



February 8, 2018

Mr. Erik Mickelson
Senior HSE Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th Street, Suite 1800
Denver, Colorado 80202

**Re: Sump Closure Summary Report
Berry P 26-24 Tank Battery
Location ID: 302774
SESW 26 3N67W
COGCC eForm 27 Initial Remediation #10981**

Dear Mr. Mickelson:

Apex Companies, LLC (Apex) is providing Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee) with this Sump Closure Summary Report (Report) to document sampling activities and the results of environmental testing at the tank battery associated with the Berry P 26-24 well. In accordance with the Initial eForm 27 - Remediation Number 10981 as approved by the COGCC, this form is being submitted to document two produced water vessel closure activities. Apex provided the environmental services at the site, that included the collection of confirmation samples from the excavation and documentation of field activities, as described below.

Site Assessment Activities

The field activities described herein were performed on November 21, 2017, with the purpose of assessing potential hydrocarbon impacts at the site related to the closure of two produced water vessels. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout and sample locations are provided on Figure 1.

The final extent of the excavation measured approximately 34 feet by 20 feet, at an approximate depth of 6 feet below ground surface (bgs). Impacted soil was not encountered in the excavation. Groundwater was not encountered in the excavation.

Confirmation soil samples were collected from the sidewalls of the excavation area at approximately 3 feet bgs, and from the base of the excavation, beneath each location of the former produced water vessels, at approximately 6 feet bgs. Soil samples were field-screened for volatile organic compound concentrations using a photoionization detector. The soil samples collected beneath the two former produced water vessel locations (B01@6' and B02@6') were submitted to Origins Laboratory in Denver, Colorado and analyzed for benzene, toluene, ethylbenzene, and total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260, TPH – diesel range and residual range organics (DRO and RRO, respectively) by USEPA Method 8015, electrical conductivity (EC), and pH. Soil analytical data are summarized in Table 1, and the laboratory analytical report is provided in Attachment A.

Results

Analytical results from the two soil base samples (B01@6' and B02@6') indicate that BTEX and TPH concentrations are below the applicable COGCC Table 910-1 standards. For both EC and pH, analytical results indicate that concentrations are within COGCC Table 910-1 allowable concentrations. The remaining soil samples, collected from the sidewalls of the excavation area, were not submitted for laboratory analysis as analytical data from the samples collected beneath the two locations of the former produced water vessels confirmed the absence of petroleum hydrocarbon impacts above COGCC Table 910-1 standards.

Conclusions

Analytical results described herein confirm BTEX and TPH impacts are not present at concentrations above applicable regulatory standards at the former produced water vessel locations. Consequently, no further site assessment or remedial activity is necessary. Prior to site assessment activities, the sumps were permanently removed.

Please contact me at (720) 501-5052 if you have any questions regarding this report or require additional information.

Sincerely,

Apex Companies, LLC



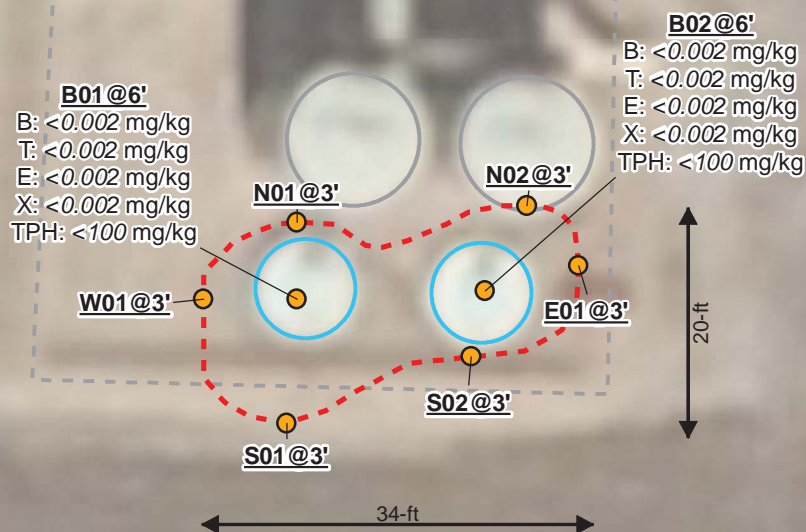
Chandler E Cole
Project Manager

Attachments:

Figure 1 – Berry P 26-24 Tank Battery - Facility Layout & Analytical Results
Table 1 – Soil Sample Analytical Results
Attachment A – Laboratory Analytical Report



