



February 2, 2016

Mr. Erik Mickelson
Senior HSE Representative
Kerr-McGee Oil & Gas Onshore LP
1099 18th 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)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500		
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

eANALYTICS LABORATORY

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,



Christopher Dieken
Quality Assurance Manager



Todd Rhea
Laboratory Manager



Proudly certified by A2LA & The
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

 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: <i>Mayer</i>																			
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	NO1@5	12/10/13 AM/PM	1	S		X	X												
02	SO1@5	AM/PM	1	S		X	X												
03	EO1@5	AM/PM	1	S		X	X												
04	WO1@5	AM/PM	1	S		X	X												
05	BO1@7	AM/PM	1	S		X	X												
06	BO1@5-sump	AM/PM	1	S		X	X												
07	SO1@2-sump	AM/PM	1	S		X	X												
08	NO1@2-sump	AM/PM	1	S		X	X												
09	EO1@2-sump	AM/PM	1	S		X	X												
10	WO1@2-sump	AM/PM	1	S		X	X												
Comments: <i>By 7am 12/14/13 please</i>																			
Turnaround Time (Business Days) TAT begins when sample is received by eANALYTICS Normal (5-10 Days) Rush analysis requires an extra charge. If 3 Day (1.25x) possible please inform eANALYTICS in advance 1 Day (2x) for rush analysis. Same Day (3x) Next Bus. Morning (APC Pricing)							Record of Custody Relinquished by: <i>[Signature]</i> Date: <i>12/10/13</i> Company: <i>Tasman</i> Time: AM/PM Received by: Date: Time: AM/PM Company: Time: AM/PM Relinquished by: Date: Time: AM/PM Company: Time: AM/PM Received by: <i>[Signature]</i> Date: <i>12/10/13</i> Company: eANALYTICS Time: <i>4:00</i> AM/PM												
For eANALYTICS Use Samples Received Intact Yes / No <i>Yes</i> / No Received Within Temperature Range (2-6°C) Yes / No <i>Yes</i> / No Sample Preservative <i>Ice</i> / None Acid / Other																			

WO #: 389

eANALYTICS: Environmental testing made Easy

Page 1 of 1

eAnalytics Laboratory

1767 Rocky Mountain Avenue Loveland CO 80538



Client: Tasman Geosciences / Anadarko Lab ID: 389

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

Analysis: Volatile Organics Method: EPA8260
TPH-GRO / DRO / ORO EPA8260/8015

Sample Name	Benzene mg/kg	Toluene mg/kg	Ethyl- benzene mg/kg	Total Xylenes mg/kg	TPH GRO C6-C10 mg/kg	TPH DRO C10-C28 mg/kg	TPH ORO C28-C36 mg/kg	Date	Date	Lab ID
								Sampled	Analyzed	
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	0.170	< 0.01	0.494	4.68	287	366	< 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	0.066	< 0.01	0.212	4.00	161	< 50	< 50	12/10/13	12/10/13	389 6

eAnalytics Laboratory

1767 Rocky Mountain Avenue Loveland CO 80538



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



Client: Tasman Geosciences / Anadarko

Lab ID: 389

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

Analysis: Volatile Organics
TPH-GRO / DRO / ORO

Method: EPA8260
EPA8260/8015

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