



22-Apr-2020

Jake Janicek  
Caerus Oil and Gas LLC  
143 Diamond Ave.  
Parachute, CO 81635

Re: **E09 696 Flowline Release**

Work Order: **20041158**

Dear Jake,

ALS Environmental received 1 sample on 17-Apr-2020 10:00 AM for the analyses presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental - Holland and for only the analyses requested.

Sample results are compliant with industry accepted practices and Quality Control results achieved laboratory specifications. Any exceptions are noted in the Case Narrative, or noted with qualifiers in the report or QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

The total number of pages in this report is 19.

If you have any questions regarding this report, please feel free to contact me:

ADDRESS: 3352 128th Avenue, Holland, MI, USA  
PHONE: +1 (616) 399-6070 FAX: +1 (616) 399-6185

Sincerely,

A handwritten signature in black ink, appearing to read "Chad Whelton", is written over a light blue horizontal line.

Electronically approved by: Chad Whelton

Chad Whelton  
Project Manager

### Report of Laboratory Analysis

Certificate No: MN 026-999-449

ALS GROUP USA, CORP Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Environmental 

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**Client:** Caerus Oil and Gas LLC  
**Project:** E09 696 Flowline Release  
**Work Order:** 20041158

**Work Order Sample Summary**

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<u>Lab Samp ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Tag Number</u>	<u>Collection Date</u>	<u>Date Received</u>	<u>Hold</u>
20041158-01	20200416-E09 696 (POR) @ 8'	Soil		4/16/2020 13:15	4/17/2020 10:00	<input type="checkbox"/>

<u>Qualifier</u>	<u>Description</u>
*	Value exceeds Regulatory Limit
**	Estimated Value
a	Analyte is non-accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
Hr	BOD/CBOD - Sample was reset outside Hold Time, value should be considered estimated.
J	Analyte is present at an estimated concentration between the MDL and Report Limit
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL
X	Analyte was detected in the Method Blank between the MDL and Reporting Limit, sample results may exhibit background or reagent contamination at the observed level.

<u>Acronym</u>	<u>Description</u>
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
LOD	Limit of Detection (see MDL)
LOQ	Limit of Quantitation (see PQL)
MBLK	Method Blank
MDL	Method Detection Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PQL	Practical Quantitation Limit
RPD	Relative Percent Difference
TDL	Target Detection Limit
TNTC	Too Numerous To Count
A	APHA Standard Methods
D	ASTM
E	EPA
SW	SW-846 Update III

<u>Units Reported</u>	<u>Description</u>
% of sample	Percent of Sample
°C	Degrees Celcius
mg/Kg-dry	Milligrams per Kilogram Dry Weight
mg/L	Milligrams per Liter
mmhos/cm @25°C	Millimhos-Centimeter at 25 Degrees Celcius
none	
s.u.	Standard Units

**ALS Group, USA**

Date: 22-Apr-20

**Client:** Caerus Oil and Gas LLC  
**Project:** E09 696 Flowline Release  
**Sample ID:** 20200416-E09 696 (POR) @ 8'  
**Collection Date:** 4/16/2020 01:15 PM