Figure 1
Berry P 26-24
Tank Battery -
Facility Layout &
Analytical Results



Legend

- Soil Sample
- Former Crude Oil Tank
- Former Produced Water Tank
- Former Secondary Containment
- Excavation Extent

Sample Location

- B: benzene
- T: toluene
- E: ethylbenzene
- X: xylenes
- TPH: total petroleum hydrocarbons

Bold values exceed COGCC Table
910-1 allowable concentrations

Site Characteristics

Legal Location: NESW Sec 26, T3N R67W
County: Weld
Land Use: Crop Land
Topography: Not Available
Run-Off Risk: Low
Soil Type: Aquolls and Aquents

REVISED	BY	COMMENT
12/5/2017	BJB	Figure 1

APEX
beau.bergstrom@apexco.com
M:\Projects\Anadarko\DJ_Basin\Remediation\Berry_P_26-24\Projects\Berry_P_26-24_Fig1.dwg 20171205.mxd

For illustration purposes, spatial data in this diagram (e.g. sample points, excavation perimeter) is representative of field observations, and for illustration purposes may have been adjusted to align with aerial imagery and other pictured spatial data. Apex also collects spatial data using GPS units with real-time differential correction and sub-meter accuracy. Spatial data (e.g. ESRI shapefiles, Google Earth KMZ) provided separately from this diagram, may not be consistent with what is presented in this site diagram, due to adjustments made for illustrative purposes.

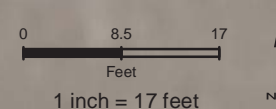




Table 1 - Soil Sample Analytical Results

Kerr-McGee Oil & Gas Onshore LP
Location Name: Berry P 26-24 Tank Battery
Location ID: 302774
County: Weld

County: Weld

COGCC Allowable Concentration →			Organics in Soil							Inorganics in Soil	
			500			0.17	85	100	175	(≤4 or 2x background)	(6-9)
Sample ID	Sample Date	Sample Depth (feet bgs)	TPH-GRO (mg/kg)	TPH-DRO (mg/kg)	TPH-RRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes - total (mg/kg)	Electrical Conductivity (mmhos/cm)	pH
B01@6'	11/21/17	6	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	0.120	8.56
B02@6'	11/21/17	6	<0.200	<25.0	<100	<0.002	<0.002	<0.002	<0.002	0.0324	8.78

Notes:

TPH Total petroleum hydrocarbons
GRO Gasoline range organics (C6 - C10)
DRO Diesel range organics (C10 - C28)
RRO Residual range organics (C28 - C40)
Bold value indicates result exceeded COGCC Table 910-1 allowable concentration for the contaminant / inorganic of concern

bgs below ground surface
mg/kg milligrams per kilogram
mmhos/cm millimhos per centimeter
NA Not analyzed / not available
COGCC Colorado Oil and Gas Conservation Commission

Attachment A

Laboratory Analytical Report



November 22, 2017

Apex Companies, LLC

Chandler Cole

4150 Darley Avenue, Suite 1

Boulder CO 80305

Project Name - KMG - Berry P 26-24

Project Number - [none]

Attached are your analytical results for KMG - Berry P 26-24 received by Origins Laboratory, Inc. November 21, 2017. This project is associated with Origins project number Y711333-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Apex Companies, LLC

4150 Darley Avenue, Suite 1

Boulder CO 80305

Chandler Cole

Project Number: [none]

Project: KMG - Berry P 26-24

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
B01@6'	Y711333-01	Soil	November 21, 2017 13:15	11/21/2017 15:00
B02@6'	Y711333-05	Soil	November 21, 2017 13:25	11/21/2017 15:00

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini For Noelle Doyle Mathis, President

Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

www.originslaboratory.com

page 1 of 1

ORIGINS LABORATORY, INC

Client: Apex Companies
Address: 1746 Cole Blvd, Lakewood, CO 80401
Telephone Number: 970-903-1260
Email Address: Chandler.Cole@apexcoos.com

Project Manager: Chandler Cole
Project Name: Berry P 26-24
Project Number: WO#pending Erik Mickelson
Samples Collected By: Brian Gibson
Bill to Anadarko

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis				Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #	Other	CBTEX	DRO/RRO	EC, pH	
RO1E6'	11/21/17	1315	1	X				X							
SO1E3'		1318	1												Hold
NO1E3'		1320	1												↓
NO1E3'		1321	1												
RO2E6'		1325	1												
Background		1306	1												Hold
NO2E3'		1326	1												↓
EO1E3'		1328	1												
SO2E3'		1334	1												↓
Relinquished By:	Date: 11/21/2017	Time: 1501													Turnaround Time: Same Day <input checked="" type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input type="checkbox"/>
Relinquished By:	Date:	Time:													11/21/17 1500

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

5.6C
Date Results Needed 7am, 11/22/17

Origins Laboratory, Inc.

