



December 5, 2013

Mr. Paul Schneider  
Senior Staff EHS Representative  
Kerr-McGee Oil & Gas Onshore LP  
1099 18<sup>th</sup> Street, Suite 1800  
Denver, Colorado 80202

**Re: Sump Closure: Excavation Summary Letter  
Report UPRR 42 Pan Am B1  
API: 05-123-07248  
Legal: SESW Sec 21-T1N-R67W**

Dear Mr. Schneider:

Tasman Geosciences, LLC (Tasman) has prepared this Sump Closure: Excavation Summary Letter Report (Report) to document information regarding environmental testing at the above-referenced site on behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee). Tasman provided environmental services at the site which included collection of confirmation soil samples from the excavation and documentation of field activities.

The objective of the soil sampling was to confirm the presence or absence of petroleum hydrocarbon impacts in the subsurface located below a removed sump on September 6, and November 13, 2013. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout, excavation dimensions, and sample locations are provided in the attached field notes (Attachment A).

Upon arrival to the site, the extent of the excavation measured approximately 25 feet north to south by 25 feet east to west to an approximate depth of 15 feet below ground surface (bgs). Approximately 350 cubic yards of soil were removed and transported to Kerr-McGee's land treatment facility in Weld County, Colorado. Soil samples were field screened using a photoionization detector (PID) and standard headspace sampling techniques. Groundwater was not encountered in the excavation.

One confirmation soil sample was collected from the north, south, east and west excavation sidewalls at approximately 12 feet bgs, and one sample was collected from the base of the excavation at approximately 15 feet bgs on September 6, 2013. These samples were submitted to Summit Scientific located in Golden, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) gasoline range organics (GRO) by Environmental Protection Agency (EPA) Method 8260B, as well as TPH diesel range and oil range organics (DRO and ORO) by EPA Method 8015. Groundwater was not encountered during excavation activities. The soil sample laboratory data is summarized in

Table 1, and the laboratory analytical report is provided in Attachment B.

No indications of petroleum hydrocarbon impacts above applicable standards were observed in the soil samples, with the exception of the sample collected from the west sidewall (W01@15'). Sample W01@15' exceeded the Colorado Oil and Gas Conservation Commission Table 910-1 standards for TPH, with a value of 542 mg/kg. Subsequent to additional excavation activities, an additional confirmation soil sample was collected from the west sidewall at approximately 13 feet bgs on November 20, 2013. This sample (W02@13') returned results below the COGCC Table 910-1 standards. Based on analytical results, no remedial action is required at this site.

Please contact me at (303) 487-1228 if you have any questions regarding this report or require additional information.

Sincerely,



Jenna R. Barker  
Environmental Engineer

Attachments: Table 1  
Attachment A – Field Notes  
Attachment B – Laboratory Analytical Report

## **Table**

**TABLE 1**  
**UPRR 42 PAN AM B1**  
**SOIL SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Sample ID	Date Sampled	Depth (Feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH - GRO (mg/kg)	TEPH - DRO + ORO (mg/kg)
N01@12'	9/6/2013	12	<0.002	0.0077	0.028	2.1	55	120
S01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	8.8	98
E01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	<0.5	<50
W01@12'	9/6/2013	12	<0.002	<0.005	<0.005	<0.005	1	<b>542</b>
B01@15'	9/6/2013	15	0.038	0.0064	0.19	1.1	180	<50
W02@13'	11/13/2013	13	<0.002	<0.005	<0.005	<0.005	<0.5	61.1
<b>COGCC standards for Soil (mg/kg)</b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>	

Notes:

TVPH - GRO: Total volatile petroleum hydrocarbons - Gasoline Range Organics

TEPH - DRO: Total extractable volatile petroleum hydrocarbons - Diesel Range Organics

TEPH - ORO: Total extractable volatile petroleum hydrocarbons - Oil Range Organics

mg/kg= Milligrams per kilogram. bgs - Below ground surface.