**Work Order:** 20041158  
**Lab ID:** 20041158-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
<b>DIESEL RANGE ORGANICS BY GC-FID</b>							
			Method: <b>SW8015D</b>		Prep: SW3550 / 4/20/20		Analyst: <b>AK</b>
<b>DRO (C10-C28)</b>	<b>330</b>		<b>3.4</b>	<b>12</b>	<b>mg/Kg-dry</b>	1	4/22/2020 02:31
Surr: 4-Terphenyl-d14	105			33-111	%REC	1	4/22/2020 02:31
<b>MERCURY BY CVAA</b>							
			Method: <b>SW7471B</b>		Prep: SW7471 / 4/20/20		Analyst: <b>MAC</b>
<b>Mercury</b>	<b>0.019</b>		<b>0.013</b>	<b>0.018</b>	<b>mg/Kg-dry</b>	1	4/20/2020 12:58
<b>METALS BY ICP-MS</b>							
			Method: <b>SW6020B</b>		Prep: SW3050B / 4/17/20		Analyst: <b>STP</b>
<b>Arsenic</b>	<b>7.3</b>		<b>0.054</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Barium</b>	<b>200</b>		<b>4.2</b>	<b>4.5</b>	<b>mg/Kg-dry</b>	10	4/20/2020 12:39
<b>Cadmium</b>	<b>0.43</b>		<b>0.027</b>	<b>0.18</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Chromium</b>	<b>7.5</b>		<b>0.20</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Copper</b>	<b>13</b>		<b>0.45</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Lead</b>	<b>11</b>		<b>0.22</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Nickel</b>	<b>13</b>		<b>0.24</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Selenium</b>	<b>0.60</b>		<b>0.42</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Silver</b>	<b>0.068</b>	J	<b>0.060</b>	<b>0.45</b>	<b>mg/Kg-dry</b>	1	4/18/2020 00:19
<b>Zinc</b>	<b>62</b>		<b>8.9</b>	<b>9.0</b>	<b>mg/Kg-dry</b>	10	4/20/2020 12:39
<b>SOLUBLE CATIONS FOR SAR</b>							
			Method: <b>SW6020B</b>		Prep: USDA Method 20B / 4/21/20		Analyst: <b>STP</b>
<b>Calcium</b>	<b>71</b>		<b>2.5</b>	<b>5.0</b>	<b>mg/L</b>	10	4/21/2020 15:29
<b>Magnesium</b>	<b>29</b>		<b>0.50</b>	<b>2.0</b>	<b>mg/L</b>	10	4/21/2020 15:29
<b>Sodium</b>	<b>160</b>		<b>0.45</b>	<b>2.0</b>	<b>mg/L</b>	10	4/21/2020 15:29
<b>SODIUM ADSORPTION RATIO</b>							
			Method: <b>USDA H60 METHOD 2</b>		Prep: USDA Method 20B / 4/21/20		Analyst: <b>STP</b>
<b>Sodium Adsorption Ratio</b>	<b>4.1</b>		<b>0.010</b>	<b>0.010</b>	<b>none</b>	1	4/21/2020
<b>POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)</b>							
			Method: <b>SW846 8270D</b>		Prep: SW3546 / 4/20/20		Analyst: <b>EEW</b>
Acenaphthene	U		0.00097	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Fluoranthene	U		0.00093	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Fluorene	U		0.0017	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	4/21/2020 23:39
<b>Naphthalene</b>	<b>0.027</b>		<b>0.0022</b>	<b>0.0050</b>	<b>mg/Kg-dry</b>	1	4/21/2020 23:39

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

# ALS Group, USA

Date: 22-Apr-20

**Client:** Caerus Oil and Gas LLC  
**Project:** E09 696 Flowline Release  
**Sample ID:** 20200416-E09 696 (POR) @ 8'  
**Collection Date:** 4/16/2020 01:15 PM