Jefe Pellegrini

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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 711533

Client: Apex Co.

Client Project ID: KMG - Berry P 26-24

Checklist Completed by: Don Lu

Shipped Via: 48
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 11-21-11 15:3

Airbill #: N/A

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 / 5.6 °C 1 / _____ °C 1 / _____ °C (Describe) _____ °C

Thermometer ID: 1063

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>pH</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) / (pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) Don Lu

11-21-11 15:3
Date/Time Reviewed

Origins Laboratory, Inc.

Jefe Pellegrini

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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

B01@6'

11/21/2017 1:15:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y711333-01 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7K2103	11/21/2017	11/22/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 113 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7K2104	11/21/2017	11/21/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 117 % 70-130 " " "
Surrogate: Toluene-d8 87.9 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 102 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.56		pH Units	1	B7K2101	11/21/2017	11/21/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.120		mmhos/cm	"	B7K2106	11/21/2017	11/21/2017	
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Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

B02@6'

11/21/2017 1:25:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y711333-05 (Soil)

DRO/RRO by EPA8015C

Diesel (C10-C28)	ND	25.0	mg/kg	1	B7K2103	11/21/2017	11/21/2017	U
Residual Range Organics (C28-C40)	ND	100	"	"	"	"	"	U

Surrogate: o-Terphenyl 91.7 % 59-131 " " "

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B7K2104	11/21/2017	11/21/2017	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

Surrogate: 1,2-Dichloroethane-d4 121 % 70-130 " " "
Surrogate: Toluene-d8 100 % 70-130 " " "
Surrogate: 4-Bromofluorobenzene 93.6 % 70-130 " " "

pH in Soil by EPA 9045D

pH	8.78		pH Units	1	B7K2101	11/21/2017	11/21/2017	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0324		mmhos/cm	"	B7K2106	11/21/2017	11/21/2017	
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Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2104 - EPA 5030 (soil)										
Blank (B7K2104-BLK1)					Prepared: 11/21/2017 Analyzed: 11/21/2017					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.4	70-130			
Surrogate: Toluene-d8	67		"	62.5		107	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2104 - EPA 5030 (soil)										
Blank (B7K2104-BLK2)					Prepared: 11/21/2017 Analyzed: 11/21/2017					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		109	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2104 - EPA 5030 (soil)										
LCS (B7K2104-BS1)					Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.099	0.002	mg/kg	0.100		98.9	77.1-124			
Toluene	0.106	0.002	"	0.100		106	74.5-128			
Ethylbenzene	0.096	0.002	"	0.100		95.7	66.4-127			
m,p-Xylene	0.188	0.004	"	0.200		94.0	76.6-124			
o-Xylene	0.094	0.002	"	0.100		94.4	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	58		ug/kg	62.5		93.5	70-130			
Surrogate: Toluene-d8	66		"	62.5		106	70-130			
Surrogate: 4-Bromofluorobenzene	61		"	62.5		98.1	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2104 - EPA 5030 (soil)										
LCS (B7K2104-BS2)					Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.103	0.002	mg/kg	0.100		103	77.1-124			
Toluene	0.102	0.002	"	0.100		102	74.5-128			
Ethylbenzene	0.106	0.002	"	0.100		106	66.4-127			
m,p-Xylene	0.214	0.004	"	0.200		107	76.6-124			
o-Xylene	0.105	0.002	"	0.100		105	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	62		ug/kg	62.5		98.6	70-130			
Surrogate: Toluene-d8	59		"	62.5		94.7	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.3	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike (B7K2104-MS1)		Source: Y711285-01			Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.115	0.002	mg/kg	0.100	ND	115	71.8-126			
Toluene	0.117	0.002	"	0.100	ND	117	65.1-130			
Ethylbenzene	0.125	0.002	"	0.100	ND	125	62.2-130			
m,p-Xylene	0.250	0.004	"	0.200	ND	125	46.5-137			
o-Xylene	0.122	0.002	"	0.100	ND	122	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.0	70-130			
Surrogate: Toluene-d8	58		"	62.5		93.3	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24


Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike (B7K2104-MS2)		Source: Y711285-02			Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.113	0.002	mg/kg	0.100	ND	113	71.8-126			
Toluene	0.128	0.002	"	0.100	ND	128	65.1-130			
Ethylbenzene	0.123	0.002	"	0.100	ND	123	62.2-130			
m,p-Xylene	0.244	0.004	"	0.200	ND	122	46.5-137			
o-Xylene	0.120	0.002	"	0.100	ND	120	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	59		ug/kg	62.5		94.3	70-130			
Surrogate: Toluene-d8	65		"	62.5		104	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

Origins Laboratory, Inc.