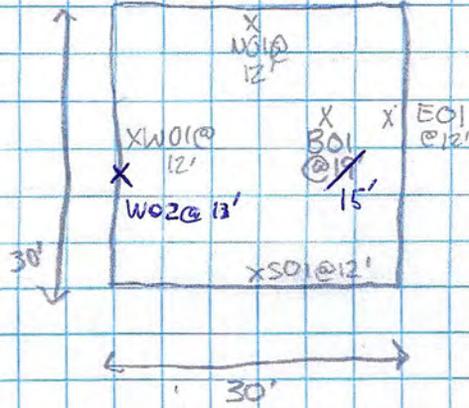
**Bold** values indicate an exceedance of the COGCC soil standards for the Site.

**Attachment A**

UPRR 42 Pan Am B1  
 9/6/13 WO# 88406957  
 11/14/13

↑ N

ACCESS ROAD



AGRICULTURE

PID (ppm)  
 N01 - 1598  
 S01 - 305  
 E01 - 25.9  
 W01 - 1396  
 B01 - 2280

SOIL ANALYTICAL mg/kg

	B	T	E	X	TPH
N01		on	hold		
E01	ND	ND	ND	ND	ND
S01	ND	ND	ND	ND	106.8
W01		on	hold		
B01	0.90	ND	0.92	2.8	550

**Attachment B**

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

September 10, 2013

Mike Dinkel

Anadarko - Denver

1099 18th St, Suite 1800

Denver, CO 80202

RE: UPRR 42 Pan AM B1

Enclosed are the results of analyses for samples received by Summit Scientific on 09/06/13 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'BS', with a long, sweeping horizontal line extending to the right.

Ben Shrewsbury

President / Laboratory Manager



Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

**Reported:**  
09/10/13 06:47

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
N01@12'	R309032-01	Soil	09/06/13 13:30	09/06/13 15:15
S01@12'	R309032-02	Soil	09/06/13 13:30	09/06/13 15:15
E01@12'	R309032-03	Soil	09/06/13 13:30	09/06/13 15:15
W01@12'	R309032-04	Soil	09/06/13 13:30	09/06/13 15:15
B01@12' <del>12'</del> 15'	R309032-05	Soil	09/06/13 13:30	09/06/13 15:15

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*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.*





Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**N01@12'**  
**R309032-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (TEPH-DRO)</b>	<b>120</b>	50	mg/kg	1	3090910	09/09/13	09/09/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.2 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090909	09/09/13	09/09/13	EPA 8260B	
<b>Toluene</b>	<b>0.0077</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.028</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>2.1</b>	0.050	"	10	"	"	09/09/13	"	
<b>Gasoline Range Hydrocarbons</b>	<b>55</b>	0.50	"	1	"	"	09/09/13	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		117 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	21-167		"	"	"	"	

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Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**S01@12'**  
**R309032-02 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (TEPH-DRO)</b>	<b>98</b>	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		98.2 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>8.8</b>	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		109 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		102 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**E01@12'**  
**R309032-03 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		95.9 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		113 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**W01@12'**  
**R309032-04 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (TEPH-DRO)</b>	<b>510</b>	50	mg/kg	1	3090910	09/09/13	09/09/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		104 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3090909	09/09/13	09/09/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1.0</b>	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>32</b>	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		134 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		129 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**B01@~~12'~~ 15'**  
**R309032-05 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (TEPH-DRO)	ND	50	mg/kg	1	3090607	09/06/13	09/06/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		97.3 %	30-150		"	"	"	"	

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.038</b>	0.0020	mg/kg	1	3090608	09/06/13	09/06/13	EPA 8260B	
<b>Toluene</b>	<b>0.0064</b>	0.0050	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.19</b>	0.0050	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>1.1</b>	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>180</b>	0.50	"	"	"	"	"	"	

Date Sampled: **09/06/13 13:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		94.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		79.2 %	21-167		"	"	"	"	

