

October 15, 2019

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Hunter Ridge Energy Services, LLC- CO

Sample Delivery Group: L1145294
Samples Received: 10/02/2019
Project Number: A27
Description: A27 Spring Q3
Site: A27
Report To: Paul Buck
143 Diamond Avenue
Parachute, CO 81635

Entire Report Reviewed By:

Chris Ward

Chris Ward
Project Manager

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 Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.





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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



20190930-A27 SEEP 7 L1145294-01 GW

Collected by
Matt Kasten

Collected date/time
09/30/19 11:50

Received date/time
10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015	WG1360893	1	10/11/19 12:26	10/11/19 12:26	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1359529	1	10/09/19 01:32	10/09/19 01:32	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 06:16	SHG	Mt. Juliet, TN

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20190930-A27 ESS L1145294-02 GW

Collected by
Matt Kasten

Collected date/time
09/30/19 12:00

Received date/time
10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method 8015	WG1360893	1	10/11/19 12:49	10/11/19 12:49	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1359529	1	10/09/19 01:52	10/09/19 01:52	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 06:39	SHG	Mt. Juliet, TN

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ACCOUNT:

Hunter Ridge Energy Services, LLC- CO

PROJECT:

A27

SDG:

L1145294

DATE/TIME:

10/15/19 11:32

PAGE:

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All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, 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.

Chris Ward
Project Manager

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Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2019 12:26	WG1360893
(S) a,a,a-Trifluorotoluene(FID)	106		78.0-120		10/11/2019 12:26	WG1360893
(S) a,a,a-Trifluorotoluene(PID)	101		79.0-125		10/11/2019 12:26	WG1360893

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	0.200		0.0500	1	10/09/2019 01:32	WG1359529
Acrolein	ND		0.0500	1	10/09/2019 01:32	WG1359529
Acrylonitrile	ND		0.0100	1	10/09/2019 01:32	WG1359529
Benzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Bromobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Bromodichloromethane	0.00238		0.00100	1	10/09/2019 01:32	WG1359529
Bromoform	ND		0.00100	1	10/09/2019 01:32	WG1359529
Bromomethane	ND		0.00500	1	10/09/2019 01:32	WG1359529
n-Butylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
sec-Butylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
tert-Butylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Carbon tetrachloride	ND		0.00100	1	10/09/2019 01:32	WG1359529
Chlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Chlorodibromomethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
Chloroethane	ND		0.00500	1	10/09/2019 01:32	WG1359529
Chloroform	0.0238		0.00500	1	10/09/2019 01:32	WG1359529
Chloromethane	ND		0.00250	1	10/09/2019 01:32	WG1359529
2-Chlorotoluene	ND		0.00100	1	10/09/2019 01:32	WG1359529
4-Chlorotoluene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	10/09/2019 01:32	WG1359529
1,2-Dibromoethane	ND	J4	0.00100	1	10/09/2019 01:32	WG1359529
Dibromomethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,3-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,4-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Dichlorodifluoromethane	ND		0.00500	1	10/09/2019 01:32	WG1359529
1,1-Dichloroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2-Dichloroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1-Dichloroethene	ND		0.00100	1	10/09/2019 01:32	WG1359529
cis-1,2-Dichloroethene	ND		0.00100	1	10/09/2019 01:32	WG1359529
trans-1,2-Dichloroethene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2-Dichloropropane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1-Dichloropropene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,3-Dichloropropane	ND		0.00100	1	10/09/2019 01:32	WG1359529
cis-1,3-Dichloropropene	ND		0.00100	1	10/09/2019 01:32	WG1359529
trans-1,3-Dichloropropene	ND		0.00100	1	10/09/2019 01:32	WG1359529
2,2-Dichloropropane	ND		0.00100	1	10/09/2019 01:32	WG1359529
Di-isopropyl ether	ND		0.00100	1	10/09/2019 01:32	WG1359529
Ethylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Hexachloro-1,3-butadiene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Isopropylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
p-Isopropyltoluene	ND		0.00100	1	10/09/2019 01:32	WG1359529
2-Butanone (MEK)	0.0513		0.0100	1	10/09/2019 01:32	WG1359529
Methylene Chloride	ND		0.00500	1	10/09/2019 01:32	WG1359529
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	10/09/2019 01:32	WG1359529
Methyl tert-butyl ether	ND		0.00100	1	10/09/2019 01:32	WG1359529
Naphthalene	ND		0.00500	1	10/09/2019 01:32	WG1359529
n-Propylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529

