



February 2, 2016

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

**Re: Sump Closure Summary Letter Report  
Mayer-63N67W22SESW (Mayer 14-22A)  
API: 05-123-21248  
Facility ID: 331752  
Legal: SESW Sec 22-T3N-R67W  
Remediation Project #8961**

Dear Mr. Mickelson:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Sump Closure Summary Letter Report (Report) to document sampling activities and the results of environmental testing at the above-referenced site. This Report is being submitted under the Form 27 Management Plan for Closure of Produced Water Vessels, which has been assigned Remediation #8961 by the COGCC. Tasman provided environmental services at the site that included collection of confirmation soil samples from the excavation and documentation of field activities, as described below.

### **Site Assessment Activities**

The field activities described herein were performed with the purpose of assessing potential hydrocarbon impacts at the site related to the closure of the produced water sump on December 10, 2013. Soil sampling activities, laboratory analytical results, and conclusions are presented below. The general site layout and sample locations are provided in the attached site map (Attachment A). Field activities associated with an unrelated State reportable release conducted on location will be reported and summarized in a separate Form 27.

The final extent of the excavation measured approximately 12 feet by 12 feet with an approximate depth of 5 feet below ground surface (bgs). No impacted material was removed from the site during closure activities. A liner was not present at the location, and groundwater was not encountered in the excavation.

Confirmation soil samples were collected from the base and sidewalls of the excavation area at approximately 5 feet and 2 feet bgs, respectively. Soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). The confirmation soil sample collected from the base of the excavation area was submitted to eAnalytics Laboratory in Loveland, Colorado, for analysis of benzene, toluene, ethylbenzene,



total xylenes (BTEX), total petroleum hydrocarbons (TPH) – gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260, and TPH – diesel range and oil range organics (DRO and ORO) by USEPA Method 8015. Soil analytical data is summarized in Table 1 and the laboratory analytical report is provided in Attachment B.

## **Results**

Soil analytical results from the sample collected from the base of the final extent of the excavation area indicated that BTEX and TPH concentrations were below the applicable COGCC Table 910-1 standards. The remaining four soil samples collected from the sidewalls of the excavation area were not submitted for laboratory analysis as analytical data confirmed the absence of petroleum hydrocarbon impacts above regulatory standards.

## **Conclusions**

Analytical results described herein confirm BTEX and TPH impacts are not present at concentrations above applicable regulatory standards in the former sump location. Consequently, no further site assessment or remedial activity is recommended at this time. Following site assessment activities, the produced water sump was removed and the excavation area was backfilled and contoured to match pre-existing site conditions.

Please contact me at (720) 409-8791 if you have any questions regarding this report or require additional information.

Sincerely,

Dan Wade  
Project Manager

## **Attachments:**

Table 1 – Soil Sample Results Summary Table  
Attachment A – Site Map  
Attachment B – Laboratory Analytical Reports



**Table**



**TABLE 1**  
**MAYER-63N67W22SESW (MAYER 14-22A)**  
**SOIL SAMPLE RESULTS SUMMARY TABLE**  
**KERR-McGEE OIL AND GAS ONSHORE LP**

Sample ID	Date	Depth (ft. bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TVPH-GRO (mg/kg)	TEPH-DRO (mg/kg)	TEPH-ORO (mg/kg)
<b>COGCC standards for soil (mg/kg) <sup>(1)</sup></b>			<b>0.17</b>	<b>85</b>	<b>100</b>	<b>175</b>	<b>500</b>		
B01@5 - sump	12/10/13	5	0.066	<0.01	0.212	4.00	161	<50	<50

**Notes:**

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 1, 2015.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

TVPH - GRO = Total volatile petroleum hydrocarbons - gasoline range organics

TEPH - DRO = Total extractable petroleum hydrocarbons - diesel range organics

TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram.

ft. bgs = Feet below ground surface.

**BOLD** = Analytical result is in exceedance of COGCC Table 910-1 soil standards.



## **Attachment A**





DATE:	February 2, 2016
DESIGNED BY:	B. Nelson
DRAWN BY:	B. Nelson



**Kerr-McGee Oil and Gas Onshore, LP**  
**Mayer-63N67W22SESW (Mayer 14-22A)**  
SESW, Section 22, Township 3 North, Range 67 West  
Weld County, Colorado

Sample Location  
Map

FIGURE  
1



## **Attachment B**



# Test Report



December 10, 2013

Client: Tasman Geosciences / Anadarko

Project: Mayer 14-22A, 22-12L, 22-13L

Lab ID: 389

Date Samples Received: 12/10/2013

Number of Samples: 10

Sample Condition: Samples arrived intact and in appropriate sample containers

Sample Temperature: Within acceptable range of 2-6° C, or as specified in EPA Method

The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

Thank you for allowing eAnalytics Laboratory to provide laboratory services for you.

Sincerely,

A handwritten signature in black ink, appearing to read "Chris Dieken".

Christopher Dieken  
Quality Assurance Manager

A handwritten signature in black ink, appearing to read "Todd Rhea".

