01-Jul-2019

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

Re: **P27 Flowline** Work Order: **19061792**

Dear Jake,

ALS Environmental received 5 samples on 26-Jun-2019 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 31.

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,

Electronically approved by: Chad Whelton

Chad Whelton
Project Manager

Report of Laboratory Analysis

ALS Group, USA

Date: 01-Jul-19

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Work Order: **19061792**

Work Order Sample Summary

Lab Samp ID	Client Sample ID	Matrix	Tag Number	Collection Date	Date Received	Hold
19061792-01	20190625-P27-E-Wall @ 6'	Soil		6/25/2019 10:39	6/26/2019 10:00	☐
19061792-02	20190625-P27-N-Wall @ 5.5'	Soil		6/25/2019 10:48	6/26/2019 10:00	☐
19061792-03	20190625-P27-W-Wall @ 4'	Soil		6/25/2019 10:55	6/26/2019 10:00	☐
19061792-04	20190625-P27-S-Wall @ 4'	Soil		6/25/2019 11:00	6/26/2019 10:00	☐
19061792-05	20190625-P27-Base @ 8'	Soil		6/25/2019 13:20	6/26/2019 10:00	☐

ALS Group, USA

Date: 01-Jul-19

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Work Order: 19061792

Case Narrative

BTEX analysis performed by ALS Fort Collins laboratory.

ALS Group, USA

Date: 01-Jul-19

Qualifier	Description
*	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.

Acronym	Description
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

Units Reported	Description
% 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: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-E-Wall @ 6'
Collection Date: 6/25/2019 10:39 AM

Work Order: 19061792
Lab ID: 19061792-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/27/19		Analyst: **KB**
DRO (C10-C28)	**31**		**3.3**	**5.7**	**mg/Kg-dry**	1	6/28/2019 12:21
Surr: 4-Terphenyl-d14	*117*			*34-130*	*%REC*	1	6/28/2019 12:21
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/26/19		Analyst: **KB**
GRO (C6-C10)	U		2.9	6.9	mg/Kg-dry	1	6/26/2019 22:13
Surr: Toluene-d8	*112*			*71-123*	*%REC*	1	6/26/2019 22:13
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/28/19		Analyst: **RSH**
Mercury	**0.58**		**0.0042**	**0.042**	**mg/Kg-dry**	2	6/28/2019 15:41
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3050B / 6/26/19		Analyst: **STP**
Arsenic	**20**		**0.053**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Barium	**3,200**		**41**	**44**	**mg/Kg-dry**	100	6/28/2019 13:53
Boron	**15**		**1.7**	**1.8**	**mg/Kg-dry**	1	6/27/2019 23:42
Cadmium	**0.39**		**0.027**	**0.18**	**mg/Kg-dry**	1	6/27/2019 23:42
Chromium	**23**		**0.20**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Copper	**24**		**0.44**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Lead	**19**		**0.21**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Nickel	**16**		**0.23**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Selenium	**0.65**		**0.41**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Silver	**0.073**	J	**0.059**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:42
Zinc	**54**		**0.87**	**0.89**	**mg/Kg-dry**	1	6/27/2019 23:42
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Calcium	**46**		**0.86**	**5.0**	**mg/L**	10	6/28/2019 15:07
Magnesium	**26**		**0.068**	**2.0**	**mg/L**	10	6/28/2019 15:07
Sodium	**29**		**0.34**	**2.0**	**mg/L**	10	6/28/2019 15:07
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Sodium Adsorption Ratio	**0.85**		**0.010**	**0.010**	**none**	1	6/28/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)		Method: **SW846 8270D**			Prep: SW3546 / 6/27/19		Analyst: **EEW**
Acenaphthene	U		0.00092	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Anthracene	U		0.0016	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Benzo(a)anthracene	U		0.0020	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Benzo(a)pyrene	U		0.0013	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Benzo(b)fluoranthene	**0.0036**	J	**0.0011**	**0.0048**	**mg/Kg-dry**	1	6/28/2019 13:52
Benzo(k)fluoranthene	U		0.0014	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Chrysene	U		0.00098	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Dibenzo(a,h)anthracene	U		0.0011	0.0048	mg/Kg-dry	1	6/28/2019 13:52

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-E-Wall @ 6'
Collection Date: 6/25/2019 10:39 AM

Work Order: 19061792
Lab ID: 19061792-01
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.00088	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Fluorene	**0.0055**		**0.0016**	**0.0048**	**mg/Kg-dry**	1	6/28/2019 13:52
Indeno(1,2,3-cd)pyrene	U		0.0017	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Naphthalene	**0.045**		**0.0021**	**0.0048**	**mg/Kg-dry**	1	6/28/2019 13:52
Pyrene	U		0.00079	0.0048	mg/Kg-dry	1	6/28/2019 13:52
Surr: 2-Fluorobiphenyl	*87.4*			*20-140*	*%REC*	1	6/28/2019 13:52
Surr: 4-Terphenyl-d14	*106*			*22-172*	*%REC*	1	6/28/2019 13:52
Surr: Nitrobenzene-d5	*82.8*			*28-140*	*%REC*	1	6/28/2019 13:52
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/28/19		Analyst: **JB**
Electrical Conductivity @ Saturation	**1.0**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/28/2019 15:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JZB**
Chromium, Trivalent	**23**		**0.36**	**1.2**	**mg/Kg-dry**	1	7/1/2019 09:19
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/27/19		Analyst: **RZM**
Chromium, Hexavalent	U		0.99	1.2	mg/Kg-dry	1	6/27/2019 14:39
MOISTURE		Method:	**SW3550C**				Analyst: **KTP**
Moisture	**14**		**0.10**	**0.10**	**% of sample**	1	6/27/2019 13:53
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/27/19		Analyst: **DNW**
pH	**8.35**		**0.10**	**0.100**	**s.u.**	1	6/27/2019 12:30
Temperature	**21.0**		**0.10**	**0.100**	**°C**	1	6/27/2019 12:30
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260**				Analyst: **ALS**
Benzene	U		0.0018	0.0057	mg/Kg-dry-dry	1	6/27/2019
Ethylbenzene	U		0.0018	0.0057	mg/Kg-dry-dry	1	6/27/2019
m,p-Xylene	U		0.0018	0.0057	mg/Kg-dry-dry	1	6/27/2019
o-Xylene	U		0.0018	0.0057	mg/Kg-dry-dry	1	6/27/2019
Toluene	U		0.0018	0.0057	mg/Kg-dry-dry	1	6/27/2019
Xylenes, Total	U		0.042	0.11	mg/Kg-dry-dry	1	6/27/2019
Surr: 4-Bromofluorobenzene	*78.6*			*52-151*	*%REC*	1	6/27/2019
Surr: Dibromofluoromethane	*88.6*			*61-134*	*%REC*	1	6/27/2019
Surr: Toluene-d8	*101*			*57-135*	*%REC*	1	6/27/2019

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-N-Wall @ 5.5'
Collection Date: 6/25/2019 10:48 AM

