



April 15, 2014

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

**Re: Sump Closure: Excavation Summary Letter
Report Yamaguchi 10 & 33-27
API: 05-123-21841
Legal: NWSE Sec 27-T3N-R67W**

Dear Mr. Hamlin:

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

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 of a sump on November 22, 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 30 feet by 16 feet with an approximate depth of 3.5 feet below ground surface (bgs). Approximately 62 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. PID readings indicated minimal or no detectable hydrocarbon impacts.

Confirmation soil samples from the final north, south, east and west excavation sidewalls were collected at approximately 2.5 feet bgs. A sample was also collected from the base of the excavation at approximately 3.5 feet bgs. A liner is not present at this location. The samples were submitted to eAnalytics Laboratory located in Loveland, 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. Soil laboratory data is summarized in Table 1, and the laboratory analytical report is provided in Attachment B.

Results

Soil analytical results indicate that BTEX and TPH concentrations were below the applicable Colorado Oil and Gas Conservation Commission (COGCC) Table 910-1 standards at the extent of the excavation.

Conclusions

Analytical results did not indicate petroleum hydrocarbon impacts above applicable standards in soil in and around the area of the former sump at the final extent of the excavation. No further Site assessment or remedial activity is recommended at this time.

Please contact me at (720) 987-9717 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
YAMAGUCHI 10 & 33-27
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)
B01@3.5'	11/22/2013	3.5	0.01	0.022	<0.01	0.031	<50	<50
E01@2.5'	11/22/2013	2.5	<0.01	0.011	<0.01	0.016	<50	<50
W01@2.5'	11/22/2013	2.5	<0.01	<0.01	<0.01	<0.01	<50	<50
S01@2.5'	11/22/2013	2.5	0.028	0.095	<0.01	0.074	<50	<50
N01@2.5'	11/22/2013	2.5	0.021	0.032	<0.01	0.021	<50	<50
COGCC standards for Soil (mg/kg)			0.17	85	100	175	500	

Notes:

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

Attachment A

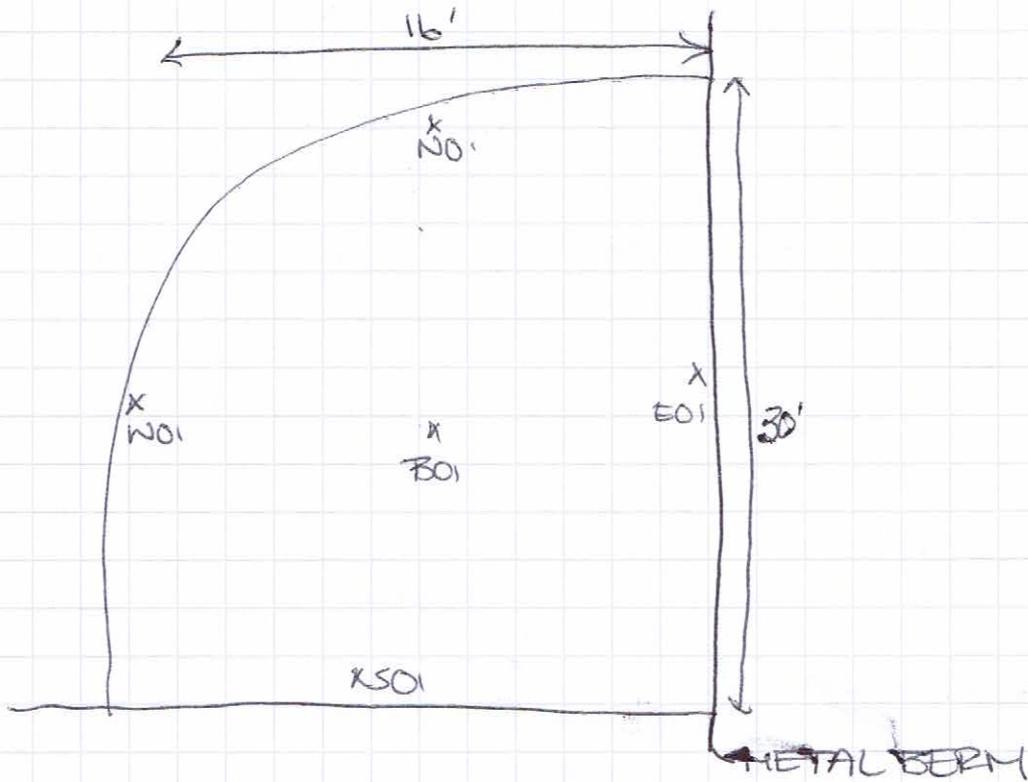
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Yamaguchi 10 & 33-27
 11/22/13
 WO#88441881

0221 & 28

PID (ppm)

NO1	0.0
EO1	26.0
SO1	256
WO1	202
BO1	0.0



Soil Analytical (mg/kg)

	<u>B</u>	<u>I</u>	<u>E</u>	<u>X</u>	<u>TPH</u>
BO1@3.5	0.01	0.022	<0.01	0.031	<50
EO1@2.5	<0.01	0.011	<0.01	0.016	<50
WO1@2.5	<0.01	<0.01	<0.01	<0.01	<50
SO1@2.5	0.028	0.095	<0.01	0.074	<50
NO1@2.5	0.021	0.032	<0.01	0.021	<50

- blocks to landfill
- No liner

Attachment B

Test Report



November 24, 2013

Client: Tasman Geosciences / Anadarko
Project: Yamaguchi 10 & 33-27
Lab Batch ID: 325
Date Samples Received: 11/22/2013
Number of Samples: 5
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 that reads "Chris Dieken".

Christopher Dieken
Quality Assurance Manager

A handwritten signature in black ink that reads "Todd Rhea".

Todd Rhea
Laboratory Manager



eAnalytics Laboratory is proudly
certified by A2LA & The United States
Department of Defense (DoD)

eAnalytics Laboratory

1767 Rocky Mountain Avenue Loveland CO 80538



Client: Tasman Geosciences / Anadarko

Lab Batch ID: 325

Project: Yamaguchi 10 & 33-27

Method: EPA8260

Sample Name	Dibromo- fluoromethane	1,2 Dichloro- ethane-D4	Toluene-D8	Bromo- fluorobenzene	Date Sampled	Date Analyzed	Lab ID
	% Recovery	% Recovery	% Recovery	% Recovery			
B01 @ 3.5'	105	103	97	101	11/22/13	11/22/13	325 1
E01 @ 2.5'	92	93	86	95	11/22/13	11/22/13	325 2
W01 @ 2.5'	100	97	97	91	11/22/13	11/22/13	325 3
S01 @ 2.5'	105	91	88	90	11/22/13	11/22/13	325 4
N01 @ 2.5'	93	89	98	89	11/22/13	11/22/13	325 5



Client: Tasman Geosciences / Anadarko

Lab Batch ID: 325

Project: Yamaguchi 10 & 33-27

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%)	95	91	101	102	93	97	93	11/22/13	LCS	325 1
Calibration Verification (80-120%)	98	99	97	101	97	93	100	11/22/13	CCV	325 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	11/22/13	MB	325 1