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090607 - EPA 3550A**

<b>Blank (3090607-BLK1)</b>				Prepared & Analyzed: 09/06/13						
C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							
<b>LCS (3090607-BS1)</b>				Prepared & Analyzed: 09/06/13						
C10-C28 (TEPH-DRO)	561	50	mg/kg	501	112	73-134				
<b>LCS Dup (3090607-BSD1)</b>				Prepared & Analyzed: 09/06/13						
C10-C28 (TEPH-DRO)	623	50	mg/kg	501	124	73-134	10.4	11		
<b>Matrix Spike (3090607-MS1)</b>				<b>Source: R309031-01</b>		Prepared & Analyzed: 09/06/13				
C10-C28 (TEPH-DRO)	536	50	mg/kg	501	ND	107	50-148			
<b>Matrix Spike Dup (3090607-MSD1)</b>				<b>Source: R309031-01</b>		Prepared & Analyzed: 09/06/13				
C10-C28 (TEPH-DRO)	548	50	mg/kg	501	ND	109	50-148	2.24	13	

**Batch 3090910 - EPA 3550A**

<b>Blank (3090910-BLK1)</b>				Prepared: 09/09/13 Analyzed: 09/10/13						
C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							
<b>LCS (3090910-BS1)</b>				Prepared: 09/09/13 Analyzed: 09/10/13						
C10-C28 (TEPH-DRO)	533	50	mg/kg	501	106	73-134				
<b>LCS Dup (3090910-BSD1)</b>				Prepared: 09/09/13 Analyzed: 09/10/13						
C10-C28 (TEPH-DRO)	546	50	mg/kg	501	109	73-134	2.38	11		

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Project: UPRR 42 Pan AM B1

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 Project Manager: Mike Dinkel

**Reported:**  
 09/10/13 06:47

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090910 - EPA 3550A**

<b>Matrix Spike (3090910-MS1)</b>		<b>Source: R309040-01</b>			Prepared: 09/09/13		Analyzed: 09/10/13				
C10-C28 (TEPH-DRO)	521	50	mg/kg	501	ND	104	50-148				
<b>Matrix Spike Dup (3090910-MSD1)</b>		<b>Source: R309040-01</b>			Prepared: 09/09/13		Analyzed: 09/10/13				
C10-C28 (TEPH-DRO)	520	50	mg/kg	501	ND	104	50-148	0.139	13		

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090608 - EPA 5030 Soil MS**

**Blank (3090608-BLK1)**

Prepared & Analyzed: 09/06/13

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0416		"	0.0397	105	23-173				
Surrogate: Toluene-d8	0.0405		"	0.0400	101	20-170				
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400	98.4	21-167				

**LCS (3090608-BS1)**

Prepared & Analyzed: 09/06/13

Benzene	0.0935	0.0020	mg/kg	0.100	93.5	58-130				
Toluene	0.107	0.0050	"	0.100	107	61-134				
Ethylbenzene	0.114	0.0050	"	0.100	114	74-139				
m,p-Xylene	0.224	0.010	"	0.200	112	73-137				
o-Xylene	0.115	0.0050	"	0.100	115	73-141				
Surrogate: 1,2-Dichloroethane-d4	0.0428		"	0.0397	108	23-173				
Surrogate: Toluene-d8	0.0407		"	0.0400	102	20-170				
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400	98.2	21-167				

**LCS Dup (3090608-BSD1)**

Prepared & Analyzed: 09/06/13

Benzene	0.0891	0.0020	mg/kg	0.100	89.1	58-130	4.83	13		
Toluene	0.103	0.0050	"	0.100	103	61-134	3.57	16		
Ethylbenzene	0.108	0.0050	"	0.100	108	74-139	5.53	12		
m,p-Xylene	0.213	0.010	"	0.200	107	73-137	5.00	14		
o-Xylene	0.110	0.0050	"	0.100	110	73-141	4.31	12		
Surrogate: 1,2-Dichloroethane-d4	0.0419		"	0.0397	106	23-173				
Surrogate: Toluene-d8	0.0405		"	0.0400	101	20-170				
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400	97.6	21-167				