Work Order: 19061792
Lab ID: 19061792-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/27/19		Analyst: **KB**
DRO (C10-C28)	**29**		**13**	**22**	**mg/Kg-dry**	1	6/28/2019 12:50
Surr: 4-Terphenyl-d14	*106*			*34-130*	*%REC*	1	6/28/2019 12:50
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/26/19		Analyst: **KB**
GRO (C6-C10)	**6.7**	J	**2.9**	**6.8**	**mg/Kg-dry**	1	6/26/2019 23:12
Surr: Toluene-d8	*95.5*			*71-123*	*%REC*	1	6/26/2019 23:12
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/28/19		Analyst: **RSH**
Mercury	**0.10**		**0.0019**	**0.019**	**mg/Kg-dry**	1	6/28/2019 15:21
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3050B / 6/26/19		Analyst: **STP**
Arsenic	**25**		**0.053**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Barium	**2,300**		**40**	**44**	**mg/Kg-dry**	100	6/28/2019 13:54
Boron	**17**		**1.7**	**1.8**	**mg/Kg-dry**	1	6/27/2019 23:44
Cadmium	**0.37**		**0.026**	**0.18**	**mg/Kg-dry**	1	6/27/2019 23:44
Chromium	**23**		**0.19**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Copper	**19**		**0.44**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Lead	**19**		**0.21**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Nickel	**15**		**0.23**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Selenium	**0.51**		**0.40**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Silver	**0.058**	J	**0.058**	**0.44**	**mg/Kg-dry**	1	6/27/2019 23:44
Zinc	**47**		**0.86**	**0.88**	**mg/Kg-dry**	1	6/27/2019 23:44
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Calcium	**92**		**0.86**	**5.0**	**mg/L**	10	6/28/2019 15:09
Magnesium	**30**		**0.068**	**2.0**	**mg/L**	10	6/28/2019 15:09
Sodium	**41**		**0.34**	**2.0**	**mg/L**	10	6/28/2019 15:09
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Sodium Adsorption Ratio	**0.94**		**0.010**	**0.010**	**none**	1	6/28/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)		Method: **SW846 8270D**			Prep: SW3546 / 6/27/19		Analyst: **EEW**
Acenaphthene	U		0.0036	0.019	mg/Kg-dry	1	6/28/2019 14:08
Anthracene	U		0.0063	0.019	mg/Kg-dry	1	6/28/2019 14:08
Benzo(a)anthracene	U		0.0077	0.019	mg/Kg-dry	1	6/28/2019 14:08
Benzo(a)pyrene	U		0.0051	0.019	mg/Kg-dry	1	6/28/2019 14:08
Benzo(b)fluoranthene	U		0.0045	0.019	mg/Kg-dry	1	6/28/2019 14:08
Benzo(k)fluoranthene	U		0.0055	0.019	mg/Kg-dry	1	6/28/2019 14:08
Chrysene	U		0.0038	0.019	mg/Kg-dry	1	6/28/2019 14:08
Dibenzo(a,h)anthracene	U		0.0044	0.019	mg/Kg-dry	1	6/28/2019 14:08

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

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-N-Wall @ 5.5'
Collection Date: 6/25/2019 10:48 AM

Work Order: 19061792
Lab ID: 19061792-02
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.0034	0.019	mg/Kg-dry	1	6/28/2019 14:08
Fluorene	U		0.0062	0.019	mg/Kg-dry	1	6/28/2019 14:08
Indeno(1,2,3-cd)pyrene	U		0.0067	0.019	mg/Kg-dry	1	6/28/2019 14:08
Naphthalene	**0.033**		**0.0081**	**0.019**	**mg/Kg-dry**	1	6/28/2019 14:08
Pyrene	U		0.0031	0.019	mg/Kg-dry	1	6/28/2019 14:08
Surr: 2-Fluorobiphenyl	*122*			*20-140*	*%REC*	1	6/28/2019 14:08
Surr: 4-Terphenyl-d14	*155*			*22-172*	*%REC*	1	6/28/2019 14:08
Surr: Nitrobenzene-d5	*113*			*28-140*	*%REC*	1	6/28/2019 14:08
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/28/19		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.39**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/28/2019 15:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JZB**
Chromium, Trivalent	**23**		**0.36**	**1.2**	**mg/Kg-dry**	1	7/1/2019 09:19
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/27/19		Analyst: **RZM**
Chromium, Hexavalent	U		0.97	1.1	mg/Kg-dry	1	6/27/2019 14:39
MOISTURE		Method:	**SW3550C**				Analyst: **KTP**
Moisture	**13**		**0.10**	**0.10**	**% of sample**	1	6/27/2019 13:53
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/27/19		Analyst: **DNW**
pH	**8.78**		**0.10**	**0.100**	**s.u.**	1	6/27/2019 13:00
Temperature	**21.5**		**0.10**	**0.100**	**°C**	1	6/27/2019 13:00
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260**				Analyst: **ALS**
Benzene	U		0.0017	0.0056	mg/Kg-dry-dry	1	6/27/2019
Ethylbenzene	U		0.0017	0.0056	mg/Kg-dry-dry	1	6/27/2019
m,p-Xylene	U		0.0017	0.0056	mg/Kg-dry-dry	1	6/27/2019
o-Xylene	U		0.0017	0.0056	mg/Kg-dry-dry	1	6/27/2019
Toluene	U		0.0017	0.0056	mg/Kg-dry-dry	1	6/27/2019
Xylenes, Total	U		0.041	0.10	mg/Kg-dry-dry	1	6/27/2019
Surr: 4-Bromofluorobenzene	*85.2*			*52-151*	*%REC*	1	6/27/2019
Surr: Dibromofluoromethane	*88.5*			*61-134*	*%REC*	1	6/27/2019
Surr: Toluene-d8	*103*			*57-135*	*%REC*	1	6/27/2019

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-W-Wall @ 4'
Collection Date: 6/25/2019 10:55 AM

Work Order: 19061792
Lab ID: 19061792-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/27/19		Analyst: **KB**
DRO (C10-C28)	**11**		**3.5**	**6.0**	**mg/Kg-dry**	1	6/28/2019 13:19
Surr: 4-Terphenyl-d14	*109*			*34-130*	*%REC*	1	6/28/2019 13:19
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/26/19		Analyst: **KB**
GRO (C6-C10)	**5.5**	J	**2.8**	**6.6**	**mg/Kg-dry**	1	6/26/2019 23:41
Surr: Toluene-d8	*98.8*			*71-123*	*%REC*	1	6/26/2019 23:41
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/28/19		Analyst: **RSH**
Mercury	**0.031**		**0.0021**	**0.021**	**mg/Kg-dry**	1	6/28/2019 15:23
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3050B / 6/26/19		Analyst: **STP**
Arsenic	**21**		**0.051**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Barium	**3,000**		**39**	**42**	**mg/Kg-dry**	100	6/28/2019 13:56
Boron	**12**		**1.6**	**1.7**	**mg/Kg-dry**	1	6/27/2019 23:46
Cadmium	**0.43**		**0.025**	**0.17**	**mg/Kg-dry**	1	6/27/2019 23:46
Chromium	**20**		**0.19**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Copper	**21**		**0.42**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Lead	**21**		**0.20**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Nickel	**14**		**0.22**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Selenium	**0.59**		**0.39**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Silver	**0.074**	J	**0.056**	**0.42**	**mg/Kg-dry**	1	6/27/2019 23:46
Zinc	**53**		**0.83**	**0.85**	**mg/Kg-dry**	1	6/27/2019 23:46
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Calcium	**26**		**0.86**	**5.0**	**mg/L**	10	6/28/2019 15:10
Magnesium	**13**		**0.068**	**2.0**	**mg/L**	10	6/28/2019 15:10
Sodium	**28**		**0.34**	**2.0**	**mg/L**	10	6/28/2019 15:10
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Sodium Adsorption Ratio	**1.1**		**0.010**	**0.010**	**none**	1	6/28/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)		Method: **SW846 8270D**			Prep: SW3546 / 6/27/19		Analyst: **EEW**
Acenaphthene	U		0.00097	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Anthracene	U		0.0017	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Benzo(a)anthracene	U		0.0021	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Benzo(a)pyrene	U		0.0014	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Benzo(b)fluoranthene	U		0.0012	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Benzo(k)fluoranthene	U		0.0015	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Chrysene	U		0.0010	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Dibenzo(a,h)anthracene	U		0.0012	0.0050	mg/Kg-dry	1	6/28/2019 14:23