**Work Order:** 20041158  
**Lab ID:** 20041158-01  
**Matrix:** SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Pyrene		U	0.00083	0.0050	mg/Kg-dry	1	4/21/2020 23:39
Surr: 2-Fluorobiphenyl	77.3			20-140	%REC	1	4/21/2020 23:39
Surr: 4-Terphenyl-d14	81.1			22-172	%REC	1	4/21/2020 23:39
Surr: Nitrobenzene-d5	81.2			28-140	%REC	1	4/21/2020 23:39
<b>GASOLINE RANGE ORGANICS BY GC-MS</b>							
			Method: SW8260GRO			Prep: SW5035 / 4/17/20	Analyst: <b>SJB</b>
<b>GRO (C6-C10)</b>	<b>31</b>		<b>1.8</b>	<b>7.1</b>	<b>mg/Kg-dry</b>	1	4/21/2020 15:23
Surr: Toluene-d8	104			70-130	%REC	1	4/21/2020 15:23
<b>VOLATILE ORGANIC COMPOUNDS</b>							
			Method: SW8260C			Prep: SW5035 / 4/17/20	Analyst: <b>BG</b>
<b>Benzene</b>	<b>0.085</b>		<b>0.0073</b>	<b>0.043</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
<b>Ethylbenzene</b>	<b>0.060</b>		<b>0.0090</b>	<b>0.043</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
<b>m,p-Xylene</b>	<b>0.51</b>		<b>0.057</b>	<b>0.085</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
<b>o-Xylene</b>	<b>0.085</b>		<b>0.016</b>	<b>0.043</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
<b>Toluene</b>	<b>0.28</b>		<b>0.012</b>	<b>0.043</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
<b>Xylenes, Total</b>	<b>0.60</b>		<b>0.057</b>	<b>0.13</b>	<b>mg/Kg-dry</b>	1	4/17/2020 16:17
Surr: 1,2-Dichloroethane-d4	98.3			70-130	%REC	1	4/17/2020 16:17
Surr: 4-Bromofluorobenzene	103			70-130	%REC	1	4/17/2020 16:17
Surr: Dibromofluoromethane	98.1			70-130	%REC	1	4/17/2020 16:17
Surr: Toluene-d8	98.9			70-130	%REC	1	4/17/2020 16:17
<b>ELECTRICAL CONDUCTIVITY (SAR)</b>							
			Method: USDA H60 METHOD 2			Prep: USDA Method 20B / 4/21/20	Analyst: <b>QTN</b>
<b>Electrical Conductivity @ Saturation</b>	<b>1.6</b>		<b>0.011</b>	<b>0.10</b>	<b>mmhos/cm @25°</b>	20	4/21/2020 15:57
<b>CHROMIUM, TRIVALENT</b>							
			Method: CALCULATION				Analyst: <b>JZB</b>
<b>Chromium, Trivalent</b>	<b>7.5</b>		<b>1.0</b>	<b>1.2</b>	<b>mg/Kg-dry</b>	1	4/21/2020 14:47
<b>CHROMIUM, HEXAVALENT</b>							
			Method: SW7196A			Prep: SW3060A / 4/21/20	Analyst: <b>KTP</b>
<b>Chromium, Hexavalent</b>	U		1.0	1.2	mg/Kg-dry	1	4/21/2020 14:01
<b>MOISTURE</b>							
			Method: SW3550C				Analyst: <b>KTP</b>
<b>Moisture</b>	<b>18</b>		<b>0.10</b>	<b>0.10</b>	<b>% of sample</b>	1	4/20/2020 13:44
<b>PH</b>							
			Method: SW9045D			Prep: EXTRACT / 4/18/20	Analyst: <b>QTN</b>
<b>pH</b>	<b>8.31</b>		<b>0.10</b>	<b>0.100</b>	<b>s.u.</b>	1	4/20/2020 13:08
<b>Temperature</b>	<b>19.8</b>		<b>0.10</b>	<b>0.100</b>	<b>°C</b>	1	4/20/2020 13:08

**Note:** See Qualifiers page for a list of qualifiers and their definitions.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 20041158  
**Project:** E09 696 Flowline Release

**QC BATCH REPORT**

Batch ID: **154802** Instrument ID **GC8** Method: **SW8015D**

MBLK		Sample ID: <b>DBLKS1-154802-154802</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/21/2020 11:16 PM</b>		
Client ID:		Run ID: <b>GC8_200422A</b>		SeqNo: <b>6368471</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	10								
<i>Surr: 4-Terphenyl-d14</i>	2.807	0	3.33	0	84.3	33-111		0		

LCS		Sample ID: <b>DLCSS1-154802-154802</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/21/2020 04:04 PM</b>		
Client ID:		Run ID: <b>GC8_200422A</b>		SeqNo: <b>6368929</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	656.5	10	666.7	0	98.5	80-121		0		
<i>Surr: 4-Terphenyl-d14</i>	2.219	0	3.33	0	66.6	33-111		0		

MS		Sample ID: <b>20041179-01A MS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/22/2020 12:34 AM</b>		
Client ID:		Run ID: <b>GC8_200422A</b>		SeqNo: <b>6368473</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	708.3	9.9	661.7	20.26	104	80-121		0		
<i>Surr: 4-Terphenyl-d14</i>	2.136	0	3.305	0	64.6	33-111		0		

MSD		Sample ID: <b>20041179-01A MSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/22/2020 01:13 AM</b>		
Client ID:		Run ID: <b>GC8_200422A</b>		SeqNo: <b>6368474</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	610.3	9.5	634.8	20.26	92.9	80-121	708.3	14.9	30	
<i>Surr: 4-Terphenyl-d14</i>	2.315	0	3.171	0	73	33-111	2.136	8.06	30	

The following samples were analyzed in this batch: 20041158-01A

Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154792** Instrument ID **HG4** Method: **SW7471B**

<b>MBLK</b>	Sample ID: <b>MBLK-154792-154792</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>4/20/2020 12:39 PM</b>					
Client ID:	Run ID: <b>HG4_200420A</b>		SeqNo: <b>6363829</b>		Prep Date: <b>4/20/2020</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury U 0.020

<b>LCS</b>	Sample ID: <b>LCS-154792-154792</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>4/20/2020 12:41 PM</b>					
Client ID:	Run ID: <b>HG4_200420A</b>		SeqNo: <b>6363830</b>		Prep Date: <b>4/20/2020</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1842 0.020 0.1665 0 111 80-120 0