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Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Styrene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1,1,2-Tetrachloroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1,2,2-Tetrachloroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
Tetrachloroethene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Toluene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2,3-Trichlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2,4-Trichlorobenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1,1-Trichloroethane	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,1,2-Trichloroethane	ND	J4	0.00100	1	10/09/2019 01:32	WG1359529
Trichloroethene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Trichlorofluoromethane	ND		0.00500	1	10/09/2019 01:32	WG1359529
1,2,3-Trichloropropane	ND		0.00250	1	10/09/2019 01:32	WG1359529
1,2,4-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,2,3-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
1,3,5-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:32	WG1359529
Vinyl chloride	ND		0.00100	1	10/09/2019 01:32	WG1359529
Xylenes, Total	ND		0.00300	1	10/09/2019 01:32	WG1359529
(S) Toluene-d8	86.9		80.0-120		10/09/2019 01:32	WG1359529
(S) 4-Bromofluorobenzene	96.4		77.0-126		10/09/2019 01:32	WG1359529
(S) 1,2-Dichloroethane-d4	85.6		70.0-130		10/09/2019 01:32	WG1359529

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Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 06:16	WG1356184
(S) o-Terphenyl	73.7		31.0-160		10/05/2019 06:16	WG1356184



Volatile Organic Compounds (GC) by Method 8015/8021

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	ND		0.100	1	10/11/2019 12:49	WG1360893
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		10/11/2019 12:49	WG1360893
(S) a,a,a-Trifluorotoluene(PID)	101		79.0-125		10/11/2019 12:49	WG1360893

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	0.319		0.0500	1	10/09/2019 01:52	WG1359529
Acrolein	ND		0.0500	1	10/09/2019 01:52	WG1359529
Acrylonitrile	ND		0.0100	1	10/09/2019 01:52	WG1359529
Benzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Bromobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Bromodichloromethane	0.00328		0.00100	1	10/09/2019 01:52	WG1359529
Bromoform	ND		0.00100	1	10/09/2019 01:52	WG1359529
Bromomethane	ND		0.00500	1	10/09/2019 01:52	WG1359529
n-Butylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
sec-Butylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
tert-Butylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Carbon tetrachloride	ND		0.00100	1	10/09/2019 01:52	WG1359529
Chlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Chlorodibromomethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
Chloroethane	ND		0.00500	1	10/09/2019 01:52	WG1359529
Chloroform	0.0305		0.00500	1	10/09/2019 01:52	WG1359529
Chloromethane	ND		0.00250	1	10/09/2019 01:52	WG1359529
2-Chlorotoluene	ND		0.00100	1	10/09/2019 01:52	WG1359529
4-Chlorotoluene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	10/09/2019 01:52	WG1359529
1,2-Dibromoethane	ND	J4	0.00100	1	10/09/2019 01:52	WG1359529
Dibromomethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,3-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,4-Dichlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Dichlorodifluoromethane	ND		0.00500	1	10/09/2019 01:52	WG1359529
1,1-Dichloroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2-Dichloroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1-Dichloroethene	ND		0.00100	1	10/09/2019 01:52	WG1359529
cis-1,2-Dichloroethene	ND		0.00100	1	10/09/2019 01:52	WG1359529
trans-1,2-Dichloroethene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2-Dichloropropane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1-Dichloropropene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,3-Dichloropropane	ND		0.00100	1	10/09/2019 01:52	WG1359529
cis-1,3-Dichloropropene	ND		0.00100	1	10/09/2019 01:52	WG1359529
trans-1,3-Dichloropropene	ND		0.00100	1	10/09/2019 01:52	WG1359529
2,2-Dichloropropane	ND		0.00100	1	10/09/2019 01:52	WG1359529
Di-isopropyl ether	ND		0.00100	1	10/09/2019 01:52	WG1359529
Ethylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Hexachloro-1,3-butadiene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Isopropylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
p-Isopropyltoluene	ND		0.00100	1	10/09/2019 01:52	WG1359529
2-Butanone (MEK)	0.0828		0.0100	1	10/09/2019 01:52	WG1359529
Methylene Chloride	ND		0.00500	1	10/09/2019 01:52	WG1359529
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	10/09/2019 01:52	WG1359529
Methyl tert-butyl ether	ND		0.00100	1	10/09/2019 01:52	WG1359529
Naphthalene	ND		0.00500	1	10/09/2019 01:52	WG1359529
n-Propylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529

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Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Styrene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1,1,2-Tetrachloroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1,2,2-Tetrachloroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1,2-Trichlorotrifluoroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
Tetrachloroethene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Toluene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2,3-Trichlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2,4-Trichlorobenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1,1-Trichloroethane	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,1,2-Trichloroethane	ND	J4	0.00100	1	10/09/2019 01:52	WG1359529
Trichloroethene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Trichlorofluoromethane	ND		0.00500	1	10/09/2019 01:52	WG1359529
1,2,3-Trichloropropane	ND		0.00250	1	10/09/2019 01:52	WG1359529
1,2,4-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,2,3-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
1,3,5-Trimethylbenzene	ND		0.00100	1	10/09/2019 01:52	WG1359529
Vinyl chloride	ND		0.00100	1	10/09/2019 01:52	WG1359529
Xylenes, Total	ND		0.00300	1	10/09/2019 01:52	WG1359529
(S) Toluene-d8	88.8		80.0-120		10/09/2019 01:52	WG1359529
(S) 4-Bromofluorobenzene	97.4		77.0-126		10/09/2019 01:52	WG1359529
(S) 1,2-Dichloroethane-d4	85.6		70.0-130		10/09/2019 01:52	WG1359529

1 Cp

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Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 06:39	WG1356184
(S) o-Terphenyl	71.6		31.0-160		10/05/2019 06:39	WG1356184



Method Blank (MB)

(MB) R3460429-3 10/11/19 08:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	0.0611	⬇	0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	104			78.0-120
(S) a,a,a-Trifluorotoluene(PID)	100			79.0-125

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Laboratory Control Sample (LCS)

(LCS) R3460429-2 10/11/19 08:11

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.96	90.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			104	78.0-120	
(S) a,a,a-Trifluorotoluene(PID)			104	79.0-125	

L1145178-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1145178-06 10/11/19 10:57 • (MS) R3460429-4 10/11/19 15:47 • (MSD) R3460429-5 10/11/19 16:10

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.115	5.76	4.68	103	83.0	1	10.0-160			20.7	22
(S) a,a,a-Trifluorotoluene(FID)					109	105		78.0-120				
(S) a,a,a-Trifluorotoluene(PID)					108	106		79.0-125				



Method Blank (MB)

(MB) R3459687-3 10/09/19 00:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0100	0.0500
Acrolein	U		0.00887	0.0500
Acrylonitrile	U		0.00187	0.0100
Benzene	U		0.000331	0.00100
Bromobenzene	U		0.000352	0.00100
Bromodichloromethane	U		0.000380	0.00100
Bromoform	U		0.000469	0.00100
Bromomethane	U		0.000866	0.00500
n-Butylbenzene	U		0.000361	0.00100
sec-Butylbenzene	U		0.000365	0.00100
tert-Butylbenzene	U		0.000399	0.00100
Carbon tetrachloride	U		0.000379	0.00100
Chlorobenzene	U		0.000348	0.00100
Chlorodibromomethane	U		0.000327	0.00100
Chloroethane	U		0.000453	0.00500
Chloroform	U		0.000324	0.00500
Chloromethane	U		0.000276	0.00250
2-Chlorotoluene	U		0.000375	0.00100
4-Chlorotoluene	U		0.000351	0.00100
1,2-Dibromo-3-Chloropropane	U		0.00133	0.00500
1,2-Dibromoethane	U		0.000381	0.00100
Dibromomethane	U		0.000346	0.00100
1,2-Dichlorobenzene	U		0.000349	0.00100
1,3-Dichlorobenzene	U		0.000220	0.00100
1,4-Dichlorobenzene	U		0.000274	0.00100
Dichlorodifluoromethane	U		0.000551	0.00500
1,1-Dichloroethane	U		0.000259	0.00100
1,2-Dichloroethane	U		0.000361	0.00100
1,1-Dichloroethene	U		0.000398	0.00100
cis-1,2-Dichloroethene	U		0.000260	0.00100
trans-1,2-Dichloroethene	U		0.000396	0.00100
1,2-Dichloropropane	U		0.000306	0.00100
1,1-Dichloropropene	U		0.000352	0.00100
1,3-Dichloropropane	U		0.000366	0.00100
cis-1,3-Dichloropropene	U		0.000418	0.00100
trans-1,3-Dichloropropene	U		0.000419	0.00100
2,2-Dichloropropane	U		0.000321	0.00100
Di-isopropyl ether	U		0.000320	0.00100
Ethylbenzene	U		0.000384	0.00100
Hexachloro-1,3-butadiene	U		0.000256	0.00100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3459687-3 10/09/19 00:13