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

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-W-Wall @ 4'
Collection Date: 6/25/2019 10:55 AM

Work Order: 19061792
Lab ID: 19061792-03
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.00092	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Fluorene	U		0.0017	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Indeno(1,2,3-cd)pyrene	U		0.0018	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Naphthalene	**0.055**		**0.0022**	**0.0050**	**mg/Kg-dry**	1	6/28/2019 14:23
Pyrene	U		0.00083	0.0050	mg/Kg-dry	1	6/28/2019 14:23
Surr: 2-Fluorobiphenyl	*112*			*20-140*	*%REC*	1	6/28/2019 14:23
Surr: 4-Terphenyl-d14	*144*			*22-172*	*%REC*	1	6/28/2019 14:23
Surr: Nitrobenzene-d5	*98.9*			*28-140*	*%REC*	1	6/28/2019 14:23
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/28/19		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.44**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/28/2019 15:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JZB**
Chromium, Trivalent	**20**		**0.38**	**1.2**	**mg/Kg-dry**	1	7/1/2019 09:19
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/27/19		Analyst: **RZM**
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	6/27/2019 14:39
MOISTURE		Method:	**SW3550C**				Analyst: **KTP**
Moisture	**18**		**0.10**	**0.10**	**% of sample**	1	6/27/2019 13:53
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/27/19		Analyst: **DNW**
pH	**8.57**		**0.10**	**0.100**	**s.u.**	1	6/27/2019 13:00
Temperature	**21.3**		**0.10**	**0.100**	**°C**	1	6/27/2019 13:00
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260**				Analyst: **ALS**
Benzene	U		0.0018	0.0061	mg/Kg-dry-dry	1	6/27/2019
Ethylbenzene	U		0.0018	0.0061	mg/Kg-dry-dry	1	6/27/2019
m,p-Xylene	**0.0029**	J	**0.0018**	**0.0061**	**mg/Kg-dry-dry**	1	6/27/2019
o-Xylene	U		0.0018	0.0061	mg/Kg-dry-dry	1	6/27/2019
Toluene	U		0.0018	0.0061	mg/Kg-dry-dry	1	6/27/2019
Xylenes, Total	U		0.043	0.11	mg/Kg-dry-dry	1	6/27/2019
Surr: 4-Bromofluorobenzene	*80.6*			*52-151*	*%REC*	1	6/27/2019
Surr: Dibromofluoromethane	*92.2*			*61-134*	*%REC*	1	6/27/2019
Surr: Toluene-d8	*105*			*57-135*	*%REC*	1	6/27/2019

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-S-Wall @ 4'
Collection Date: 6/25/2019 11:00 AM

Work Order: 19061792
Lab ID: 19061792-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/27/19		Analyst: **KB**
DRO (C10-C28)	**15**	J	**14**	**24**	**mg/Kg-dry**	1	6/28/2019 13:48
Surr: 4-Terphenyl-d14	*105*			*34-130*	*%REC*	1	6/28/2019 13:48
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/26/19		Analyst: **KB**
GRO (C6-C10)	**3.6**	J	**2.7**	**6.5**	**mg/Kg-dry**	1	6/27/2019 12:10
Surr: Toluene-d8	*94.6*			*71-123*	*%REC*	1	6/27/2019 12:10
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/28/19		Analyst: **RSH**
Mercury	**0.071**		**0.0019**	**0.019**	**mg/Kg-dry**	1	6/28/2019 15:26
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3050B / 6/26/19		Analyst: **STP**
Arsenic	**16**		**0.056**	**0.46**	**mg/Kg-dry**	1	6/27/2019 23:48
Barium	**3,100**		**43**	**46**	**mg/Kg-dry**	100	6/28/2019 13:57
Boron	**13**		**1.7**	**1.9**	**mg/Kg-dry**	1	6/27/2019 23:48
Cadmium	**0.32**		**0.028**	**0.19**	**mg/Kg-dry**	1	6/27/2019 23:48
Chromium	**16**		**0.20**	**0.46**	**mg/Kg-dry**	1	6/27/2019 23:48
Copper	**17**		**0.46**	**0.46**	**mg/Kg-dry**	1	6/27/2019 23:48
Lead	**15**		**0.22**	**0.46**	**mg/Kg-dry**	1	6/27/2019 23:48
Nickel	**12**		**0.24**	**0.46**	**mg/Kg-dry**	1	6/27/2019 23:48
Selenium	U		0.43	0.46	mg/Kg-dry	1	6/27/2019 23:48
Silver	U		0.061	0.46	mg/Kg-dry	1	6/27/2019 23:48
Zinc	**41**		**0.91**	**0.93**	**mg/Kg-dry**	1	6/27/2019 23:48
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Calcium	**32**		**0.86**	**5.0**	**mg/L**	10	6/28/2019 15:12
Magnesium	**19**		**0.068**	**2.0**	**mg/L**	10	6/28/2019 15:12
Sodium	**24**		**0.34**	**2.0**	**mg/L**	10	6/28/2019 15:12
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Sodium Adsorption Ratio	**0.82**		**0.010**	**0.010**	**none**	1	6/28/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)		Method: **SW846 8270D**			Prep: SW3546 / 6/27/19		Analyst: **EEW**
Acenaphthene	U		0.0038	0.020	mg/Kg-dry	1	6/28/2019 14:39
Anthracene	U		0.0067	0.020	mg/Kg-dry	1	6/28/2019 14:39
Benzo(a)anthracene	U		0.0082	0.020	mg/Kg-dry	1	6/28/2019 14:39
Benzo(a)pyrene	U		0.0054	0.020	mg/Kg-dry	1	6/28/2019 14:39
Benzo(b)fluoranthene	U		0.0047	0.020	mg/Kg-dry	1	6/28/2019 14:39
Benzo(k)fluoranthene	U		0.0058	0.020	mg/Kg-dry	1	6/28/2019 14:39
Chrysene	U		0.0041	0.020	mg/Kg-dry	1	6/28/2019 14:39
Dibenzo(a,h)anthracene	U		0.0046	0.020	mg/Kg-dry	1	6/28/2019 14:39

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

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-S-Wall @ 4'
Collection Date: 6/25/2019 11:00 AM

Work Order: 19061792
Lab ID: 19061792-04
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.0037	0.020	mg/Kg-dry	1	6/28/2019 14:39
Fluorene	U		0.0065	0.020	mg/Kg-dry	1	6/28/2019 14:39
Indeno(1,2,3-cd)pyrene	U		0.0071	0.020	mg/Kg-dry	1	6/28/2019 14:39
Naphthalene	**0.034**		**0.0086**	**0.020**	**mg/Kg-dry**	1	6/28/2019 14:39
Pyrene	U		0.0033	0.020	mg/Kg-dry	1	6/28/2019 14:39
Surr: 2-Fluorobiphenyl	*95.5*			*20-140*	*%REC*	1	6/28/2019 14:39
Surr: 4-Terphenyl-d14	*127*			*22-172*	*%REC*	1	6/28/2019 14:39
Surr: Nitrobenzene-d5	*95.8*			*28-140*	*%REC*	1	6/28/2019 14:39
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/28/19		Analyst: **JB**
Electrical Conductivity @ Saturation	**2.2**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/28/2019 15:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JZB**
Chromium, Trivalent	**16**		**0.37**	**1.2**	**mg/Kg-dry**	1	7/1/2019 09:19
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/27/19		Analyst: **RZM**
Chromium, Hexavalent	U		0.99	1.2	mg/Kg-dry	1	6/27/2019 14:39
MOISTURE		Method:	**SW3550C**				Analyst: **KTP**
Moisture	**16**		**0.10**	**0.10**	**% of sample**	1	6/27/2019 13:53
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/27/19		Analyst: **DNW**
pH	**8.72**		**0.10**	**0.100**	**s.u.**	1	6/27/2019 13:00
Temperature	**21.3**		**0.10**	**0.100**	**°C**	1	6/27/2019 13:00
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260**				Analyst: **ALS**
Benzene	U		0.0018	0.0058	mg/Kg-dry-dry	1	6/27/2019
Ethylbenzene	U		0.0018	0.0058	mg/Kg-dry-dry	1	6/27/2019
m,p-Xylene	U		0.0018	0.0058	mg/Kg-dry-dry	1	6/27/2019
o-Xylene	U		0.0018	0.0058	mg/Kg-dry-dry	1	6/27/2019
Toluene	U		0.0018	0.0058	mg/Kg-dry-dry	1	6/27/2019
Xylenes, Total	U		0.042	0.11	mg/Kg-dry-dry	1	6/27/2019
Surr: 4-Bromofluorobenzene	*85.4*			*52-151*	*%REC*	1	6/27/2019
Surr: Dibromofluoromethane	*92.1*			*61-134*	*%REC*	1	6/27/2019
Surr: Toluene-d8	*88.1*			*57-135*	*%REC*	1	6/27/2019

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-Base @ 8'
Collection Date: 6/25/2019 01:20 PM

Work Order: 19061792
Lab ID: 19061792-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
DIESEL RANGE ORGANICS BY GC-FID		Method: **SW8015C**			Prep: SW3546 / 6/27/19		Analyst: **KB**
DRO (C10-C28)	**93**		**13**	**23**	**mg/Kg-dry**	1	6/28/2019 14:47
Surr: 4-Terphenyl-d14	*105*			*34-130*	*%REC*	1	6/28/2019 14:47
GASOLINE RANGE ORGANICS BY GC-FID		Method: **SW8015D**			Prep: SW5035 / 6/26/19		Analyst: **KB**
GRO (C6-C10)	**15**		**2.9**	**7.0**	**mg/Kg-dry**	1	6/27/2019 12:40
Surr: Toluene-d8	*115*			*71-123*	*%REC*	1	6/27/2019 12:40
MERCURY BY CVAA		Method: **SW7471B**			Prep: SW7471 / 6/28/19		Analyst: **RSH**
Mercury	**0.020**	J	**0.0022**	**0.022**	**mg/Kg-dry**	1	6/28/2019 15:28
METALS BY ICP-MS		Method: **SW6020A**			Prep: SW3050B / 6/26/19		Analyst: **STP**
Arsenic	**19**		**0.047**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Barium	**590**		**36**	**40**	**mg/Kg-dry**	100	6/28/2019 13:59
Boron	**17**		**1.5**	**1.6**	**mg/Kg-dry**	1	6/27/2019 23:50
Cadmium	**0.35**		**0.024**	**0.16**	**mg/Kg-dry**	1	6/27/2019 23:50
Chromium	**19**		**0.17**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Copper	**21**		**0.40**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Lead	**18**		**0.19**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Nickel	**15**		**0.21**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Selenium	U		0.36	0.40	mg/Kg-dry	1	6/27/2019 23:50
Silver	**0.063**	J	**0.052**	**0.40**	**mg/Kg-dry**	1	6/27/2019 23:50
Zinc	**55**		**0.78**	**0.79**	**mg/Kg-dry**	1	6/27/2019 23:50
SOLUBLE CATIONS FOR SAR		Method: **SW6020A**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Calcium	**29**		**0.86**	**5.0**	**mg/L**	10	6/28/2019 15:14
Magnesium	**11**		**0.068**	**2.0**	**mg/L**	10	6/28/2019 15:14
Sodium	**380**		**0.34**	**2.0**	**mg/L**	10	6/28/2019 15:14
SODIUM ADSORPTION RATIO		Method: **USDA H60 METHOD 2**			Prep: USDA Method 20B / 6/28/19		Analyst: **STP**
Sodium Adsorption Ratio	**15**		**0.010**	**0.010**	**none**	1	6/28/2019
POLYNUCLEAR AROMATIC HYDROCARBONS (PAHS)		Method: **SW846 8270D**			Prep: SW3546 / 6/27/19		Analyst: **EEW**
Acenaphthene	U		0.0037	0.019	mg/Kg-dry	1	6/28/2019 14:54
Anthracene	U		0.0064	0.019	mg/Kg-dry	1	6/28/2019 14:54
Benzo(a)anthracene	U		0.0078	0.019	mg/Kg-dry	1	6/28/2019 14:54
Benzo(a)pyrene	U		0.0052	0.019	mg/Kg-dry	1	6/28/2019 14:54
Benzo(b)fluoranthene	U		0.0046	0.019	mg/Kg-dry	1	6/28/2019 14:54
Benzo(k)fluoranthene	U		0.0056	0.019	mg/Kg-dry	1	6/28/2019 14:54
Chrysene	U		0.0039	0.019	mg/Kg-dry	1	6/28/2019 14:54
Dibenzo(a,h)anthracene	U		0.0045	0.019	mg/Kg-dry	1	6/28/2019 14:54

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

ALS Group, USA

Date: *01-Jul-19*

Client: Caerus Oil and Gas LLC
Project: P27 Flowline
Sample ID: 20190625-P27-Base @ 8'
Collection Date: 6/25/2019 01:20 PM

Work Order: 19061792
Lab ID: 19061792-05
Matrix: SOIL

Analyses	Result	Qual	MDL	Report Limit	Units	Dilution Factor	Date Analyzed
Fluoranthene	U		0.0035	0.019	mg/Kg-dry	1	6/28/2019 14:54
Fluorene	**0.0083**	J	**0.0063**	**0.019**	**mg/Kg-dry**	1	6/28/2019 14:54
Indeno(1,2,3-cd)pyrene	U		0.0068	0.019	mg/Kg-dry	1	6/28/2019 14:54
Naphthalene	**0.069**		**0.0083**	**0.019**	**mg/Kg-dry**	1	6/28/2019 14:54
Pyrene	U		0.0031	0.019	mg/Kg-dry	1	6/28/2019 14:54
Surr: 2-Fluorobiphenyl	*104*			*20-140*	*%REC*	1	6/28/2019 14:54
Surr: 4-Terphenyl-d14	*128*			*22-172*	*%REC*	1	6/28/2019 14:54
Surr: Nitrobenzene-d5	*101*			*28-140*	*%REC*	1	6/28/2019 14:54
ELECTRICAL CONDUCTIVITY (SAR)		Method:	**USDA H60 METHOD 2**		Prep: USDA Method 20B / 6/28/19		Analyst: **JB**
Electrical Conductivity @ Saturation	**0.43**		**0.011**	**0.10**	**mmhos/cm @25°**	20	6/28/2019 15:15
CHROMIUM, TRIVALENT		Method:	**CALCULATION**				Analyst: **JZB**
Chromium, Trivalent	**19**		**0.37**	**1.2**	**mg/Kg-dry**	1	7/1/2019 09:19
CHROMIUM, HEXAVALENT		Method:	**SW7196A**		Prep: SW3060A / 6/27/19		Analyst: **RZM**
Chromium, Hexavalent	U		1.0	1.2	mg/Kg-dry	1	6/27/2019 14:39
MOISTURE		Method:	**SW3550C**				Analyst: **KTP**
Moisture	**17**		**0.10**	**0.10**	**% of sample**	1	6/27/2019 13:53
PH		Method:	**SW9045D**		Prep: EXTRACT / 6/27/19		Analyst: **DNW**
pH	**8.48**		**0.10**	**0.100**	**s.u.**	1	6/27/2019 13:00
Temperature	**21.4**		**0.10**	**0.100**	**°C**	1	6/27/2019 13:00
VOLATILE ORGANIC COMPOUNDS		Method:	**SW8260**				Analyst: **ALS**
Benzene	U		0.0018	0.0059	mg/Kg-dry-dry	1	6/27/2019
Ethylbenzene	**0.0022**	J	**0.0018**	**0.0059**	**mg/Kg-dry-dry**	1	6/27/2019
m,p-Xylene	**0.16**		**0.0018**	**0.0059**	**mg/Kg-dry-dry**	1	6/27/2019
o-Xylene	**0.068**		**0.0018**	**0.0059**	**mg/Kg-dry-dry**	1	6/27/2019
Toluene	**0.0061**		**0.0018**	**0.0059**	**mg/Kg-dry-dry**	1	6/27/2019
Xylenes, Total	**0.22**		**0.043**	**0.11**	**mg/Kg-dry-dry**	1	6/27/2019
Surr: 4-Bromofluorobenzene	*85.3*			*52-151*	*%REC*	1	6/27/2019
Surr: Dibromofluoromethane	*86.2*			*61-134*	*%REC*	1	6/27/2019
Surr: Toluene-d8	*99.8*			*57-135*	*%REC*	1	6/27/2019

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

QC BATCH REPORT

Batch ID: **138363** Instrument ID **GC8** Method: **SW8015C**

MBLK Sample ID: **DBLKS1-138363-138363** Units: **mg/Kg** Analysis Date: **6/28/2019 09:26 AM**

Client ID: Run ID: **GC8_190628A** SeqNo: **5749750** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	U	5.0								
Surr: 4-Terphenyl-d14	*3.567*	0	*3.33*	0	*107*	*34-130*	0			

LCS Sample ID: **DLCSS1-138363-138363** Units: **mg/Kg** Analysis Date: **6/28/2019 09:55 AM**

Client ID: Run ID: **GC8_190628A** SeqNo: **5749751** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	375.5	5.0	333	0	113	65-122	0			
Surr: 4-Terphenyl-d14	*3.317*	0	*3.33*	0	*99.6*	*34-130*	0			

MS Sample ID: **19061786-01B MS** Units: **mg/Kg** Analysis Date: **6/28/2019 10:53 AM**

Client ID: Run ID: **GC8_190628A** SeqNo: **5749754** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	415.3	4.8	321.2	45.39	115	65-122	0			
Surr: 4-Terphenyl-d14	*3.054*	0	*3.212*	0	*95.1*	*34-130*	0			

MSD Sample ID: **19061786-01B MSD** Units: **mg/Kg** Analysis Date: **6/28/2019 11:22 AM**

Client ID: Run ID: **GC8_190628A** SeqNo: **5749755** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (C10-C28)	427.6	4.8	318	45.39	120	65-122	415.3	2.93	30	
Surr: 4-Terphenyl-d14	*3.008*	0	*3.18*	0	*94.6*	*34-130*	3.054	*1.52*	*30*	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138292** Instrument ID **GC9** Method: **SW8015D**

MBLK Sample ID: **MBLK-138292-138292** Units: **µg/Kg-dry** Analysis Date: **6/26/2019 06:18 PM**
Client ID: Run ID: **GC9_190626A** SeqNo: **5743948** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	U	5,000								
Surr: Toluene-d8	*5210*	0	*5000*	0	*104*	*71-123*	0			

LCS Sample ID: **LCS-138292-138292** Units: **µg/Kg-dry** Analysis Date: **6/26/2019 05:48 PM**
Client ID: Run ID: **GC9_190626A** SeqNo: **5743946** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	443300	5,000	500000	0	88.7	71-123	0			
Surr: Toluene-d8	*5804*	0	*5000*	0	*116*	*71-123*	0			

MS Sample ID: **19061813-01A MS** Units: **µg/Kg-dry** Analysis Date: **6/27/2019 04:05 AM**
Client ID: Run ID: **GC9_190626A** SeqNo: **5743966** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	466300	4,600	459100	0	102	71-123	0			
Surr: Toluene-d8	*5396*	0	*4591*	0	*118*	*71-123*	0			

MSD Sample ID: **19061813-01A MSD** Units: **µg/Kg-dry** Analysis Date: **6/27/2019 04:34 AM**
Client ID: Run ID: **GC9_190626A** SeqNo: **5743967** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
GRO (C6-C10)	497900	5,100	513900	0	96.9	71-123	466300	6.55	30	
Surr: Toluene-d8	*5820*	0	*5139*	0	*113*	*71-123*	5396	*7.56*	*30*	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138443** Instrument ID **HG4** Method: **SW7471B**

MBLK Sample ID: **MBLK-138443-138443** Units: **mg/Kg** Analysis Date: **6/28/2019 02:27 PM**
Client ID: Run ID: **HG4_190628A** SeqNo: **5750059** Prep Date: **6/28/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	U	0.020								

LCS Sample ID: **LCS-138443-138443** Units: **mg/Kg** Analysis Date: **6/28/2019 02:30 PM**
Client ID: Run ID: **HG4_190628A** SeqNo: **5750060** Prep Date: **6/28/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1683	0.020	0.1665	0	101	80-120	0			

MS Sample ID: **19061106-20AMS** Units: **mg/Kg** Analysis Date: **6/28/2019 02:49 PM**
Client ID: Run ID: **HG4_190628A** SeqNo: **5750068** Prep Date: **6/28/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.131	0.015	0.1279	0.002756	100	75-125	0			

MSD Sample ID: **19061106-20AMSD** Units: **mg/Kg** Analysis Date: **6/28/2019 02:51 PM**
Client ID: Run ID: **HG4_190628A** SeqNo: **5750069** Prep Date: **6/28/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Mercury	0.1309	0.015	0.1266	0.002756	101	75-125	0.131	0.0948	35	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138268** Instrument ID **ICPMS3** Method: **SW6020A**

MBLK Sample ID: **MBLK-138268-138268** Units: **mg/Kg** Analysis Date: **6/27/2019 10:55 PM**
Client ID: Run ID: **ICPMS3_190627B** SeqNo: **5748160** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	U	0.25								
Barium	U	0.25								
Boron	U	1.0								
Cadmium	U	0.10								
Chromium	U	0.25								
Copper	U	0.25								
Lead	U	0.25								
Nickel	U	0.25								
Selenium	U	0.25								
Silver	U	0.25								
Zinc	U	0.50								

LCS Sample ID: **LCS-138268-138268** Units: **mg/Kg** Analysis Date: **6/27/2019 10:57 PM**
Client ID: Run ID: **ICPMS3_190627B** SeqNo: **5748161** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	5.014	0.25	5	0	100	80-120	0			
Barium	5.231	0.25	5	0	105	80-120	0			
Boron	26.25	1.0	25	0	105	80-120	0			
Cadmium	4.978	0.10	5	0	99.6	80-120	0			
Chromium	5.098	0.25	5	0	102	80-120	0			
Copper	5.158	0.25	5	0	103	80-120	0			
Lead	5.128	0.25	5	0	103	80-120	0			
Nickel	5.183	0.25	5	0	104	80-120	0			
Selenium	4.912	0.25	5	0	98.2	80-120	0			
Silver	5.151	0.25	5	0	103	80-120	0			
Zinc	5.076	0.50	5	0	102	80-120	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138268** Instrument ID **ICPMS3** Method: **SW6020A**

MS Sample ID: **19061813-08AMS** Units: **mg/Kg** Analysis Date: **6/28/2019 12:11 AM**
Client ID: Run ID: **ICPMS3_190627B** SeqNo: **5748204** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	7.133	0.33	6.631	2.018	77.1	75-125	0			
Boron	38.46	1.3	33.16	4.374	103	75-125	0			
Cadmium	5.307	0.13	6.631	0.1727	77.4	75-125	0			
Chromium	14.85	0.33	6.631	8.654	93.4	75-125	0			
Copper	14.11	0.33	6.631	9.392	71.2	75-125	0			S
Lead	17.19	0.33	6.631	10.12	107	75-125	0			
Nickel	17.33	0.33	6.631	10.21	107	75-125	0			
Selenium	5.143	0.33	6.631	0.2571	73.7	75-125	0			S
Silver	4.948	0.33	6.631	0.03975	74	75-125	0			S
Zinc	35.82	0.66	6.631	28.69	107	75-125	0			O

MS Sample ID: **19061813-08AMS** Units: **mg/Kg** Analysis Date: **6/28/2019 02:09 PM**
Client ID: Run ID: **ICPMS3_190628B** SeqNo: **5749616** Prep Date: **6/26/2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	166.4	3.3	6.631	158.5	118	75-125	0			O

MSD Sample ID: **19061813-08AMSD** Units: **mg/Kg** Analysis Date: **6/28/2019 12:13 AM**
Client ID: Run ID: **ICPMS3_190627B** SeqNo: **5748205** Prep Date: **6/26/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Arsenic	6.871	0.33	6.588	2.018	73.7	75-125	7.133	3.75	20	S
Boron	39.19	1.3	32.94	4.374	106	75-125	38.46	1.88	20	
Cadmium	5.312	0.13	6.588	0.1727	78	75-125	5.307	0.0946	20	
Chromium	14.37	0.33	6.588	8.654	86.8	75-125	14.85	3.25	20	
Copper	13.66	0.33	6.588	9.392	64.7	75-125	14.11	3.27	20	S
Lead	16.72	0.33	6.588	10.12	100	75-125	17.19	2.77	20	
Nickel	14.9	0.33	6.588	10.21	71.3	75-125	17.33	15.1	20	S
Selenium	4.924	0.33	6.588	0.2571	70.8	75-125	5.143	4.35	20	S
Silver	5.011	0.33	6.588	0.03975	75.5	75-125	4.948	1.28	20	
Zinc	35.17	0.66	6.588	28.69	98.4	75-125	35.82	1.83	20	O

MSD Sample ID: **19061813-08AMSD** Units: **mg/Kg** Analysis Date: **6/28/2019 02:10 PM**
Client ID: Run ID: **ICPMS3_190628B** SeqNo: **5749618** Prep Date: **6/26/2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Barium	166.4	3.3	6.588	158.5	120	75-125	166.4	0.032	20	O

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138438** Instrument ID **ICPMS3** Method: **SW6020A**

DUP Sample ID: **19061813-02ADUP** Units: **mg/L** Analysis Date: **6/28/2019 03:18 PM**
Client ID: Run ID: **ICPMS3_190628A** SeqNo: **5749903** Prep Date: **6/28/2019** DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	30.55	5.0	0	0	0	0-0	33.47	9.12		
Magnesium	6.21	2.0	0	0	0	0-0	6.54	5.18		
Sodium	24.79	2.0	0	0	0	0-0	19.27	25		

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

Batch ID: **138438** Instrument ID **SAR** Method: **USDA H60 Metho**

DUP Sample ID: **19061813-02ADUP** Units: **none** Analysis Date: **6/28/2019**
Client ID: Run ID: **SAR_190628A** SeqNo: **5748703** Prep Date: **6/28/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Sodium Adsorption Ratio	1.069	0.010	0	0	0		0.7978	29	50	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138362** Instrument ID **SVMS6** Method: **SW846 8270D**

MBLK Sample ID: **PBLKS1-138362-138362** Units: **µg/Kg** Analysis Date: **6/28/2019 11:13 AM**
Client ID: Run ID: **SVMS6_190628A** SeqNo: **5749870** Prep Date: **6/27/2019** DF: **1**

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								
Surr: 2-Fluorobiphenyl	*3172*	0	*3333*	0	*95.2*	*20-140*	0			
Surr: 4-Terphenyl-d14	*4237*	0	*3333*	0	*127*	*22-172*	0			
Surr: Nitrobenzene-d5	*3024*	0	*3333*	0	*90.7*	*28-140*	0			

LCS Sample ID: **PLCSS1-138362-138362** Units: **µg/Kg** Analysis Date: **6/28/2019 11:28 AM**
Client ID: Run ID: **SVMS6_190628A** SeqNo: **5749871** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1248	4.2	1333	0	93.6	40-140	0			
Anthracene	1769	4.2	1333	0	133	40-140	0			
Benzo(a)anthracene	1499	4.2	1333	0	112	40-140	0			
Benzo(a)pyrene	1498	4.2	1333	0	112	40-140	0			
Benzo(b)fluoranthene	1425	4.2	1333	0	107	40-140	0			
Benzo(k)fluoranthene	1369	4.2	1333	0	103	40-140	0			
Chrysene	1396	4.2	1333	0	105	40-140	0			
Dibenzo(a,h)anthracene	1382	4.2	1333	0	104	40-140	0			
Fluoranthene	1267	4.2	1333	0	95.1	40-140	0			
Fluorene	1213	4.2	1333	0	91	40-140	0			
Indeno(1,2,3-cd)pyrene	1429	4.2	1333	0	107	40-140	0			
Naphthalene	1339	4.2	1333	0	100	40-140	0			
Pyrene	1447	4.2	1333	0	109	40-140	0			
Surr: 2-Fluorobiphenyl	*3233*	0	*3333*	0	*97*	*20-140*	0			
Surr: 4-Terphenyl-d14	*3967*	0	*3333*	0	*119*	*22-172*	0			
Surr: Nitrobenzene-d5	*3298*	0	*3333*	0	*99*	*28-140*	0			

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138362** Instrument ID **SVMS6** Method: **SW846 8270D**

MS Sample ID: **19061710-02A MS** Units: **µg/Kg** Analysis Date: **6/28/2019 11:49 AM**
Client ID: Run ID: **SVMS6_190628A** SeqNo: **5749872** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1039	3.9	1260	20.24	80.8	40-140	0			
Anthracene	1488	3.9	1260	38.56	115	40-140	0			
Benzo(a)anthracene	1132	3.9	1260	9.283	89	40-140	0			
Benzo(a)pyrene	1043	3.9	1260	8.992	82.1	40-140	0			
Benzo(b)fluoranthene	1008	3.9	1260	17.66	78.5	40-140	0			
Benzo(k)fluoranthene	933.4	3.9	1260	3.807	73.7	40-140	0			
Chrysene	1054	3.9	1260	42.72	80.2	40-140	0			
Dibenzo(a,h)anthracene	1070	3.9	1260	10.55	84	40-140	0			
Fluoranthene	940	3.9	1260	15.23	73.4	40-140	0			
Fluorene	1057	3.9	1260	144.9	72.4	40-140	0			
Indeno(1,2,3-cd)pyrene	1141	3.9	1260	9.024	89.8	40-140	0			
Naphthalene	1570	3.9	1260	582.5	78.3	40-140	0			
Pyrene	987.3	3.9	1260	59.57	73.6	40-140	0			
Surr: 2-Fluorobiphenyl	*3093*	0	*3152*	0	*98.2*	*20-140*	0			
Surr: 4-Terphenyl-d14	*2817*	0	*3152*	0	*89.4*	*22-172*	0			
Surr: Nitrobenzene-d5	*2949*	0	*3152*	0	*93.6*	*28-140*	0			