<b>MS</b>	Sample ID: <b>20040978-01AMS</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>4/20/2020 12:47 PM</b>					
Client ID:	Run ID: <b>HG4_200420A</b>		SeqNo: <b>6363833</b>		Prep Date: <b>4/20/2020</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1272 0.016 0.1323 -0.0008713 96.8 75-125 0

<b>MSD</b>	Sample ID: <b>20040978-01AMSD</b>		Units: <b>mg/Kg</b>		Analysis Date: <b>4/20/2020 12:49 PM</b>					
Client ID:	Run ID: <b>HG4_200420A</b>		SeqNo: <b>6363834</b>		Prep Date: <b>4/20/2020</b> DF: <b>1</b>					
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Mercury 0.1284 0.016 0.1357 -0.0008713 95.2 75-125 0.1272 0.974 35

The following samples were analyzed in this batch:

20041158-01A
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Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154742** Instrument ID **ICPMS4** Method: **SW6020B**

MBLK		Sample ID: <b>MBLK-154742-154742</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/18/2020 12:05 AM</b>		
Client ID:		Run ID: <b>ICPMS4_200417B</b>		SeqNo: <b>6361982</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.22								
Barium	U	0.22								
Cadmium	U	0.088								
Chromium	U	0.22								
Copper	U	0.22								
Lead	U	0.22								
Nickel	U	0.22								
Selenium	U	0.22								
Silver	U	0.22								
Zinc	U	0.44								

LCS		Sample ID: <b>LCS-154742-154742</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/18/2020 12:07 AM</b>		
Client ID:		Run ID: <b>ICPMS4_200417B</b>		SeqNo: <b>6361983</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	3.804	0.19	3.837	0	99.1	80-120	0			
Barium	3.867	0.19	3.837	0	101	80-120	0			
Cadmium	3.854	0.077	3.837	0	100	80-120	0			
Chromium	3.968	0.19	3.837	0	103	80-120	0			
Copper	3.893	0.19	3.837	0	101	80-120	0			
Lead	3.897	0.19	3.837	0	102	80-120	0			
Nickel	3.803	0.19	3.837	0	99.1	80-120	0			
Selenium	3.914	0.19	3.837	0	102	80-120	0			
Silver	3.833	0.19	3.837	0	99.9	80-120	0			
Zinc	4.221	0.38	3.837	0	110	80-120	0			

MS		Sample ID: <b>20040978-01AMS</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/18/2020 12:13 AM</b>		
Client ID:		Run ID: <b>ICPMS4_200417B</b>		SeqNo: <b>6361987</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.853	0.34	6.849	0.3909	94.3	75-125	0			
Barium	97.08	0.34	6.849	75.47	316	75-125	0			SO
Cadmium	5.997	0.14	6.849	-0.004195	87.6	75-125	0			
Chromium	13.52	0.34	6.849	4.415	133	75-125	0			S
Copper	9.256	0.34	6.849	2.462	99.2	75-125	0			
Lead	7.325	0.34	6.849	0.4608	100	75-125	0			
Nickel	10.61	0.34	6.849	3.03	111	75-125	0			
Selenium	6.131	0.34	6.849	-0.002063	89.5	75-125	0			
Silver	5.95	0.34	6.849	0.003232	86.8	75-125	0			
Zinc	11.5	0.68	6.849	2.978	124	75-125	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

**Client:** Caerus Oil and Gas LLC  
**Work Order:** 20041158  
**Project:** E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154742**      Instrument ID **ICPMS4**      Method: **SW6020B**

MSD		Sample ID: <b>20040978-01AMSD</b>				Units: <b>mg/Kg</b>		Analysis Date: <b>4/18/2020 12:15 AM</b>		
Client ID:		Run ID: <b>ICPMS4_200417B</b>			SeqNo: <b>6361988</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.996	0.34	6.84	0.3909	96.6	75-125	6.853	2.07	20	
Barium	107.5	0.34	6.84	75.47	468	75-125	97.08	10.2	20	SO
Cadmium	6.084	0.14	6.84	-0.004195	89	75-125	5.997	1.43	20	
Chromium	13.51	0.34	6.84	4.415	133	75-125	13.52	0.0999	20	S
Copper	9.134	0.34	6.84	2.462	97.6	75-125	9.256	1.32	20	
Lead	7.087	0.34	6.84	0.4608	96.9	75-125	7.325	3.29	20	
Nickel	10.67	0.34	6.84	3.03	112	75-125	10.61	0.565	20	
Selenium	6.373	0.34	6.84	-0.002063	93.2	75-125	6.131	3.87	20	
Silver	6.051	0.34	6.84	0.003232	88.4	75-125	5.95	1.69	20	
Zinc	9.93	0.68	6.84	2.978	102	75-125	11.5	14.7	20	