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Isopropylbenzene	U		0.000326	0.00100
p-Isopropyltoluene	U		0.000350	0.00100
2-Butanone (MEK)	U		0.00393	0.0100
Methylene Chloride	U		0.00100	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.00214	0.0100
Methyl tert-butyl ether	U		0.000367	0.00100
Naphthalene	U		0.00100	0.00500
n-Propylbenzene	U		0.000349	0.00100
Styrene	U		0.000307	0.00100
1,1,1,2-Tetrachloroethane	U		0.000385	0.00100
1,1,2,2-Tetrachloroethane	U		0.000130	0.00100
Tetrachloroethene	U		0.000372	0.00100
Toluene	U		0.000412	0.00100
1,1,2-Trichlorotrifluoroethane	U		0.000303	0.00100
1,2,3-Trichlorobenzene	U		0.000230	0.00100
1,2,4-Trichlorobenzene	U		0.000355	0.00100
1,1,1-Trichloroethane	U		0.000319	0.00100
1,1,2-Trichloroethane	U		0.000383	0.00100
Trichloroethene	U		0.000398	0.00100
Trichlorofluoromethane	U		0.00120	0.00500
1,2,3-Trichloropropane	U		0.000807	0.00250
1,2,3-Trimethylbenzene	U		0.000321	0.00100
1,2,4-Trimethylbenzene	U		0.000373	0.00100
1,3,5-Trimethylbenzene	U		0.000387	0.00100
Vinyl chloride	U		0.000259	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	87.1			80.0-120
(S) 4-Bromofluorobenzene	96.9			77.0-126
(S) 1,2-Dichloroethane-d4	84.4			70.0-130

