

October 09, 2017

Crestone Peak Resources

Sample Delivery Group: L940258

Samples Received: 09/29/2017

Project Number:

Description: lene 4

Report To:

David Tewkesbury

10188 E. Interstate 25 Frontage Rd.

Firestone, CO 80504

Entire Report Reviewed By:



Shane Gambill

Technical Service Representative

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



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SAMPLE SUMMARY

ONE LAB. NATIONWIDE.



MW-01 L940258-01 GW

			Collected by	Collected date/time	Received date/time
				09/27/17 13:00	09/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/04/17 13:10	10/04/17 13:10	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/05/17 18:13	10/05/17 18:13	ACE

¹ Cp² Tc³ Ss

MW-02 L940258-02 GW

			Collected by	Collected date/time	Received date/time
				09/27/17 13:30	09/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/04/17 13:29	10/04/17 13:29	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	10	10/05/17 18:32	10/05/17 18:32	ACE

⁴ Cn⁵ Sr⁶ Qc

MW-03 L940258-03 GW

			Collected by	Collected date/time	Received date/time
				09/27/17 13:50	09/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/04/17 13:48	10/04/17 13:48	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/05/17 18:51	10/05/17 18:51	ACE

⁷ Gl⁸ Al⁹ Sc

MW-04 L940258-04 GW

			Collected by	Collected date/time	Received date/time
				09/27/17 14:20	09/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/04/17 14:07	10/04/17 14:07	LRL
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/05/17 19:11	10/05/17 19:11	ACE

MW-05 L940258-05 GW

			Collected by	Collected date/time	Received date/time
				09/27/17 14:50	09/29/17 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1027299	1	10/04/17 14:26	10/04/17 14:26	LRL

ACCOUNT:

Crestone Peak Resources

PROJECT:

SDG:

L940258

DATE/TIME:

10/09/17 15:07

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. All MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All radiochemical sample results for solids are reported on a dry weight basis with the exception of tritium, carbon-14 and radon, unless wet weight was requested by the client. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Shane Gambill
Technical Service Representative

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/04/2017 13:10	WG1027299
Toluene	ND		0.00100	1	10/04/2017 13:10	WG1027299
Ethylbenzene	ND		0.00100	1	10/04/2017 13:10	WG1027299
Total Xylenes	ND		0.00300	1	10/05/2017 18:13	WG1027299
(S) Toluene-d8	97.7		80.0-120		10/04/2017 13:10	WG1027299
(S) Toluene-d8	97.0		80.0-120		10/05/2017 18:13	WG1027299
(S) Dibromofluoromethane	101		76.0-123		10/05/2017 18:13	WG1027299
(S) Dibromofluoromethane	98.7		76.0-123		10/04/2017 13:10	WG1027299
(S) a,a,a-Trifluorotoluene	99.9		80.0-120		10/04/2017 13:10	WG1027299
(S) a,a,a-Trifluorotoluene	102		80.0-120		10/05/2017 18:13	WG1027299
(S) 4-Bromofluorobenzene	95.6		80.0-120		10/04/2017 13:10	WG1027299
(S) 4-Bromofluorobenzene	94.0		80.0-120		10/05/2017 18:13	WG1027299

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.332		0.0100	10	10/05/2017 18:32	WG1027299
Toluene	ND		0.00100	1	10/04/2017 13:29	WG1027299
Ethylbenzene	0.175		0.00100	1	10/04/2017 13:29	WG1027299
Total Xylenes	0.839		0.0300	10	10/05/2017 18:32	WG1027299
(S) Toluene-d8	97.5		80.0-120		10/04/2017 13:29	WG1027299
(S) Toluene-d8	98.1		80.0-120		10/05/2017 18:32	WG1027299
(S) Dibromofluoromethane	98.8		76.0-123		10/05/2017 18:32	WG1027299
(S) Dibromofluoromethane	99.9		76.0-123		10/04/2017 13:29	WG1027299
(S) a,a,a-Trifluorotoluene	98.3		80.0-120		10/05/2017 18:32	WG1027299
(S) a,a,a-Trifluorotoluene	96.1		80.0-120		10/04/2017 13:29	WG1027299
(S) 4-Bromofluorobenzene	100		80.0-120		10/04/2017 13:29	WG1027299
(S) 4-Bromofluorobenzene	99.7		80.0-120		10/05/2017 18:32	WG1027299

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	0.00141		0.00100	1	10/05/2017 18:51	WG1027299
Toluene	ND		0.00100	1	10/04/2017 13:48	WG1027299
Ethylbenzene	0.00125		0.00100	1	10/04/2017 13:48	WG1027299
Total Xylenes	0.0476		0.00300	1	10/05/2017 18:51	WG1027299
(S) Toluene-d8	98.1		80.0-120		10/05/2017 18:51	WG1027299
(S) Toluene-d8	96.7		80.0-120		10/04/2017 13:48	WG1027299
(S) Dibromofluoromethane	104		76.0-123		10/04/2017 13:48	WG1027299
(S) Dibromofluoromethane	103		76.0-123		10/05/2017 18:51	WG1027299
(S) a,a,a-Trifluorotoluene	98.6		80.0-120		10/04/2017 13:48	WG1027299
(S) a,a,a-Trifluorotoluene	101		80.0-120		10/05/2017 18:51	WG1027299
(S) 4-Bromofluorobenzene	102		80.0-120		10/05/2017 18:51	WG1027299
(S) 4-Bromofluorobenzene	99.6		80.0-120		10/04/2017 13:48	WG1027299