The following samples were analyzed in this batch:

20041158-01A
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**Client:** Caerus Oil and Gas LLC  
**Work Order:** 20041158  
**Project:** E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154859**      Instrument ID **ICPMS4**      Method: **SW6020B**

DUP		Sample ID: <b>20041158-01ADUP</b>				Units: <b>mg/L</b>		Analysis Date: <b>4/21/2020 03:31 PM</b>		
Client ID: <b>20200416-E09 696 (POR) @ 8'</b>		Run ID: <b>ICPMS4_200421A</b>		SeqNo: <b>6365907</b>		Prep Date: <b>4/21/2020</b>		DF: <b>10</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	87.2	5.0	0	0	0	0-0	70.75	20.8		
Magnesium	36.08	2.0	0	0	0	0-0	29.24	20.9		
Sodium	203.6	2.0	0	0	0	0-0	164.2	21.4		

The following samples were analyzed in this batch:

20041158-01A
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Batch ID: **154859**      Instrument ID **SAR**      Method: **USDA H60 Metho**

DUP		Sample ID: <b>20041158-01ADUP</b>				Units: <b>none</b>		Analysis Date: <b>4/21/2020</b>		
Client ID: <b>20200416-E09 696 (POR) @ 8'</b>		Run ID: <b>SAR_200421A</b>		SeqNo: <b>6365925</b>		Prep Date: <b>4/21/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	4.629	0.010	0	0	0		4.145	11	50	

The following samples were analyzed in this batch:

20041158-01A
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Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154811** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK		Sample ID: <b>SBLKS1-154811-154811</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/21/2020 06:45 PM</b>		
Client ID:		Run ID: <b>SVMS6_200421A</b>		SeqNo: <b>6367689</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	U	4.2								
Anthracene	U	4.2								
Benzo(a)anthracene	U	4.2								
Benzo(a)pyrene	U	4.2								
Benzo(b)fluoranthene	U	4.2								
Benzo(k)fluoranthene	U	4.2								
Chrysene	U	4.2								
Dibenzo(a,h)anthracene	U	4.2								
Fluoranthene	U	4.2								
Fluorene	U	4.2								
Indeno(1,2,3-cd)pyrene	U	4.2								
Naphthalene	U	4.2								
Pyrene	U	4.2								
<i>Surr: 2-Fluorobiphenyl</i>	1170	0	3333	0	35.1	20-140	0			
<i>Surr: 4-Terphenyl-d14</i>	3509	0	3333	0	105	22-172	0			
<i>Surr: Nitrobenzene-d5</i>	2923	0	3333	0	87.7	28-140	0			

LCS		Sample ID: <b>SLCSS1-154811-154811</b>				Units: <b>µg/Kg</b>		Analysis Date: <b>4/21/2020 07:00 PM</b>		
Client ID:		Run ID: <b>SVMS6_200421A</b>		SeqNo: <b>6367690</b>		Prep Date: <b>4/20/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1028	4.2	1333	0	77.1	40-140	0			
Anthracene	1136	4.2	1333	0	85.2	40-140	0			
Benzo(a)anthracene	1120	4.2	1333	0	84	40-140	0			
Benzo(a)pyrene	1130	4.2	1333	0	84.8	40-140	0			
Benzo(b)fluoranthene	1015	4.2	1333	0	76.1	40-140	0			
Benzo(k)fluoranthene	1069	4.2	1333	0	80.2	40-140	0			
Chrysene	1093	4.2	1333	0	82	40-140	0			
Dibenzo(a,h)anthracene	1127	4.2	1333	0	84.6	40-140	0			
Fluoranthene	1112	4.2	1333	0	83.4	40-140	0			
Fluorene	1061	4.2	1333	0	79.6	40-140	0			
Indeno(1,2,3-cd)pyrene	1166	4.2	1333	0	87.5	40-140	0			
Naphthalene	1058	4.2	1333	0	79.4	40-140	0			
Pyrene	1098	4.2	1333	0	82.4	40-140	0			
<i>Surr: 2-Fluorobiphenyl</i>	920.4	0	3333	0	27.6	20-140	0			
<i>Surr: 4-Terphenyl-d14</i>	3333	0	3333	0	100	22-172	0			
<i>Surr: Nitrobenzene-d5</i>	2134	0	3333	0	64	28-140	0			

Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: 154811 Instrument ID SVMS6 Method: SW846 8270D

MS				Sample ID: 20041179-01A MS			Units: µg/Kg		Analysis Date: 4/21/2020 07:16 PM		
Client ID:		Run ID: SVMS6_200421A		SeqNo: 6367691		Prep Date: 4/20/2020		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	475.2	4.1	1317	0	36.1	40-140	0			S	
Anthracene	445.8	4.1	1317	0	33.9	40-140	0			S	
Benzo(a)anthracene	378.1	4.1	1317	0	28.7	40-140	0			S	
Benzo(a)pyrene	353.8	4.1	1317	0	26.9	40-140	0			S	
Benzo(b)fluoranthene	328	4.1	1317	0	24.9	40-140	0			S	
Benzo(k)fluoranthene	335.4	4.1	1317	0	25.5	40-140	0			S	
Chrysene	369.3	4.1	1317	0	28	40-140	0			S	
Dibenzo(a,h)anthracene	328.9	4.1	1317	0	25	40-140	0			S	
Fluoranthene	394.7	4.1	1317	0	30	40-140	0			S	
Fluorene	460	4.1	1317	7.817	34.3	40-140	0			S	
Indeno(1,2,3-cd)pyrene	322.2	4.1	1317	0	24.5	40-140	0			S	
Naphthalene	586.1	4.1	1317	51.61	40.6	40-140	0			S	
Pyrene	408.6	4.1	1317	3.759	30.7	40-140	0			S	
Surr: 2-Fluorobiphenyl	1413	0	3293	0	42.9	20-140	0				
Surr: 4-Terphenyl-d14	1136	0	3293	0	34.5	22-172	0				
Surr: Nitrobenzene-d5	1128	0	3293	0	34.3	28-140	0				

MSD				Sample ID: 20041179-01A MSD			Units: µg/Kg		Analysis Date: 4/21/2020 07:31 PM		
Client ID:		Run ID: SVMS6_200421A		SeqNo: 6367692		Prep Date: 4/20/2020		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Acenaphthene	379.7	4.1	1302	0	29.2	40-140	475.2	22.3	30	S	
Anthracene	383.9	4.1	1302	0	29.5	40-140	445.8	14.9	30	S	
Benzo(a)anthracene	357.1	4.1	1302	0	27.4	40-140	378.1	5.71	30	S	
Benzo(a)pyrene	340.3	4.1	1302	0	26.1	40-140	353.8	3.9	30	S	
Benzo(b)fluoranthene	314.5	4.1	1302	0	24.2	40-140	328	4.19	30	S	
Benzo(k)fluoranthene	326	4.1	1302	0	25	40-140	335.4	2.83	30	S	
Chrysene	353.5	4.1	1302	0	27.2	40-140	369.3	4.39	30	S	
Dibenzo(a,h)anthracene	318.3	4.1	1302	0	24.5	40-140	328.9	3.26	30	S	
Fluoranthene	359	4.1	1302	0	27.6	40-140	394.7	9.47	30	S	
Fluorene	384.3	4.1	1302	7.817	28.9	40-140	460	18	30	S	
Indeno(1,2,3-cd)pyrene	323	4.1	1302	0	24.8	40-140	322.2	0.245	30	S	
Naphthalene	479.2	4.1	1302	51.61	32.8	40-140	586.1	20.1	30	S	
Pyrene	358.8	4.1	1302	3.759	27.3	40-140	408.6	13	30	S	
Surr: 2-Fluorobiphenyl	945.3	0	3255	0	29	20-140	1413	39.6	0		
Surr: 4-Terphenyl-d14	1069	0	3255	0	32.8	22-172	1136	6.07	0		
Surr: Nitrobenzene-d5	944	0	3255	0	29	28-140	1128	17.8	0		

The following samples were analyzed in this batch:

20041158-01A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154737** Instrument ID **VMS8** Method: **SW8260C**