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459687-1 10/08/19 23:14 • (LCSD) R3459687-2 10/08/19 23:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.125	0.0918	0.102	73.4	81.6	19.0-160			10.5	27
Acrolein	0.125	0.102	0.108	81.6	86.4	10.0-160			5.71	26
Acrylonitrile	0.125	0.104	0.108	83.2	86.4	55.0-149			3.77	20
Benzene	0.0250	0.0239	0.0246	95.6	98.4	70.0-123			2.89	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459687-1 10/08/19 23:14 • (LCSD) R3459687-2 10/08/19 23:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
Bromobenzene	0.0250	0.0225	0.0227	90.0	90.8	73.0-121			0.885	20
Bromodichloromethane	0.0250	0.0223	0.0229	89.2	91.6	75.0-120			2.65	20
Bromoform	0.0250	0.0183	0.0192	73.2	76.8	68.0-132			4.80	20
Bromomethane	0.0250	0.0177	0.0171	70.8	68.4	10.0-160			3.45	25
n-Butylbenzene	0.0250	0.0223	0.0232	89.2	92.8	73.0-125			3.96	20
sec-Butylbenzene	0.0250	0.0224	0.0229	89.6	91.6	75.0-125			2.21	20
tert-Butylbenzene	0.0250	0.0213	0.0221	85.2	88.4	76.0-124			3.69	20
Carbon tetrachloride	0.0250	0.0223	0.0228	89.2	91.2	68.0-126			2.22	20
Chlorobenzene	0.0250	0.0201	0.0212	80.4	84.8	80.0-121			5.33	20
Chlorodibromomethane	0.0250	0.0193	0.0205	77.2	82.0	77.0-125			6.03	20
Chloroethane	0.0250	0.0258	0.0257	103	103	47.0-150			0.388	20
Chloroform	0.0250	0.0231	0.0236	92.4	94.4	73.0-120			2.14	20
Chloromethane	0.0250	0.0205	0.0222	82.0	88.8	41.0-142			7.96	20
2-Chlorotoluene	0.0250	0.0223	0.0226	89.2	90.4	76.0-123			1.34	20
4-Chlorotoluene	0.0250	0.0216	0.0222	86.4	88.8	75.0-122			2.74	20
1,2-Dibromo-3-Chloropropane	0.0250	0.0196	0.0200	78.4	80.0	58.0-134			2.02	20
1,2-Dibromoethane	0.0250	0.0199	0.0212	79.6	84.8	80.0-122	J4		6.33	20
Dibromomethane	0.0250	0.0230	0.0234	92.0	93.6	80.0-120			1.72	20
1,2-Dichlorobenzene	0.0250	0.0220	0.0223	88.0	89.2	79.0-121			1.35	20
1,3-Dichlorobenzene	0.0250	0.0225	0.0233	90.0	93.2	79.0-120			3.49	20
1,4-Dichlorobenzene	0.0250	0.0220	0.0228	88.0	91.2	79.0-120			3.57	20
Dichlorodifluoromethane	0.0250	0.0274	0.0278	110	111	51.0-149			1.45	20
1,1-Dichloroethane	0.0250	0.0228	0.0234	91.2	93.6	70.0-126			2.60	20
1,2-Dichloroethane	0.0250	0.0214	0.0217	85.6	86.8	70.0-128			1.39	20
1,1-Dichloroethene	0.0250	0.0255	0.0261	102	104	71.0-124			2.33	20
cis-1,2-Dichloroethene	0.0250	0.0238	0.0250	95.2	100	73.0-120			4.92	20
trans-1,2-Dichloroethene	0.0250	0.0227	0.0239	90.8	95.6	73.0-120			5.15	20
1,2-Dichloropropane	0.0250	0.0225	0.0229	90.0	91.6	77.0-125			1.76	20
1,1-Dichloropropene	0.0250	0.0251	0.0256	100	102	74.0-126			1.97	20
1,3-Dichloropropane	0.0250	0.0208	0.0219	83.2	87.6	80.0-120			5.15	20
cis-1,3-Dichloropropene	0.0250	0.0224	0.0231	89.6	92.4	80.0-123			3.08	20
trans-1,3-Dichloropropene	0.0250	0.0206	0.0211	82.4	84.4	78.0-124			2.40	20
2,2-Dichloropropane	0.0250	0.0216	0.0226	86.4	90.4	58.0-130			4.52	20
Di-isopropyl ether	0.0250	0.0223	0.0225	89.2	90.0	58.0-138			0.893	20
Ethylbenzene	0.0250	0.0213	0.0224	85.2	89.6	79.0-123			5.03	20
Hexachloro-1,3-butadiene	0.0250	0.0245	0.0261	98.0	104	54.0-138			6.32	20
Isopropylbenzene	0.0250	0.0195	0.0208	78.0	83.2	76.0-127			6.45	20
p-Isopropyltoluene	0.0250	0.0222	0.0230	88.8	92.0	76.0-125			3.54	20
2-Butanone (MEK)	0.125	0.0951	0.100	76.1	80.0	44.0-160			5.02	20
Methylene Chloride	0.0250	0.0223	0.0228	89.2	91.2	67.0-120			2.22	20

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc



Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459687-1 10/08/19 23:14 • (LCSD) R3459687-2 10/08/19 23:34

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
4-Methyl-2-pentanone (MIBK)	0.125	0.0863	0.0932	69.0	74.6	68.0-142			7.69	20
Methyl tert-butyl ether	0.0250	0.0219	0.0224	87.6	89.6	68.0-125			2.26	20
Naphthalene	0.0250	0.0186	0.0201	74.4	80.4	54.0-135			7.75	20
n-Propylbenzene	0.0250	0.0220	0.0225	88.0	90.0	77.0-124			2.25	20
Styrene	0.0250	0.0202	0.0213	80.8	85.2	73.0-130			5.30	20
1,1,1,2-Tetrachloroethane	0.0250	0.0191	0.0206	76.4	82.4	75.0-125			7.56	20
1,1,2,2-Tetrachloroethane	0.0250	0.0200	0.0205	80.0	82.0	65.0-130			2.47	20
Tetrachloroethene	0.0250	0.0224	0.0235	89.6	94.0	72.0-132			4.79	20
Toluene	0.0250	0.0207	0.0218	82.8	87.2	79.0-120			5.18	20
1,1,2-Trichlorotrifluoroethane	0.0250	0.0235	0.0238	94.0	95.2	69.0-132			1.27	20
1,2,3-Trichlorobenzene	0.0250	0.0214	0.0228	85.6	91.2	50.0-138			6.33	20
1,2,4-Trichlorobenzene	0.0250	0.0222	0.0231	88.8	92.4	57.0-137			3.97	20
1,1,1-Trichloroethane	0.0250	0.0225	0.0231	90.0	92.4	73.0-124			2.63	20
1,1,2-Trichloroethane	0.0250	0.0188	0.0198	75.2	79.2	80.0-120	J4	J4	5.18	20
Trichloroethene	0.0250	0.0234	0.0243	93.6	97.2	78.0-124			3.77	20
Trichlorofluoromethane	0.0250	0.0262	0.0262	105	105	59.0-147			0.000	20
1,2,3-Trichloropropane	0.0250	0.0209	0.0219	83.6	87.6	73.0-130			4.67	20
1,2,3-Trimethylbenzene	0.0250	0.0214	0.0216	85.6	86.4	77.0-120			0.930	20
1,2,4-Trimethylbenzene	0.0250	0.0209	0.0218	83.6	87.2	76.0-121			4.22	20
1,3,5-Trimethylbenzene	0.0250	0.0209	0.0213	83.6	85.2	76.0-122			1.90	20
Vinyl chloride	0.0250	0.0264	0.0273	106	109	67.0-131			3.35	20
Xylenes, Total	0.0750	0.0622	0.0652	82.9	86.9	79.0-123			4.71	20
(S) Toluene-d8				86.1	85.4	80.0-120				
(S) 4-Bromofluorobenzene				96.0	95.3	77.0-126				
(S) 1,2-Dichloroethane-d4				83.7	85.6	70.0-130				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



Method Blank (MB)

(MB) R3457652-1 10/04/19 01:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	62.5			31.0-160

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3457652-2 10/04/19 01:55 • (LCSD) R3457652-3 10/04/19 02:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	1.50	1.54	1.54	103	103	50.0-150			0.000	20
(S) o-Terphenyl				100	97.0	31.0-160				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(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.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

J	The identification of the analyte is acceptable; the reported value is an estimate.
J4	The associated batch QC was outside the established quality control range for accuracy.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National 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.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National 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. Pace National performs all testing at our central laboratory.



Hunter Ridge Energy Services, LLC- CO

143 Diamond Avenue

Report to:
Paul Buck

Billing Information:

Accounts Payable
143 Diamond Ave.
Parachute, CO 81635

Email To:

Matt.kasten@encana.com;Paul.buck@encana.com

Project

Description: A27 SPRING Q3

City/State
Collected:

Phone: 970-285-2739

Fax: 970-625-4636

Client Project #
A27

Lab Project #
HUNTERCO-A27

Collected by (print):

Site/Facility ID #
A27

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Date Results Needed

Immediately
Packed on Ice N ☐ Y ☒

☐ Same Day ☐ Five Day
☐ Next Day ☐ 5 Day (Rad Only)
☐ Two Day ☐ 10 Day (Rad Only)
☐ Three Day

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	DROLVI 40mlAmb-HCl-BT	GRO 40mlAmb HCl	V8260 40mlAmb-HCl	BTEx/TPH(C/D)								
20190930 A27 Seep 7	Grab	GW	-	9/30/19	1150	7	X	X	X	X								
20190930 A27 ESS	Grab	GW	-	9/30/19	1200	7	X	X	X	X								
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									
		GW				7	X	X	X									

* Matrix:

SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:

☐ UPS ☐ FedEx ☐ Courier

RAD SCREEN: <0.5 mR/hr

pH Temp

Flow Other

Tracking # 4510 1663 4337

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Trip Blank Received: Yes/No
HCL/MeOH
TBR

Relinquished by: (Signature)

Date:

Time:

Received by: (Signature)

Temp: 73°C
Bottles Received: 8
0.4-3=0.1

Relinquished by: (Signature)

Date:

Time:

Received for lab by: (Signature)

Date: 10/2/19
Time: 8:45

Hold:

Condition:
NCF / OK

Analysis / Container / Preservative

Chain of Custody Page 1 of 1



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



L # 1145294

Tab F067

Acctnum: HUNTERCO

Template: T148425

Prelogin: P701545

TSR: 824 - Chris Ward

PB:

Shipped Via:

Remarks Sample # (lab only)

Sample Receipt Checklist

COC Seal Present/Intact: ☒ Y ☐ N
COC Signed/Accurate: ☒ Y ☐ N
Bottles arrive intact: ☒ Y ☐ N
Correct bottles used: ☒ Y ☐ N
Sufficient volume sent: ☒ Y ☐ N
If Applicable
VOA Zero Headspace: ☒ Y ☐ N
Preservation Correct/Checked: ☒ Y ☐ N