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/05/2017 19:11	WG1027299
Toluene	ND		0.00100	1	10/04/2017 14:07	WG1027299
Ethylbenzene	ND		0.00100	1	10/04/2017 14:07	WG1027299
Total Xylenes	ND		0.00300	1	10/04/2017 14:07	WG1027299
(S) Toluene-d8	98.7		80.0-120		10/04/2017 14:07	WG1027299
(S) Toluene-d8	100		80.0-120		10/05/2017 19:11	WG1027299
(S) Dibromofluoromethane	105		76.0-123		10/04/2017 14:07	WG1027299
(S) Dibromofluoromethane	103		76.0-123		10/05/2017 19:11	WG1027299
(S) a,a,a-Trifluorotoluene	101		80.0-120		10/04/2017 14:07	WG1027299
(S) a,a,a-Trifluorotoluene	99.8		80.0-120		10/05/2017 19:11	WG1027299
(S) 4-Bromofluorobenzene	101		80.0-120		10/04/2017 14:07	WG1027299
(S) 4-Bromofluorobenzene	105		80.0-120		10/05/2017 19:11	WG1027299

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



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

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Benzene	ND		0.00100	1	10/04/2017 14:26	WG1027299
Toluene	ND		0.00100	1	10/04/2017 14:26	WG1027299
Ethylbenzene	ND		0.00100	1	10/04/2017 14:26	WG1027299
Total Xylenes	ND		0.00300	1	10/04/2017 14:26	WG1027299
(S) Toluene-d8	96.7		80.0-120		10/04/2017 14:26	WG1027299
(S) Dibromofluoromethane	105		76.0-123		10/04/2017 14:26	WG1027299
(S) a,a,a-Trifluorotoluene	100		80.0-120		10/04/2017 14:26	WG1027299
(S) 4-Bromofluorobenzene	103		80.0-120		10/04/2017 14:26	WG1027299

¹ Cp² Tc³ Ss⁴ Cn⁵ Sr⁶ Qc⁷ Gl⁸ Al⁹ Sc



Method Blank (MB)

(MB) R3254881-3 10/03/17 23:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.000331	0.00100
Ethylbenzene	U		0.000384	0.00100
Toluene	U		0.000412	0.00100
Xylenes, Total	U		0.00106	0.00300
(S) Toluene-d8	98.8			80.0-120
(S) Dibromofluoromethane	104			76.0-123
(S) a,a,a-Trifluorotoluene	98.2			80.0-120
(S) 4-Bromofluorobenzene	98.6			80.0-120

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

(LCS) R3254881-1 10/03/17 22:33 • (LCSD) R3254881-2 10/03/17 23:01

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 %
Benzene	0.0250	0.0250	0.0268	100	107	69.0-123			6.95	20
Ethylbenzene	0.0250	0.0236	0.0237	94.3	94.8	77.0-120			0.570	20
Toluene	0.0250	0.0216	0.0236	86.6	94.4	77.0-120			8.67	20
Xylenes, Total	0.0750	0.0734	0.0715	97.9	95.3	77.0-120			2.62	20
(S) Toluene-d8				96.9	97.1	80.0-120				
(S) Dibromofluoromethane				106	104	76.0-123				
(S) a,a,a-Trifluorotoluene				101	100	80.0-120				
(S) 4-Bromofluorobenzene				90.0	104	80.0-120				

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc



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.

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, 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.
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.
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.

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

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

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

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

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	S-67674
EPA-Crypto	IN00003		

Our Locations

A map of the United States showing the locations of 25 study sites. The sites are marked with pins: 24 purple pins and 1 orange pin. The orange pin is located in Tennessee (TN). The purple pins are located in Washington (WA), Oregon (OR), Idaho (ID), Nevada (NV), California (CA), Arizona (AZ), New Mexico (NM), Texas (TX), Oklahoma (OK), Kansas (KS), Missouri (MO), Arkansas (AR), Louisiana (LA), Mississippi (MS), Alabama (AL), Georgia (GA), Florida (FL), North Carolina (NC), South Carolina (SC), Virginia (VA), West Virginia (WV), Kentucky (KY), Illinois (IL), Indiana (IN), Michigan (MI), Ohio (OH), Pennsylvania (PA), New York (NY), and Maine (ME). The states are labeled with their abbreviations.

[illegible]

ESC LAB SCIENCES Cooler Receipt Form

Client: <u>CREPEA FCO</u>	SDG#	<u>6940258</u>	
Cooler Received/Opened On: <u>9/29/17</u>	Temperature:	<u>0.9</u>	
Received by: Michael Witherspoon			
Signature: <u>mw</u>			
Receipt Check List			
	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable		✓	
VOA Zero headspace?			
Preservation Correct / Checked?			