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Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090608 - EPA 5030 Soil MS**

Matrix Spike (3090608-MS1)	Source: R309031-01			Prepared & Analyzed: 09/06/13						
Benzene	0.0853	0.0020	mg/kg	0.100	ND	85.3	30-131			
Toluene	0.0979	0.0050	"	0.100	ND	97.9	30-134			
Ethylbenzene	0.103	0.0050	"	0.100	ND	103	22-153			
m,p-Xylene	0.204	0.010	"	0.200	ND	102	10-159			
o-Xylene	0.104	0.0050	"	0.100	ND	104	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0430		"	0.0397		108	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.1	21-167			

Matrix Spike Dup (3090608-MSD1)	Source: R309031-01			Prepared & Analyzed: 09/06/13						
Benzene	0.0807	0.0020	mg/kg	0.100	ND	80.7	30-131	5.57	34	
Toluene	0.0955	0.0050	"	0.100	ND	95.5	30-134	2.51	30	
Ethylbenzene	0.102	0.0050	"	0.100	ND	102	22-153	0.556	24	
m,p-Xylene	0.202	0.010	"	0.200	ND	101	10-159	1.24	68	
o-Xylene	0.102	0.0050	"	0.100	ND	102	31-151	2.15	38	
Surrogate: 1,2-Dichloroethane-d4	0.0397		"	0.0397		100	23-173			
Surrogate: Toluene-d8	0.0406		"	0.0400		102	20-170			
Surrogate: 4-Bromofluorobenzene	0.0385		"	0.0400		96.2	21-167			

**Batch 3090909 - EPA 5030 Soil MS**

Blank (3090909-BLK1)	Prepared: 09/09/13 Analyzed: 09/10/13									
Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0397		107	23-173			
Surrogate: Toluene-d8	0.0400		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0417		"	0.0400		104	21-167			

Summit Scientific

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Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

Reported:  
09/10/13 06:47

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090909 - EPA 5030 Soil MS**

**LCS (3090909-BS1)**

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0932	0.0020	mg/kg	0.100		93.2	58-130			
Toluene	0.0945	0.0050	"	0.100		94.5	61-134			
Ethylbenzene	0.0963	0.0050	"	0.100		96.3	74-139			
m,p-Xylene	0.195	0.010	"	0.200		97.4	73-137			
o-Xylene	0.0972	0.0050	"	0.100		97.2	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0423		"	0.0397		107	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0411		"	0.0400		103	21-167			

**LCS Dup (3090909-BSD1)**

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0939	0.0020	mg/kg	0.100		93.9	58-130	0.738	13	
Toluene	0.0955	0.0050	"	0.100		95.5	61-134	1.01	16	
Ethylbenzene	0.0974	0.0050	"	0.100		97.4	74-139	1.11	12	
m,p-Xylene	0.197	0.010	"	0.200		98.7	73-137	1.33	14	
o-Xylene	0.0980	0.0050	"	0.100		98.0	73-141	0.769	12	
Surrogate: 1,2-Dichloroethane-d4	0.0419		"	0.0397		105	23-173			
Surrogate: Toluene-d8	0.0399		"	0.0400		99.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	21-167			

**Matrix Spike (3090909-MS1)**

Source: R309040-03

Prepared: 09/09/13 Analyzed: 09/10/13

Benzene	0.0919	0.0020	mg/kg	0.100	ND	91.9	30-131			
Toluene	0.0947	0.0050	"	0.100	ND	94.7	30-134			
Ethylbenzene	0.0968	0.0050	"	0.100	ND	96.8	22-153			
m,p-Xylene	0.196	0.010	"	0.200	ND	98.2	10-159			
o-Xylene	0.0979	0.0050	"	0.100	ND	97.9	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0422		"	0.0397		106	23-173			
Surrogate: Toluene-d8	0.0397		"	0.0400		99.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	21-167			

Summit Scientific

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Anadarko - Denver  
 1099 18th St, Suite 1800  
 Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
 Project Manager: Mike Dinkel

**Reported:**  
 09/10/13 06:47

**Volatile Organic Compounds by EPA Method 8260B - Quality Control**  
**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3090909 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (3090909-MSD1)</b>	<b>Source: R309040-03</b>			Prepared: 09/09/13		Analyzed: 09/10/13				
Benzene	0.0956	0.0020	mg/kg	0.100	ND	95.6	30-131	3.94	34	
Toluene	0.0987	0.0050	"	0.100	ND	98.7	30-134	4.16	30	
Ethylbenzene	0.0997	0.0050	"	0.100	ND	99.7	22-153	2.96	24	
m,p-Xylene	0.202	0.010	"	0.200	ND	101	10-159	2.91	68	
o-Xylene	0.0993	0.0050	"	0.100	ND	99.3	31-151	1.43	38	
Surrogate: 1,2-Dichloroethane-d4	0.0436		"	0.0397		110	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.6	20-170			
Surrogate: 4-Bromofluorobenzene	0.0412		"	0.0400		103	21-167			

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Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR 42 Pan AM B1

Project Number: WO #88406957  
Project Manager: Mike Dinkel

**Reported:**  
09/10/13 06:47

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

# Summit Scientific

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741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

November 14, 2013

Jim Dawe  
Anadarko - Denver  
1099 18th St, Suite 1800  
Denver, CO 80202  
RE: UPRR Pan Am B1

Enclosed are the results of analyses for samples received by Summit Scientific on 11/14/13 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

DRAFT REPORT  
DATA SUBJECT TO CHANGE





Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR Pan Am B1  
Project Number: WO #88406957  
Project Manager: Jim Dawe

**Reported:**  
11/14/13 22:38

**DRAFT: W02@13'**  
**R311096-01 (Soil)**

**Summit Scientific**

**DRAFT: Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (TEPH-DRO)</b>	<b>56</b>	50	mg/kg	1	3111407	11/14/13	11/14/13	8015M	
C28-C36 (TEPH-ORO)	ND	50	"	"	"	"	"	"	

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		111 %	30-150		"	"	"	"	

**DRAFT: Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	3111408	11/14/13	11/14/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>5.1</b>	0.50	"	"	"	"	"	"	

Date Sampled: 11/14/13 14:40

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		108 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		102 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		81.2 %	21-167		"	"	"	"	

DRAFT REPORT

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Anadarko - Denver  
 1099 18th St, Suite 1800  
 Denver CO, 80202

Project: UPRR Pan Am B1

Project Number: WO #88406957  
 Project Manager: Jim Dawe

**Reported:**  
 11/14/13 22:38

**DRAFT: Extractable Petroleum Hydrocarbons by 8015 - Quality Control**

**Summit Scientific**

Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

**Batch 3111407 - EPA 3550A**

**Blank (3111407-BLK1)**

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	ND	50	mg/kg							
C28-C36 (TEPH-ORO)	ND	50	"							

**LCS (3111407-BS1)**

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	542	50	mg/kg	501		108	73-134			
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**Matrix Spike (3111407-MS1)**

**Source: R311087-02**

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	522	50	mg/kg	481	ND	109	50-148			
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**Matrix Spike Dup (3111407-MSD1)**

**Source: R311087-02**

Prepared & Analyzed: 11/14/13

C10-C28 (TEPH-DRO)	526	50	mg/kg	476	ND	110	50-148	0.640	13	
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DRAFT REPORT

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Anadarko - Denver  
1099 18th St, Suite 1800  
Denver CO, 80202

Project: UPRR Pan Am B1  
Project Number: WO #88406957  
Project Manager: Jim Dawe

**Reported:**  
11/14/13 22:38

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference

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DRAFT REPORT

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