MS		Sample ID: <b>20041078-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/20/2020 07:26 PM</b>		
Client ID:		Run ID: <b>VMS8_200420A</b>		SeqNo: <b>6364765</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1382	39	1301	0	106	75-125	0			
Ethylbenzene	1401	39	1301	0	108	75-125	0			
m,p-Xylene	2971	78	2601	263.2	104	80-125	0			
o-Xylene	1442	39	1301	55.45	107	75-125	0			
Toluene	1355	39	1301	0	104	70-125	0			
Xylenes, Total	4413	120	3902	315	105	75-125	0			
<i>Surr: 1,2-Dichloroethane-d4</i>	1262	0	1301	0	97.1	70-130	0			
<i>Surr: 4-Bromofluorobenzene</i>	1323	0	1301	0	102	70-130	0			
<i>Surr: Dibromofluoromethane</i>	1271	0	1301	0	97.7	70-130	0			
<i>Surr: Toluene-d8</i>	1237	0	1301	0	95.1	70-130	0			

MSD		Sample ID: <b>20041078-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/20/2020 07:42 PM</b>		
Client ID:		Run ID: <b>VMS8_200420A</b>		SeqNo: <b>6364766</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	1428	40	1325	0	108	75-125	1382	3.24	30	
Ethylbenzene	1441	40	1325	0	109	75-125	1401	2.81	30	
m,p-Xylene	3056	80	2651	263.2	105	80-125	2971	2.84	30	
o-Xylene	1482	40	1325	55.45	108	75-125	1442	2.78	30	
Toluene	1422	40	1325	0	107	70-125	1355	4.77	30	
Xylenes, Total	4539	120	3976	315	106	75-125	4413	2.82	30	
<i>Surr: 1,2-Dichloroethane-d4</i>	1227	0	1325	0	92.6	70-130	1262	2.81	30	
<i>Surr: 4-Bromofluorobenzene</i>	1310	0	1325	0	98.8	70-130	1323	1.01	30	
<i>Surr: Dibromofluoromethane</i>	1273	0	1325	0	96.1	70-130	1271	0.178	30	
<i>Surr: Toluene-d8</i>	1253	0	1325	0	94.5	70-130	1237	1.25	30	

The following samples were analyzed in this batch:

20041158-01A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.

Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154751** Instrument ID **VMS7** Method: **SW8260GRO**

MBLK		Sample ID: <b>MBLK-154751-154751</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/20/2020 03:34 PM</b>			
Client ID:		Run ID: <b>VMS7_200420A</b>				SeqNo: <b>6365384</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	U	5,000	0	0	0	0	0	0			
<i>Surr: Toluene-d8</i>	<i>837.5</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>83.8</i>	<i>70-130</i>	<i>0</i>				

LCS		Sample ID: <b>LCS-154751-154751</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/20/2020 02:33 PM</b>			
Client ID:		Run ID: <b>VMS7_200420A</b>				SeqNo: <b>6365382</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	30440	5,000	25000	0	122	70-130	0				
<i>Surr: Toluene-d8</i>	<i>1018</i>	<i>0</i>	<i>1000</i>	<i>0</i>	<i>102</i>	<i>70-130</i>	<i>0</i>				

MS		Sample ID: <b>20041154-01A MS</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/21/2020 06:57 PM</b>			
Client ID:		Run ID: <b>VMS7_200421A</b>				SeqNo: <b>6367536</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	129100	7,100	35340	57810	202	70-130	0			S	
<i>Surr: Toluene-d8</i>	<i>2170</i>	<i>0</i>	<i>1414</i>	<i>0</i>	<i>153</i>	<i>70-130</i>	<i>0</i>			S	

MSD		Sample ID: <b>20041154-01A MSD</b>				Units: <b>µg/Kg-dry</b>		Analysis Date: <b>4/21/2020 07:13 PM</b>			
Client ID:		Run ID: <b>VMS7_200421A</b>				SeqNo: <b>6367537</b>		Prep Date: <b>4/17/2020</b>		DF: <b>1</b>	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
GRO (C6-C10)	92310	6,800	34240	57810	101	70-130	129100	33.2	30	R	
<i>Surr: Toluene-d8</i>	<i>1816</i>	<i>0</i>	<i>1370</i>	<i>0</i>	<i>133</i>	<i>70-130</i>	<i>2170</i>	<i>17.7</i>	<i>30</i>	S	

The following samples were analyzed in this batch:

20041158-01A
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**Client:** Caerus Oil and Gas LLC  
**Work Order:** 20041158  
**Project:** E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154770**      Instrument ID **WETCHEM**      Method: **SW9045D**

