



June 10, 2015

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

**Re: Sump Replacement Summary Letter Report  
Coulter 9 & 10-12  
API: 05-123-23461  
Facility ID: 305770  
Legal: NESE Sec 12-T2N-R66W  
Remediation Project #8961**

Dear Mr. LaRue:

On behalf of Kerr-McGee Oil & Gas Onshore LP (Kerr-McGee), Tasman Geosciences, Inc. (Tasman) has prepared this Sump Replacement 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 Colorado Oil and Gas Conservation Commission (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 removal and replacement of the produced water sump on August 19, 2014. 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).

The final extent of the excavation measured approximately 10 feet by 15 feet with an approximate depth of 4 feet below ground surface (bgs). No impacted material was removed from the site during replacement activities. A liner was present beneath the sump, and no water was encountered during excavation activities.

Confirmation soil samples were collected from the sidewalls of the excavation area at approximately 3 feet bgs. A soil sample was not collected from the base of the excavation area due to the presence of a liner beneath the sump. Soil samples were field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). The confirmation soil sample collected from the east sidewall of the excavation area was submitted to



eAnalytics Laboratory in Loveland, Colorado for laboratory analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX) and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by United States Environmental Protection Agency (USEPA) Method 8260B, 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 final extent of the excavation area indicated that BTEX and TPH concentrations were below the applicable Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 standards. The remaining three 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 regulatory standards in the area of the sump. Consequently, no further site assessment or remedial activity is recommended at this time. Following site assessment activities, the produced water sump was replaced and the excavation area was backfilled and contoured to match pre-existing site conditions. The production facility remains operational.

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

Sincerely,

A handwritten signature in blue ink that reads "Christine Wasko".

Christine Wasko  
Project Scientist

## **Attachments:**

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

## **Table**

**TABLE 1  
COULTER 9 AND 10-12  
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)
<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>	
E01@3'	8/19/2014	3	<0.01	<0.01	<0.01	<0.01	<50	<50

**Notes:**

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

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

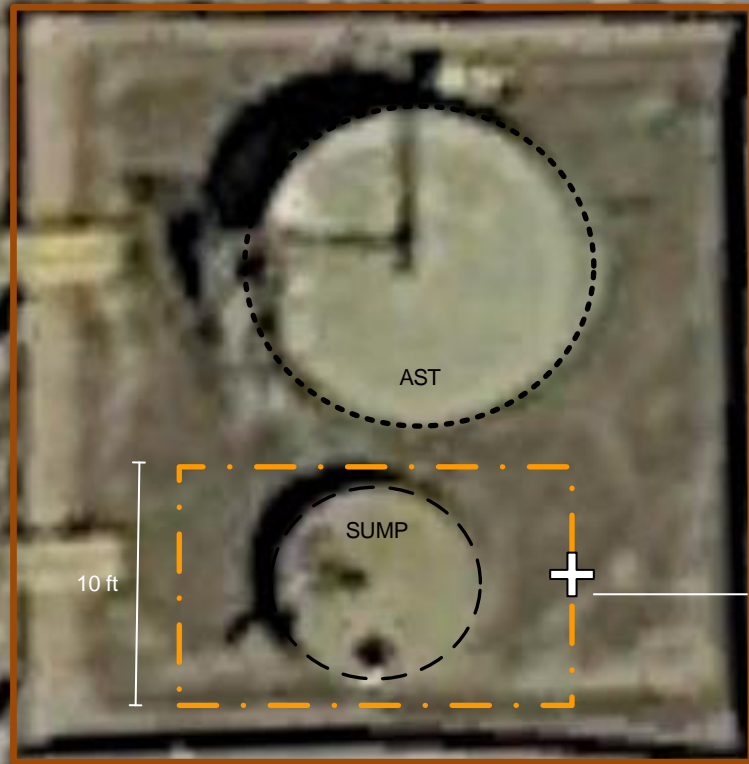
TEPH - ORO = Total extractable petroleum hydrocarbons - oil range organics

mg/kg = Milligrams per kilogram.

bgs = Below ground surface.

**Bold Text** = Analytical result is in exceedance of COGCC Table 910-1 soil standards

**Attachment A**



E01 @ 3'  
B - <0.01 mg/kg  
TPH - <50 mg/kg


B – Benzene  
TPH – Total Petroleum Hydrocarbons  
mg/kg – Milligrams Per Kilogram

Image Source:  
Google Earth 2015








DRAWN BY: BRN  
DATE: 6/9/2015

**Facility Diagram**  
Kerr-McGee Oil and Gas Onshore, LP  
Coulter 9 & 10-12  
(August 2014)  
NESE S12 T2N R66W  
Weld County, CO

 **TASMAN** 6899 Pecos St., Unit C  
GEOSCIENCES Denver, CO 80221

**LEGEND**

-  Approximate Excavation Extent
-  Former Infrastructure
-  Existing Infrastructure
-  Berm

 Approximate Soil Sample Location

**FIGURE 1**  
**SITE MAP**

**Attachment B**

# Test Report

## eANALYTICS LABORATORY

August 20, 2014

Client: Tasman Geosciences / Anadarko  
Project: Coulter 9, 10-12  
Lab ID: 1987  
Date Samples Received: 8/19/2014  
Number of Samples: 4  
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

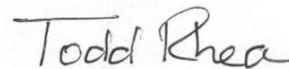
The quality control procedures associated with the requested analyses were satisfactorily passed before the samples were run.

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

Sincerely,



Christopher Dieken  
Quality Assurance Manager



Todd Rhea  
Laboratory Manager

**eAnalytics Laboratory**

1767 Rocky Mountain Avenue Loveland CO 80538





Client: Tasman Geosciences / Anadarko Lab ID: 1987  
 Project: Coulter 9,10-12  
 Analysis: Volatile Organics Method: EPA8260  
 TPH EPA8260/8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl- benzene mg/kg	Total Xylenes mg/kg	TPH	TPH	TPH	Date Sampled	Date Analyzed	Lab ID
					GRO C6-C10 mg/kg	DRO C10-C28 mg/kg	ORO C28-C36 mg/kg			
E01 @ 3	< 0.01	< 0.01	< 0.01	< 0.01	< 50	< 50	< 50	08/19/14	08/19/14	1987 4



Client: Tasman Geosciences / Anadarko      Lab ID: 1987  
 Project: Coulter 9, 10-12      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
E01 @ 3	108	103	99	101	08/19/14	08/19/14	1987 4



Client: Tasman Geosciences / Anadarko Lab ID: 1987

Project: Coulter 9, 10-12

Analysis: Volatile Organics Method: EPA8260  
TPH EPA8260/8015

Sample Name	Benzene % Rec	Toluene % Rec	Ethyl- benzene % Rec	Total Xylenes % Rec	TPH GRO C6-C10 % Rec	TPH DRO C10-C28 % Rec	TPH ORO C28-C36 % Rec	Date Analyzed	Lab ID
Laboratory Control Sample (70-130%)	90	95	89	101	96	95	91	08/19/14	LCS 1987 1
Method Blank	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	< 0.01 mg/kg	< 50 mg/kg	< 50 mg/kg	< 50 mg/kg	08/19/14	MB 1987 1

**eAnalytics Laboratory**

1767 Rocky Mountain Avenue Loveland CO 80538