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Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2104 - EPA 5030 (soil)										
Matrix Spike Dup (B7K2104-MSD1)	Source: Y711285-01				Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.110	0.002	mg/kg	0.100	ND	110	71.8-126	4.90	11.3	
Toluene	0.122	0.002	"	0.100	ND	122	65.1-130	4.08	15.4	
Ethylbenzene	0.102	0.002	"	0.100	ND	102	62.2-130	20.0	19.6	QR-02
m,p-Xylene	0.206	0.004	"	0.200	ND	103	46.5-137	19.7	19.2	QR-02
o-Xylene	0.110	0.002	"	0.100	ND	110	54.2-134	10.2	17.9	
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.2	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		98.5	70-130			

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Companies, LLC
4150 Darley Avenue, Suite 1
Boulder CO 80305

Chandler Cole
Project Number: [none]
Project: KMG - Berry P 26-24

Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2104 - EPA 5030 (soil)

Matrix Spike Dup (B7K2104-MSD2)		Source: Y711285-02			Prepared: 11/21/2017 Analyzed: 11/21/2017					
Benzene	0.108	0.002	mg/kg	0.100	ND	108	71.8-126	5.21	11.3	
Toluene	0.121	0.002	"	0.100	ND	121	65.1-130	4.98	15.4	
Ethylbenzene	0.109	0.002	"	0.100	ND	109	62.2-130	11.9	19.6	
m,p-Xylene	0.221	0.004	"	0.200	ND	111	46.5-137	9.89	19.2	
o-Xylene	0.110	0.002	"	0.100	ND	110	54.2-134	9.06	17.9	
Surrogate: 1,2-Dichloroethane-d4	60		ug/kg	62.5		95.3	70-130			
Surrogate: Toluene-d8	66		"	62.5		105	70-130			
Surrogate: 4-Bromofluorobenzene	62		"	62.5		99.0	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Extractable Petroleum Hydrocarbons by 8015C - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B7K2103 - EPA 3580

Blank (B7K2103-BLK1)

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	ND	50.0	mg/kg							U
Residual Range Organics (C28-C40)	ND	200	"							U
Surrogate: o-Terphenyl	54		"	50.0		107	59-131			

LCS (B7K2103-BS1)

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	1020	50.0	mg/kg	1000		102	64-121			
Residual Range Organics (C28-C40)	846	200	"	1000		84.6	58-124			
Surrogate: o-Terphenyl	63		"	50.0		126	59-131			

Matrix Spike (B7K2103-MS1)

Source: Y711285-01

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	978	50.0	mg/kg	1000	37.3	94.1	53-125			
Residual Range Organics (C28-C40)	800	200	"	1000	ND	80.0	47-133			
Surrogate: o-Terphenyl	59		"	50.0		117	59-131			

Matrix Spike Dup (B7K2103-MSD1)

Source: Y711285-01

Prepared: 11/21/2017 Analyzed: 11/21/2017

Diesel (C10-C28)	1020	50.0	mg/kg	1000	37.3	97.8	53-125	3.91	20	
Residual Range Organics (C28-C40)	857	200	"	1000	ND	85.7	47-133	6.84	20	
Surrogate: o-Terphenyl	61		"	50.0		122	59-131			

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Project: KMG - Berry P 26-24

Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B7K2101 - NO PREP										
Duplicate (B7K2101-DUP1)		Source: Y711312-06			Prepared: 11/21/2017 Analyzed: 11/21/2017					
pH	9.12		pH Units		9.08			0.440	25	
Batch B7K2106 - NO PREP										
Blank (B7K2106-BLK1)		Prepared: 11/21/2017 Analyzed: 11/21/2017								
Specific Conductance (EC)	0.00510		mmhos/cm							
Duplicate (B7K2106-DUP1)		Source: Y711333-05			Prepared: 11/21/2017 Analyzed: 11/21/2017					
Specific Conductance (EC)	0.0351		mmhos/cm		0.0324			8.00	25	

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Chandler Cole
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Project: KMG - Berry P 26-24

Notes and Definitions

U Sample is Non-Detect.


QR-02 The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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