Todd Rhea  
Laboratory Manager



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United States Department of Defense  
(DoD ELAP)

**eAnalytics Laboratory**

1767 Rocky Mountain Avenue Loveland CO 80538



## Chain of Custody

# eANALYTICS

## LABORATORY

Chain of Custody Form

eANALYTICS LABORATORY			1767 Rocky Mountain Avenue Loveland CO 80538   Phone: (970) 667-6975   Fax: (970) 669-0941   www.eAnalyticsLab.com																	
CLIENT INFORMATION (*New Clients please fill out completely)			ANALYSIS INFORMATION (Select analysis by checking box on corresponding sample line)																	
Company: Tasman Geosciences / Anadarko			Number of Containers	Matrix: (S) Soil (W) Water (V) Vapor (O) Other	BTEX (EPA 8260)	BTEX/GRO (EPA 8260)	DRO/ORO (EPA 8015)	TPH-GRO/DRO/ORO (EPA 8260/8015)	SAR (US Dept of Ag Method 20B)	EC (US Dept of Ag Method 3)	pH (EPA 9045D)	Other Analysis								
Project: Mayer																				
Project Manager: Paul Schneider																				
Sampler: Jenna Barker																				
Phone/Email: 720-987-9717 / JBarker@Tasman-Geo.com																				
Address: 6899 Pecos Street, Unit C Denver, CO 80221																				
Lab ID	Sample Name	Sampling Date/Time																		
01	N01@5	12/10/13 AM/PM	1 S			X X														
02	S01@5	AM/PM	1 S			X X														
03	E01@5	AM/PM	1 S			X X														
04	W01@5	AM/PM	1 S			X X														
05	B01@7	AM/PM	1 S			X X														
06	B01@5-sump	AM/PM	1 S			X X														
07	S01@2-sump	AM/PM	1 S			X X														
08	N01@2-sump	AM/PM	1 S			X X														
09	E01@2-sump	AM/PM	1 S			X X														
10	W01@2-sump	AM/PM	1 S			X X														
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		
		AM/PM																		

Comments: By 7am 12/14/13 Please

<b>Turnaround Time (Business Days)</b> TAT begins when sample is received by eANALYTICS <input type="radio"/> Normal (5-10 Days) <input type="radio"/> 3 Day (1.25x) <input type="radio"/> 1 Day (2x) <input checked="" type="radio"/> Same Day (3x) Next Bus. Morning (APC Pricing)		<b>Record of Custody</b> Relinquished by: <i>[Signature]</i> Date: 12/10/13 Company: Tasman Time: AM/PM Received by: _____ Date: _____ Company: _____ Time: _____ Relinquished by: _____ Date: _____ Company: _____ Time: _____ Received by: <i>[Signature]</i> Date: 12/10/13 Company: eANALYTICS Time: 4:00 PM	
<b>For eANALYTICS Use</b> Samples Received Intact <input checked="" type="radio"/> Yes <input type="radio"/> No Received Within Temperature Range (2-6°C) <input checked="" type="radio"/> Yes <input type="radio"/> No Sample Preservative <input checked="" type="radio"/> Ice <input type="radio"/> None <input type="radio"/> Acid <input type="radio"/> Other			

WO # 389

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# eANALYTICS

## LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 389

Project: Mayer 14-22A, 22-12L, 22-13L

Analysis: Volatile Organics  
TPH-GRO / DRO / OROMethod: EPA8260  
EPA8260/8015

Sample Name	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36	Date Sampled	Date Analyzed	Lab ID	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg				
N01 @ 5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	12/10/13	12/10/13	389	1
S01 @ 5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	12/10/13	12/10/13	389	2
E01 @ 5	<b>0.170</b>	< 0.01	<b>0.494</b>	<b>4.68</b>	<b>287</b>	<b>366</b>	< 50	12/10/13	12/10/13	389	3
W01 @ 5	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	12/10/13	12/10/13	389	4
B01 @ 7	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	12/10/13	12/10/13	389	5
B01 @ 5-sump	<b>0.066</b>	< 0.01	<b>0.212</b>	<b>4.00</b>	<b>161</b>	< 50	< 50	12/10/13	12/10/13	389	6

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**e**ANALYTICS  
L A B O R A T O R Y

Client: Tasman Geosciences / Anadarko

Lab ID: 389

Project: Mayer 14-22A, 22-12L, 22-13L

Method: EPA8260

Sample Name	Dibromo- fluoromethane % Recovery	1,2 Dichloro- ethane-D4 % Recovery	Toluene-D8 % Recovery	Bromo- fluorobenzene % Recovery	Date Sampled	Date Analyzed	Lab ID
N01 @ 5	101	93	92	89	12/10/13	12/10/13	389 1
S01 @ 5	104	96	91	95	12/10/13	12/10/13	389 2
E01 @ 5	95	101	86	101	12/10/13	12/10/13	389 3
W01 @ 5	98	86	102	102	12/10/13	12/10/13	389 4
B01 @ 7	91	90	94	99	12/10/13	12/10/13	389 5
B01 @ 5-sump	89	96	97	100	12/10/13	12/10/13	389 6

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# eANALYTICS

## LABORATORY

Client: Tasman Geosciences / Anadarko

Lab ID: 389

Project: Mayer 14-22A, 22-12L, 22-13L

Analysis: Volatile Organics  
TPH-GRO / DRO / OROMethod: EPA8260  
EPA8260/8015

Sample Name								Date Analyzed	Lab ID	
	Benzene	Toluene	Ethyl- benzene	Total Xylenes	TPH GRO C6-C10	TPH DRO C10-C28	TPH ORO C28-C36			
	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec	% Rec			
Laboratory Control	89	101	92	98	89	97	93	12/10/13	LCS	389 1
(70-130%)										
Calibration Verification	97	97	99	92	99	98	96	12/10/13	CCV	389 1
(80-120%)										
Method Blank	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	12/10/13	MB	389 1
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			

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