LCS		Sample ID: <b>LCS-154770-154770</b>				Units: <b>s.u.</b>		Analysis Date: <b>4/20/2020 01:08 PM</b>			
Client ID:		Run ID: <b>WETCHEM_200420D</b>		SeqNo: <b>6363771</b>		Prep Date: <b>4/18/2020</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	4.05	0.10	4	0	101	90-110	0				

DUP		Sample ID: <b>20041078-01A DUP</b>				Units: <b>s.u.</b>		Analysis Date: <b>4/20/2020 01:08 PM</b>			
Client ID:		Run ID: <b>WETCHEM_200420D</b>		SeqNo: <b>6363774</b>		Prep Date: <b>4/18/2020</b>		DF: <b>1</b>			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
pH	11.08	0.10	0	0	0	0-0	10.99	0.816	20		
Temperature	19.7	0.10	0	0	0		19.7	0			

The following samples were analyzed in this batch:

20041158-01A
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Client: Caerus Oil and Gas LLC  
 Work Order: 20041158  
 Project: E09 696 Flowline Release

# QC BATCH REPORT

Batch ID: **154813** Instrument ID **WETCHEM** Method: **SW7196A**

<b>MBLK</b>	Sample ID: <b>MBLK-154813-154813</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/21/2020 02:01 PM</b>		
Client ID:	Run ID: <b>WETCHEM_200421E</b>			SeqNo: <b>6365565</b>		Prep Date: <b>4/21/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 1.0

<b>LCS</b>	Sample ID: <b>LCS-154813-154813</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/21/2020 02:01 PM</b>		
Client ID:	Run ID: <b>WETCHEM_200421E</b>			SeqNo: <b>6365566</b>		Prep Date: <b>4/21/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 4.63 1.0 5 0 92.6 80-120 0

<b>MS</b>	Sample ID: <b>20041179-01A MS</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/21/2020 02:01 PM</b>		
Client ID:	Run ID: <b>WETCHEM_200421E</b>			SeqNo: <b>6365571</b>		Prep Date: <b>4/21/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent U 0.99 4.95 0.3 -6.06 75-125 0 S

<b>MS</b>	Sample ID: <b>20041179-01A MSI</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/21/2020 02:01 PM</b>		
Client ID:	Run ID: <b>WETCHEM_200421E</b>			SeqNo: <b>6365573</b>		Prep Date: <b>4/21/2020</b>		DF: <b>100</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 2603 100 2751 0.3 94.6 75-125 0

<b>MSD</b>	Sample ID: <b>20041179-01A MSD</b>				Units: <b>mg/Kg</b>			Analysis Date: <b>4/21/2020 02:01 PM</b>		
Client ID:	Run ID: <b>WETCHEM_200421E</b>			SeqNo: <b>6365572</b>		Prep Date: <b>4/21/2020</b>		DF: <b>1</b>		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual

Chromium, Hexavalent 1.554 0.99 4.95 0.3 25.3 75-125 0.6733 79.1 20 SR

The following samples were analyzed in this batch:

20041158-01A
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Note: See Qualifiers Page for a list of Qualifiers and their explanation.





**Sample Receipt Checklist**

Client Name: **CAERUS**

Date/Time Received: **17-Apr-20 10:00**

Work Order: **20041158**

Received by: **KRW**

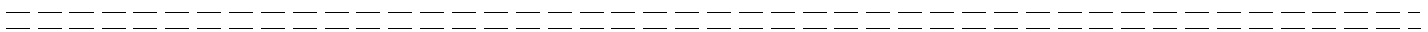
Checklist completed by Keith Wierenga 17-Apr-20  
eSignature Date

Reviewed by: Chad Whelton 17-Apr-20  
eSignature Date

Matrices: Soil  
 Carrier name: FedEx

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on shipping container/cooler?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Container/Temp Blank temperature in compliance?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample(s) received on ice?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temperature(s)/Thermometer(s):	<u>4.2/4.2 C</u>		<u>SR2</u>
Cooler(s)/Kit(s):	<u> </u>		
Date/Time sample(s) sent to storage:	<u>4/17/2020 1:43:29 PM</u>		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
pH adjusted by:	<u> </u>		

Login Notes:



Client Contacted: \_\_\_\_\_ Date Contacted: \_\_\_\_\_ Person Contacted: \_\_\_\_\_

Contacted By: \_\_\_\_\_ Regarding: \_\_\_\_\_

Comments:

CorrectiveAction: