input checked="" type="checkbox"/>	
Did all bottles arrive in good condition?			<input checked="" type="checkbox"/>		
Were correct bottles used for the analyses requested?			<input checked="" type="checkbox"/>		
Was sufficient amount of sample sent in each bottle?			<input checked="" type="checkbox"/>		
Were correct preservatives used?					<input checked="" type="checkbox"/>
Were all applicable sample containers checked for preservation?					<input checked="" type="checkbox"/>
(Any samples not in accepted pH range noted on COC.)					
If applicable, was an observable VOA headspace present?					
Non Conformance Generated? (If yes see attached NCF)				<input checked="" type="checkbox"/>	