MSD Sample ID: **19061710-02A MSD** Units: **µg/Kg** Analysis Date: **6/28/2019 12:04 PM**
Client ID: Run ID: **SVMS6_190628A** SeqNo: **5749873** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Acenaphthene	1036	4.1	1324	20.24	76.7	40-140	1039	0.32	30	
Anthracene	1540	4.1	1324	38.56	113	40-140	1488	3.38	30	
Benzo(a)anthracene	1187	4.1	1324	9.283	88.9	40-140	1132	4.79	30	
Benzo(a)pyrene	1071	4.1	1324	8.992	80.2	40-140	1043	2.6	30	
Benzo(b)fluoranthene	1055	4.1	1324	17.66	78.3	40-140	1008	4.59	30	
Benzo(k)fluoranthene	943.6	4.1	1324	3.807	71	40-140	933.4	1.09	30	
Chrysene	1070	4.1	1324	42.72	77.6	40-140	1054	1.48	30	
Dibenzo(a,h)anthracene	1095	4.1	1324	10.55	81.9	40-140	1070	2.34	30	
Fluoranthene	1001	4.1	1324	15.23	74.4	40-140	940	6.28	30	
Fluorene	1079	4.1	1324	144.9	70.5	40-140	1057	2.01	30	
Indeno(1,2,3-cd)pyrene	1189	4.1	1324	9.024	89.1	40-140	1141	4.13	30	
Naphthalene	1530	4.1	1324	582.5	71.5	40-140	1570	2.55	30	
Pyrene	1001	4.1	1324	59.57	71.1	40-140	987.3	1.42	30	
Surr: 2-Fluorobiphenyl	*2973*	0	*3312*	0	*89.8*	*20-140*	3093	*3.97*	*0*	
Surr: 4-Terphenyl-d14	*2812*	0	*3312*	0	*84.9*	*22-172*	2817	*0.194*	*0*	
Surr: Nitrobenzene-d5	*2769*	0	*3312*	0	*83.6*	*28-140*	2949	*6.3*	*0*	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138317** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-138317-138317** Units: **s.u.** Analysis Date: **6/27/2019 12:30 PM**
Client ID: Run ID: **WETCHEM_190627F** SeqNo: **5745605** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	3.99	0.10	4	0	99.8	90-110	0			

DUP Sample ID: **19061710-01A DUP** Units: **s.u.** Analysis Date: **6/27/2019 12:30 PM**
Client ID: Run ID: **WETCHEM_190627F** SeqNo: **5745611** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	9.1	0.10	0	0	0	0-0	9.11	0.11	20	
Temperature	20.8	0.10	0	0	0		20.9	0.48		

DUP Sample ID: **19061813-01A DUP** Units: **s.u.** Analysis Date: **6/27/2019 12:30 PM**
Client ID: Run ID: **WETCHEM_190627F** SeqNo: **5745620** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.89	0.10	0	0	0	0-0	8.85	0.451	20	
Temperature	20.7	0.10	0	0	0		20.6	0.484		

The following samples were analyzed in this batch: 19061792-01B

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138330** Instrument ID **WETCHEM** Method: **SW9045D**

LCS Sample ID: **LCS-138330-138330** Units: **s.u.** Analysis Date: **6/27/2019 01:00 PM**
Client ID: Run ID: **WETCHEM_190627H** SeqNo: **5745753** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	4	0.10	4	0	100	90-110	0			

DUP Sample ID: **19061785-06A DUP** Units: **s.u.** Analysis Date: **6/27/2019 01:00 PM**
Client ID: Run ID: **WETCHEM_190627H** SeqNo: **5745761** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	7.17	0.10	0	0	0	0-0	7.18	0.139	20	
Temperature	21.5	0.10	0	0	0		21.5	0		

DUP Sample ID: **19061792-02B DUP** Units: **s.u.** Analysis Date: **6/27/2019 01:00 PM**
Client ID: **20190625-P27-N-Wall @ 5.5'** Run ID: **WETCHEM_190627H** SeqNo: **5745763** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
pH	8.76	0.10	0	0	0	0-0	8.78	0.228	20	
Temperature	21.5	0.10	0	0	0		21.5	0		

The following samples were analyzed in this batch:

19061792-02B	19061792-03B	19061792-04B
19061792-05B		

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138342** Instrument ID **WETCHEM** Method: **SW7196A**

MBLK Sample ID: **MBLK-138342-138342** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: Run ID: **WETCHEM_190627J** SeqNo: **5746344** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	U	1.0								

LCS Sample ID: **LCS-138342-138342** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: Run ID: **WETCHEM_190627J** SeqNo: **5746345** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.28	1.0	5	0	85.6	80-120	0			

MS Sample ID: **19061792-01B MS** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: **20190625-P27-E-Wall @ 6'** Run ID: **WETCHEM_190627J** SeqNo: **5746349** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1.069	0.98	4.902	0.42	13.2	75-125	0			S

MS Sample ID: **19061792-01B MSI** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: **20190625-P27-E-Wall @ 6'** Run ID: **WETCHEM_190627J** SeqNo: **5746351** Prep Date: **6/27/2019** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	1535	100	1673	0.42	91.7	75-125	0			

MS Sample ID: **19061813-01A MS** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: Run ID: **WETCHEM_190627J** SeqNo: **5746358** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.67	1.0	5	0.04	92.6	75-125	0			

MS Sample ID: **19061813-01A MSI** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: Run ID: **WETCHEM_190627J** SeqNo: **5746360** Prep Date: **6/27/2019** DF: **100**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	2088	100	2124	0.04	98.3	75-125	0			

MSD Sample ID: **19061792-01B MSD** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: **20190625-P27-E-Wall @ 6'** Run ID: **WETCHEM_190627J** SeqNo: **5746350** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	U	1.0	5	0.42	-8.4	75-125	1.069	0	20	S

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138342** Instrument ID **WETCHEM** Method: **SW7196A**

MSD Sample ID: **19061813-01A MSD** Units: **mg/Kg** Analysis Date: **6/27/2019 02:39 PM**
Client ID: Run ID: **WETCHEM_190627J** SeqNo: **5746359** Prep Date: **6/27/2019** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chromium, Hexavalent	4.8	1.0	5	0.04	95.2	75-125	4.67	2.75	20	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **138438** Instrument ID **WETCHEM** Method: **USDA H60 Metho**

DUP Sample ID: **19061813-02A DUP** Units: **mmhos/cm @25°** Analysis Date: **6/28/2019 03:00 PM**

Client ID: Run ID: **WETCHEM_190628M** SeqNo: **5750121** Prep Date: **6/28/2019** DF: **20**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Electrical Conductivity @ Saturation	0.313	0.10	0	0	0		0.3122	0.256	50	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **R263741** Instrument ID **MOIST** Method: **SW3550C**

MBLK Sample ID: **WBLKS-R263741** Units: **% of sample** Analysis Date: **6/27/2019 01:53 PM**
Client ID: Run ID: **MOIST_190627B** SeqNo: **5748582** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	U	0.10								

LCS Sample ID: **LCS-R263741** Units: **% of sample** Analysis Date: **6/27/2019 01:53 PM**
Client ID: Run ID: **MOIST_190627B** SeqNo: **5748581** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	100	0.10	100	0	100	98-102	0			

DUP Sample ID: **19061848-03A DUP** Units: **% of sample** Analysis Date: **6/27/2019 01:53 PM**
Client ID: Run ID: **MOIST_190627B** SeqNo: **5748577** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	14.22	0.10	0	0	0	0-0	14.05	1.2	10	

DUP Sample ID: **19061848-04A DUP** Units: **% of sample** Analysis Date: **6/27/2019 01:53 PM**
Client ID: Run ID: **MOIST_190627B** SeqNo: **5748579** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Moisture	16.27	0.10	0	0	0	0-0	16.18	0.555	10	

The following samples were analyzed in this batch:

19061792-01B	19061792-02B	19061792-03B
19061792-04B	19061792-05B	

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

Client: Caerus Oil and Gas LLC
Work Order: 19061792
Project: P27 Flowline

QC BATCH REPORT

Batch ID: **R263949** Instrument ID **SUB** Method: **SW8260**

MBLK Sample ID: **Method Blank-R263949** Units: **µg/Kg** Analysis Date: **6/27/2019**
Client ID: Run ID: **SUB_190701E** SeqNo: **5754594** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	U	5.0								
Ethylbenzene	U	5.0								
m,p-Xylene	U	5.0								
o-Xylene	U	5.0								
Toluene	U	5.0								
Xylenes, Total	U	90								
Surr: 4-Bromofluorobenzene	*45.9*	0	*50*	0	*91.8*	*52-151*	0			
Surr: Dibromofluoromethane	*43.3*	0	*50*	0	*86.6*	*61-134*	0			
Surr: Toluene-d8	*52.2*	0	*50*	0	*104*	*57-135*	0			

LCS Sample ID: **Lab Control Sample-R263949** Units: **µg/Kg** Analysis Date: **6/27/2019**
Client ID: Run ID: **SUB_190701E** SeqNo: **5754593** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	44.5	5.0	40	0	111	73-126	0			
Ethylbenzene	40.8	5.0	40	0	102	74-127	0			
m,p-Xylene	79	5.0	80	0	98.8	79-126	0			
o-Xylene	38.4	5.0	40	0	96	77-125	0			
Toluene	42.7	5.0	40	0	107	71-127	0			
Xylenes, Total	117.4	90	120	0	97.8	75-125	0			
Surr: 4-Bromofluorobenzene	*46.4*	0	*50*	0	*92.8*	*52-151*	0			
Surr: Dibromofluoromethane	*44*	0	*50*	0	*88*	*61-134*	0			
Surr: Toluene-d8	*52.5*	0	*50*	0	*105*	*57-135*	0			

LCSD Sample ID: **Duplicate Lab Control Sample-R2639** Units: **µg/Kg** Analysis Date: **6/27/2019**
Client ID: Run ID: **SUB_190701E** SeqNo: **5754592** Prep Date: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	46.6	5.0	40	0	116	73-126	44.5	4.61	30	
Ethylbenzene	43.7	5.0	40	0	109	74-127	40.8	6.86	30	
m,p-Xylene	83.4	5.0	80	0	104	79-126	79	5.42	30	
o-Xylene	41.5	5.0	40	0	104	77-125	38.4	7.76	30	
Toluene	46.5	5.0	40	0	116	71-127	42.7	8.52	30	
Xylenes, Total	124.9	90	120	0	104		117.4	6.19		
Surr: 4-Bromofluorobenzene	*46.3*	0	*50*	0	*92.6*	*52-151*	46.4	*0.216*		
Surr: Dibromofluoromethane	*43.6*	0	*50*	0	*87.2*	*61-134*	44	*0.913*		
Surr: Toluene-d8	*53.4*	0	*50*	0	*107*	*57-135*	52.5	*1.7*		

The following samples were analyzed in this batch:

19061792-01A	19061792-02A	19061792-03A
19061792-04A	19061792-05A	

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

ALS Laboratory Group

225 Commerce Drive, Fort Collins, Colorado 80524
TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Form 202r8

WORKORDER # 19061792

PAGE 1 of 1

DISPOSAL By Lab or Return to Client

PROJECT NAME	P27 Flowline	SAMPLER	Jake Janicek
FACILITY NAME		PROJECT NO.	
FACILITY ID (API)		EDD FORMAT	
COMPANY NAME	Caerus	PURCHASE ORDER	
SEND REPORT TO	Jake Janicek	BILL TO COMPANY	
ADDRESS		INVOICE ATTN TO	Jake Janicek
CITY / STATE / ZIP		ADDRESS	
PHONE		CITY / STATE / ZIP	
FAX		PHONE	
E-MAIL		FAX	
		E-MAIL	

DATE 6-25-19

TURNAROUND 3-DAY

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	TPH GRO/DRO	BTEX	Table 910 PAHs	Table 910 metals	EC	pH	SAR
1	20190625-P27-E-wall@6'	S	6-25-19	1039	2			X	X	X	X	X	X	X
2	20190625-P27-35-N-wall@5.5'			1048				X	X	X	X	X	X	X
3	20190625-P27-W-wall@4'			1055				X	X	X	X	X	X	X
4	20190625-P27-S-wall@4'			1100				X	X	X	X	X	X	X
5	20190625-P27-Base@8'			1320				X	X	X	X	X	X	X

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

Comments:	QC PACKAGE (check below)
SRZ 4.4°C	LEVEL II (Standard QC)
	LEVEL III (Std QC + forms)
	LEVEL IV (Std QC + forms + raw data)

Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 7-Other 8-4 degrees C 9-5035

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Jake Janicek	6-25-19	1530
RECEIVED BY		W.M	6-25-19	1530
RELINQUISHED BY		W.M	6-25-19	1830
RECEIVED BY		Diane E. Shea	6/26/19	1000
RELINQUISHED BY				
RECEIVED BY				

ALS Group, USA

Sample Receipt Checklist

Client Name: **CAERUS** Date/Time Received: **26-Jun-19 10:00**

Work Order: **19061792** Received by: **DS**

Checklist completed by Diane Shaw (eSignature) 26-Jun-19 (Date) Reviewed by: Chad Whelton (eSignature) 26-Jun-19 (Date)

Matrices: Soil

Carrier name: FedEx

Shipping container/cooler in good condition?	Yes ☑	No ☐	Not Present ☐
Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	Not Present ☑
Custody seals intact on sample bottles?	Yes ☐	No ☐	Not Present ☑
Chain of custody present?	Yes ☑	No ☐	
Chain of custody signed when relinquished and received?	Yes ☑	No ☐	
Chain of custody agrees with sample labels?	Yes ☑	No ☐	
Samples in proper container/bottle?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	
All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature in compliance?	Yes ☑	No ☐	
Sample(s) received on ice?	Yes ☑	No ☐	
Temperature(s)/Thermometer(s):	4.4/4.4 c	SR2	
Cooler(s)/Kit(s):			
Date/Time sample(s) sent to storage:	6/26/2019 12:57:51 PM		
Water - VOA vials have zero headspace?	Yes ☐	No ☐	No VOA vials submitted ☑
Water - pH acceptable upon receipt?	Yes ☐	No ☐	N/A ☑
pH adjusted?	Yes ☐	No ☐	N/A ☑
pH adjusted by:	-		

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

CorrectiveAction: