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Automated Report

Technical Report for

Kerr-McGee Oil & Gas Onshore LP

GWA_Barclay_125634_Well

FID:753242 Reg:Vol. Freq.:Q1

SGS Job Number: DA13369

Sampling Date: 02/05/19

Report to:

Kerr-McGee Oil & Gas Onshore LP
112 High Street
Buffalo, WY 82834
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ATTN: Tanya Cude

Total number of pages in report: 51

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Carissa Cumine 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942) UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

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Sample Summary

Kerr-McGee Oil & Gas Onshore LP

Job No: DA13369

GWA_Barclay_125634_Well
Project No: FID:753242 Reg:Vol. Freq.:Q1

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
DA13369-1	02/05/19	13:08	TS	02/06/19	AQ	Ground Water	BW_BARCLAY_125634_PRE SWSW_20_3N_66W
DA13369-1A	02/05/19	13:08	TS	02/06/19	AQ	Ground Water	BW_BARCLAY_125634_PRE SWSW_20_3N_66W
DA13369-1B	02/05/19	13:08	TS	02/06/19	AQ	Ground Water	BW_BARCLAY_125634_PRE SWSW_20_3N_66W
DA13369-1F	02/05/19	13:08	TS	02/06/19	AQ	Groundwater Filtered	BW_BARCLAY_125634_PRE SWSW_20_3N_66W

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Kerr-McGee Oil & Gas Onshore LP	**Job No**	DA13369
Site:	GWA_Barclay_125634_Well	**Report Date**	2/19/2019 3:02:16 PM

On 02/06/2019, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.6 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA13369 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260B

Matrix: AQ **Batch ID:** V7V2991

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13348-1MS, DA13348-1MSD were used as the QC samples indicated.
- The matrix spike duplicate (MSD) recovery(s) of Toluene are outside control limits. Probable cause due to matrix interference.

GC Volatiles By Method RSK175 MOD

Matrix: AQ **Batch ID:** GFB1049

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12301-5MS, DA12301-5MSD were used as the QC samples indicated.
- DA13369-1A: The pH of the sample was >2 at time of analysis.

GC Volatiles By Method SW846 8015B

Matrix: AQ **Batch ID:** GGB2306

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12301-20MS, DA12301-20MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846-8015B

Matrix: AQ **Batch ID:** OP17434

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12301-2MS, DA12301-2MSD were used as the QC samples indicated.

Metals Analysis By Method EPA 200.7

Matrix: AQ **Batch ID:** MP27320

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13342-29FMS, DA13342-29FMSD were used as the QC samples for the metals analysis.

Metals Analysis By Method EPA 200.8

Matrix:	AQ	Batch ID:	MP27318

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13344-1AMS, DA13344-1AMSD were used as the QC samples for the metals analysis.

General Chemistry By Method EPA 300.0/SW846 9056

Matrix:	AQ	Batch ID:	R46621

- The data for EPA 300.0/SW846 9056 meets quality control requirements.
- DA13369-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

General Chemistry By Method EPA 365.1

Matrix:	AQ	Batch ID:	GP24561

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13311-1MS, DA13388-1DUP were used as the QC samples for the Phosphorus, Total analysis.

General Chemistry By Method EPA300.0/SW846 9056A

Matrix:	AQ	Batch ID:	GP24543

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13356-2MS, DA13356-2MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.
- DA13369-1 for Sulfate; Nitrogen, Nitrite and Nitrogen, Nitrate: Elevated detection limit due to matrix interference.

General Chemistry By Method HACH IRB-BART

Matrix:	AQ	Batch ID:	MB1143

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method HACH SLYM-BART

Matrix:	AQ	Batch ID:	MB1144

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method HACH SRB-BART

Matrix:	AQ	Batch ID:	MB1145

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM 2320B-2011

Matrix: AQ **Batch ID:** GN46068

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** GN46069

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** GN46070

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13296-1MS, DA13296-1MSD, DA13369-1DUP were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

General Chemistry By Method SM 2510B-2011

Matrix: AQ **Batch ID:** GP24562

- Sample(s) DA13369-1DUP were used as the QC samples for the Specific Conductivity analysis.

General Chemistry By Method SM 2540C-2011

Matrix: AQ **Batch ID:** GN46030

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13369-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

General Chemistry By Method SM1030E-2011

Matrix: AQ **Batch ID:** GN46087

- The data for SM1030E-2011 meets quality control requirements.

General Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ **Batch ID:** GN46064

- Sample(s) DA13369-1DUP were used as the QC samples for the pH analysis.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA13369-1 Analysis performed past recommended hold time.

Field Data By Method FIELD

Matrix: AQ **Batch ID:** R46582

- The data for FIELD meets quality control requirements.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA13369
Account: Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well
Collected: 02/05/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
DA13369-1	**BW_BARCLAY_125634_PRE SWSW_20_3N_66W**					
Alkalinity, Bicarbonate as CaCO3		447	5.0		mg/l	SM 2320B-2011
Alkalinity, Carbonate		18.6	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3		465	5.0		mg/l	SM 2320B-2011
Bromide		0.59	0.10		mg/l	EPA300.0/SW846 9056A
Cation Anion Balance		2.7			%	SM1030E-2011
Chloride		56.3	2.5		mg/l	EPA300.0/SW846 9056A
Fluoride		1.9	0.20		mg/l	EPA300.0/SW846 9056A
Phosphorus, Total		0.034	0.010		mg/l	EPA 365.1
Solids, Total Dissolved		608	10		mg/l	SM 2540C-2011
Specific Conductivity		970	1.0		umhos/cm	SM 2510B-2011
pH [a]		8.67			su	SM4500HB + -2011/9040C
Temperature (Field)		17.1			Deg. C	FIELD
pH (Field)		8.5			su	FIELD
Redox Potential Vs H2		98.9			mv	FIELD
Oxygen, Dissolved (Field)		8.58			mg/l	FIELD
Specific Conductivity (Field)		1056	0.50		umhos/cm	FIELD
Turbidity		0.02			NTU	FIELD
DA13369-1A	**BW_BARCLAY_125634_PRE SWSW_20_3N_66W**					
Methane [b]		4.03	0.0080	0.0040	mg/l	RSK175 MOD
Ethane [b]		0.395	0.0016	0.00080	mg/l	RSK175 MOD
Propane [b]		0.176	0.0022	0.0011	mg/l	RSK175 MOD
DA13369-1B	**BW_BARCLAY_125634_PRE SWSW_20_3N_66W**					
Iron-Related Bacteria		2200	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		500	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		6000	200		CFU/ml	HACH SRB-BART
DA13369-1F	**BW_BARCLAY_125634_PRE SWSW_20_3N_66W**					
Barium		0.0354	0.0040		mg/l	EPA 200.8
Boron		0.185	0.050		mg/l	EPA 200.7
Calcium		2.27	0.40		mg/l	EPA 200.7
Magnesium		0.395	0.20		mg/l	EPA 200.7
Manganese		0.0060	0.0050		mg/l	EPA 200.7
Potassium		1.27	1.0		mg/l	EPA 200.7
Sodium		233	0.40		mg/l	EPA 200.7
Strontium		0.0695	0.0050		mg/l	EPA 200.7

(a) Analysis performed past recommended hold time.
(b) The pH of the sample was > 2 at time of analysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1	**Date Sampled:**	02/05/19
Matrix:	AQ - Ground Water	**Date Received:**	02/06/19
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GWA_Barclay_125634_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V58622.D	1	02/07/19 18:36	MB	n/a	n/a	V7V2991
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	105%		70-130%
17060-07-0	1,2-Dichloroethane-D4	95%		70-130%
2037-26-5	Toluene-D8	93%		70-130%
460-00-4	4-Bromofluorobenzene	101%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1	**Date Sampled:**	02/05/19
Matrix:	AQ - Ground Water	**Date Received:**	02/06/19
Method:	SW846 8015B	**Percent Solids:**	n/a
Project:	GWA_Barclay_125634_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB49006.D	1	02/07/19 20:49	BB	n/a	n/a	GGB2306
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	95%		60-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: BW_BARCLAY_125634_PRE SWSW_20_3N_66W
Lab Sample ID: DA13369-1
Matrix: AQ - Ground Water
Method: SW846-8015B SW846 3510C
Project: GWA_Barclay_125634_Well

Date Sampled: 02/05/19
Date Received: 02/06/19
Percent Solids: n/a

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD62529.D	1	02/08/19 14:46	RB	02/07/19	OP17434	GFD2557
Run #2							

	Initial Volume	Final Volume
Run #1	1040 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	56%		11-142%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1	**Date Sampled:**	02/05/19
Matrix:	AQ - Ground Water	**Date Received:**	02/06/19
		Percent Solids:	n/a
Project:	GWA_Barclay_125634_Well		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	447	5.0	mg/l	1	02/11/19	PV	SM 2320B-2011
Alkalinity, Carbonate	18.6	5.0	mg/l	1	02/11/19	PV	SM 2320B-2011
Alkalinity, Total as CaCO3	465	5.0	mg/l	1	02/11/19	PV	SM 2320B-2011
Bromide	0.59	0.10	mg/l	2	02/07/19 10:17	JB	EPA300.0/SW846 9056A
Cation Anion Balance	2.7		%	1	02/13/19	KM	SM1030E-2011
Chloride	56.3	2.5	mg/l	5	02/07/19 10:30	JB	EPA300.0/SW846 9056A
Fluoride	1.9	0.20	mg/l	2	02/07/19 10:17	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate [a]	< 0.020	0.020	mg/l	2	02/07/19 10:17	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite [b]	< 0.040	0.040	mg/l	1	02/07/19 10:30	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite [a]	< 0.020	0.020	mg/l	5	02/07/19 10:30	JB	EPA300.0/SW846 9056A
Phosphorus, Total	0.034	0.010	mg/l	1	02/09/19 11:59	AM	EPA 365.1
Solids, Total Dissolved	608	10	mg/l	1	02/07/19	SK	SM 2540C-2011
Specific Conductivity	970	1.0	umhos/cm	1	02/11/19 12:30	PV	SM 2510B-2011
Sulfate [a]	< 1.0	1.0	mg/l	2	02/07/19 10:17	JB	EPA300.0/SW846 9056A
pH [c]	8.67		su	1	02/11/19 12:00	PV	SM4500HB+-2011/9040C

Field Parameters

Oxygen, Dissolved (Field)	8.58		mg/l	1	02/11/19	SUB	FIELD
Redox Potential Vs H2	98.9		mv	1	02/11/19	SUB	FIELD
Specific Conductivity (Field)	1056	0.50	umhos/cm	1	02/11/19	SUB	FIELD
Temperature (Field)	17.1		Deg. C	1	02/11/19	SUB	FIELD
Turbidity	0.02		NTU	1	02/11/19	SUB	FIELD
pH (Field)	8.5		su	1	02/11/19	SUB	FIELD

(a) Elevated detection limit due to matrix interference.
(b) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)
(c) Analysis performed past recommended hold time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1A	**Date Sampled:**	02/05/19
Matrix:	AQ - Ground Water	**Date Received:**	02/06/19
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	GWA_Barclay_125634_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FB23124.D	1	02/07/19 17:43	BB	n/a	n/a	GFB1049
Run #2 [a]	FB23125.D	10	02/07/19 17:56	BB	n/a	n/a	GFB1049

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	18.5 Deg. C
Run #2	39.0 ml	4.0 ml	500 ul	18.5 Deg. C

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	4.03 [b]	0.0080	0.0040	mg/l	
74-84-0	Ethane	0.395	0.0016	0.00080	mg/l	
74-98-6	Propane	0.176	0.0022	0.0011	mg/l	

(a) The pH of the sample was > 2 at time of analysis.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1B	**Date Sampled:**	02/05/19
Matrix:	AQ - Ground Water	**Date Received:**	02/06/19
		Percent Solids:	n/a
Project:	GWA_Barclay_125634_Well		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron-Related Bacteria	2200	25	CFU/ml	1	02/11/19 13:30	SK	HACH IRB-BART
Slime Forming Bacteria	500	500	CFU/ml	1	02/11/19 13:30	SK	HACH SLYM-BART
Sulfate Reducing Bacteria	6000	200	CFU/ml	1	02/11/19 13:30	SK	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_BARCLAY_125634_PRE SWSW_20_3N_66W		
Lab Sample ID:	DA13369-1F	**Date Sampled:**	02/05/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	02/06/19
		Percent Solids:	n/a
Project:	GWA_Barclay_125634_Well		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Barium	0.0354	0.0040	mg/l	2	02/07/19	02/07/19	EP	EPA 200.8 [2]	EPA 200.8 [5]
Boron	0.185	0.050	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Calcium	2.27	0.40	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Iron	< 0.010	0.010	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Magnesium	0.395	0.20	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Manganese	0.0060	0.0050	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Potassium	1.27	1.0	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]
Selenium	< 0.00080	0.00080	mg/l	2	02/07/19	02/11/19	EP	EPA 200.8 [3]	EPA 200.8 [5]
Sodium	233	0.40	mg/l	1	02/07/19	02/12/19	JR	EPA 200.7 [4]	EPA 200.7 [6]
Strontium	0.0695	0.0050	mg/l	1	02/07/19	02/07/19	JR	EPA 200.7 [1]	EPA 200.7 [6]

(1) Instrument QC Batch: MA11012
(2) Instrument QC Batch: MA11015
(3) Instrument QC Batch: MA11025
(4) Instrument QC Batch: MA11029
(5) Prep QC Batch: MP27318
(6) Prep QC Batch: MP27320

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

Bottle Order Control #:
FED-EX Tracking #:
SGS Quote #:
SGS Job # DA13369

Client / Reporting Information		Project Information		Billing Information (if different from Report to)	
Company:	(Report to) Absaroka Solutions	Project Name:	GWA_Barclay_125634_Well	Frequency:	Q1
Street:	112 High Street	Regulation:	Voluntary		
City, State:	Buffalo, WY 82834	Facility ID:	753242	Company:	Anadarko Petroleum Corportation (APC)
Project Contact:	Tanya Cude	EQuIS Facility Code:	0089019-AN-GWABWQ	Street Address:	1099 18th Street, Suite 1800
Phone:	352-318-4034	Client Purchase Order #:	WO #88561344	City, State ZIP:	Denver, CO 80202-1918
Email:					
Sampler(s) Name(s):	Tyler Scherden	Project Manager:	Joel Mason	Attention:	Erik Mickelson User ID: fvv451

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Field ID / Point of Collection	Collection Date	Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: NONE	HCl	NaOH	HNO3	H2SO4	DI Water	MEOH	ENCORE	Na2S2O4	Other	PH, SCON, TDS	XCARBICALK	BRO, CHL, F, NO2, XNO3O, NO32, SO4	TPO4	Dissolved Metals - Lab Filtered*	VRSK175DGMEP	V8260BTX	B8015DRO	V8015GRO	IRBAC, SFBAC, SO4RBAC	CABAL	LAB USE ONLY
BW_Barclay_125634_Pre	2/5/2019	1308	TS	GW	17	9	6			1					1	X	X	X	X	X	X	X	X	X	X	X	01
SWSW_20_3N_66W																											
Temperature, field	17.1	°C																									
pH, field	8.50	s.u.																									
Specific Conductivity, field	1056	uS/cm																									
Oxidation Reduction Potential, field	98.9	mV																									
Dissolved Oxygen, field	8.58	mg/L																									
Turbidity, field	0.02	NTU																									

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day Emergency
- [ ] 2 Day Emergency
- [ ] 1 Day Emergency

Special Reporting Instructions:
- [ ] Report in PPB
- [ ] Report in PPM
- [ ] Report MDLs

Emergency & Rush T/A data available VIA LabLink. RUSH TAT approval needed.

Data Deliverable Information

- [ ] Commercial "A" (Level 1, Results Only)
- [ ] Commercial "B" (Level 2, Results + QC Summary)
- [ ] COMMBN (Results/QC/Narrative)
- [ ] COMMBN+ [Results/QC/Narrative (+ chromatograms)]
- [ ] REDT2
- [ ] FULT1
- [x] EDD Format: COGCC Compatible

Comments / Special Instructions

*Dissolved Metals (200.7/200.8): BaMS, B, Ca, Fe,Mg, Mn, K, SeMS, Na, Sr

Please also send reports to Joel.Mason@Absarokasolutions.com and Max.Moran@Absarokasolutions.com

Bubbles / 18°C

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:
1	2/5/19 1800		2/6/19 8:05		2
Relinquished by Sampler:	Date/Time:	Received By:	Relinquished By:	Date/Time:	Received By:
3		3	4		4

Custody Seal # 3810625 Intact [X] Not Intact [ ] Absent [ ] | Preserved where applicable | Cooler Temp. °C: 0.6 | Therm. ID: 7080 | On Ice [X]

Form MSQA 084-01, RV 6/19/17

SGS Accutest Sample Receipt Summary

Job Number: DA13369 **Client:** ABSOROKA SOLUTIONS **Project:** GWA

Date / Time Received: 2/6/2019 2:05:00 PM **Delivery Method:** **Airbill #'s:** CO

Cooler Temps (Initial/Adjusted): #1: (0.6/0.6);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2991-MB	7V58605.D	1	02/07/19	MB	n/a	n/a	V7V2991

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA13369-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	70-130%
2037-26-5	Toluene-D8	90%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

Blank Spike Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2991-BS	7V58603.D	1	02/07/19	MB	n/a	n/a	V7V2991

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA13369-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	52.2	104	70-130
100-41-4	Ethylbenzene	50	49.0	98	69-130
108-88-3	Toluene	50	48.3	97	70-130
	m,p-Xylene	100	98.8	99	70-130
95-47-6	o-Xylene	50	48.9	98	70-130
1330-20-7	Xylene (total)	150	148	99	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	105%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	70-130%
2037-26-5	Toluene-D8	94%	70-130%
460-00-4	4-Bromofluorobenzene	102%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA13348-1MS	7V58607.D	25	02/07/19	MB	n/a	n/a	V7V2991
DA13348-1MSD	7V58608.D	25	02/07/19	MB	n/a	n/a	V7V2991
DA13348-1	7V58606.D	25	02/07/19	MB	n/a	n/a	V7V2991

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA13369-1

CAS No.	Compound	DA13348-1 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	1100		1250	2100	80	1250	2140	83	2	67-130/30
100-41-4	Ethylbenzene	161		1250	1190	82	1250	1190	82	0	69-130/30
108-88-3	Toluene	2910		1250	3800	71	1250	3770	69* [a]	1	70-130/30
	m,p-Xylene	2560		2500	4450	76	2500	4450	76	0	70-130/30
95-47-6	o-Xylene	539		1250	1580	83	1250	1570	82	1	70-130/30
1330-20-7	Xylene (total)	3100		3750	6030	78	3750	6030	78	0	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA13348-1	Limits
1868-53-7	Dibromofluoromethane	105%	107%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	97%	95%	70-130%
2037-26-5	Toluene-D8	95%	94%	95%	70-130%
460-00-4	4-Bromofluorobenzene	99%	97%	101%	70-130%

(a) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2306-MB	GB48994.D	1	02/07/19	BB	n/a	n/a	GGB2306

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA13369-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	

CAS No.	Surrogate Recoveries		Limits
120-82-1	1,2,4-Trichlorobenzene	88%	60-140%

Method Blank Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1049-MB	FB23103.D	1	02/07/19	BB	n/a	n/a	GFB1049

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA13369-1A

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

Blank Spike Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2306-BS	GB48995.D	1	02/07/19	BB	n/a	n/a	GGB2306

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA13369-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	1.88	85	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	60-140%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1049-BS	FB23104.D	10	02/07/19	BB	n/a	n/a	GFB1049

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA13369-1A

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.512	0.522	102	70-133
74-84-0	Ethane	0.923	1.08	117	70-137
74-98-6	Propane	1.38	1.62	118	70-137

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-20MS	GB48996.D	1	02/07/19	BB	n/a	n/a	GGB2306
DA12301-20MSD	GB48997.D	1	02/07/19	BB	n/a	n/a	GGB2306
DA12301-20	GB48998.D	1	02/07/19	BB	n/a	n/a	GGB2306

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA13369-1

CAS No.	Compound	DA12301-20 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		2.2	1.81	82	2.2	1.84	84	2	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-20	Limits
120-82-1	1,2,4-Trichlorobenzene	93%	96%	93%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-5MS	FB23106.D	10	02/07/19	BB	n/a	n/a	GFB1049
DA12301-5MSD	FB23107.D	10	02/07/19	BB	n/a	n/a	GFB1049
DA12301-5	FB23105.D	1	02/07/19	BB	n/a	n/a	GFB1049

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA13369-1A

CAS No.	Compound	DA12301-5 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-82-8	Methane	ND		0.512	0.493	96	0.512	0.504	98	2	15-196/30
74-84-0	Ethane	ND		0.923	1.01	109	0.923	1.03	112	2	53-144/30
74-98-6	Propane	ND		1.38	1.51	110	1.38	1.54	112	2	54-144/30

* = Outside of Control Limits.

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17434-MB	FC62524.D	1	02/08/19	RB	02/07/19	OP17434	GFC2558

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA13369-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	42%	11-142%

Blank Spike Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17434-BS	FC62525.D	1	02/08/19	RB	02/07/19	OP17434	GFC2558

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA13369-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	3.42	68	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	38%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13369
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17434-MS	FC62526.D	1	02/08/19	RB	02/07/19	OP17434	GFC2558
OP17434-MSD	FC62527.D	1	02/08/19	RB	02/07/19	OP17434	GFC2558
DA12301-2	FC62528.D	1	02/08/19	RB	02/07/19	OP17434	GFC2558

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA13369-1

CAS No.	Compound	DA12301-2 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		5	4.69	94	5	3.92	78	18	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-2	Limits
84-15-1	o-Terphenyl	90%	70%	96%	11-142%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/07/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079	0.12	<2.0
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	-0.071	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP27318: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/07/19

Metal	DA13344-1A Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	63.1	462	400	99.7	70-130
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron					
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum	anr				
Nickel					
Phosphorus					
Potassium					
Selenium	2.0	175	200	86.5	70-130
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP27318: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27318 Methods: EPA 200.8
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/07/19

Metal	DA13344-1A Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	63.1	461	400	99.5	0.2	20
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron						
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum	anr					
Nickel						
Phosphorus						
Potassium						
Selenium	2.0	176	200	87.0	0.6	20
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP27318: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27318
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 02/07/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	386	400	96.5	85-115
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron				
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel				
Phosphorus				
Potassium				
Selenium	175	200	87.5	85-115
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27318: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	46	30		
Antimony	30	14	10		
Arsenic	25	22	7		
Barium	10	.3	2		
Beryllium	10	1	1.3		
Boron	50	3.3	7.4	2.9	<50
Cadmium	10	1.9	1.6		
Calcium	400	6.6	53	15.6	<400
Chromium	10	1.1	1.7		
Cobalt	5.0	2.7	2.3		
Copper	10	4.6	2.3		
Iron	10	8.9	3.1	0.40	<10
Lead	50	13	6.3		
Lithium	5.0	.6	4		
Magnesium	200	50	31	7.7	<200
Manganese	5.0	.5	1.1	0.20	<5.0
Molybdenum	10	8.5	4.3		
Nickel	30	6.2	6.1		
Phosphorus	100	91	24		
Potassium	1000	84	250	-3.4	<1000
Selenium	50	30	21		
Silicon	50	41	45		
Silver	30	.6	4		
Sodium	400	13	51	8.0	<400
Strontium	5.0	.1	.6	-0.10	<5.0
Thallium	10	17	7.5		
Tin	60	41	51		
Titanium	10	.5	1.9		
Uranium	50	3.9	8.5		
Vanadium	10	.9	.7		
Zinc	30	9	3.8		

Associated samples MP27320: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	DA13342-29F Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron	35.9	1080	1000	104.4	70-130
Cadmium					
Calcium	45700	72300	25000	106.4	70-130
Chromium					
Cobalt					
Copper					
Iron	0.0	5170	5000	103.4	70-130
Lead					
Lithium					
Magnesium	11300	35700	25000	97.6	70-130
Manganese	1.3	487	500	97.1	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	2140	29000	25000	107.4	70-130
Selenium					
Silicon					
Silver					
Sodium	17700	43600	25000	103.6	70-130
Strontium	470	965	500	99.0	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP27320: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/07/19

Metal	DA13342-29F Original MS	Spikelot ICPALL2	% Rec	QC Limits

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	DA13342-29F Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	35.9	948	1000	91.2	13.0	20
Cadmium						
Calcium	45700	63900	25000	72.8	12.3	20
Chromium						
Cobalt						
Copper						
Iron	0.0	4890	5000	97.8	5.6	20
Lead						
Lithium						
Magnesium	11300	33700	25000	89.6	5.8	20
Manganese	1.3	430	500	85.7	12.4	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	2140	27400	25000	101.0	5.7	20
Selenium						
Silicon						
Silver						
Sodium	17700	41200	25000	94.0	5.7	20
Strontium	470	910	500	88.0	5.9	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP27320: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 02/07/19

Metal	DA13342-29F Original MSD	Spikelot ICPALL2 % Rec	MSD RPD	QC Limit

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1000	1000	100.0	85-115
Cadmium				
Calcium	24400	25000	97.6	85-115
Chromium				
Cobalt				
Copper				
Iron	5080	5000	101.6	85-115
Lead				
Lithium				
Magnesium	23900	25000	95.6	85-115
Manganese	479	500	95.8	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	26100	25000	104.4	85-115
Selenium				
Silicon				
Silver				
Sodium	24700	25000	98.8	85-115
Strontium	469	500	93.8	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP27320: DA13369-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

QC Batch ID: MP27320
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 02/07/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN46068	5.0	2.5	mg/l	100	102	101.7	90-110%
Alkalinity, Carbonate	GN46069	5.0	2.5	mg/l	100	102	101.7	80-120%
Alkalinity, Total as CaCO3	GN46070	5.0	2.5	mg/l	100	102	101.7	90-110%
Bromide	GP24543/GN46042	0.050	0.0	mg/l	0.5	0.518	103.6	90-110%
Chloride	GP24543/GN46042	0.50	0.0	mg/l	5	5.03	100.6	90-110%
Fluoride	GP24543/GN46042	0.10	0.0	mg/l	1	1.01	101.0	90-110%
Iron-Related Bacteria	MB1143	25	<25	CFU/ml				
Nitrogen, Nitrate	GP24543/GN46042	0.010	0.0	mg/l	0.1	0.103	103.0	90-110%
Nitrogen, Nitrite	GP24543/GN46042	0.0040	0.0	mg/l	0.05	0.0530	106.0	90-110%
Phosphorus, Total	GP24561/GN46060	0.010	0.00	mg/l	0.2	0.193	96.5	90-110%
Phosphorus, Total	GP24561/GN46060	0.010	0.00	mg/l	0.2	0.198	99.0	90-110%
Slime Forming Bacteria	MB1144	500	<500	CFU/ml				
Solids, Total Dissolved	GN46030	10	0.0	mg/l	400	402	100.5	90-110%
Specific Conductivity	GP24562/GN46065			umhos/cm	98.8	98.2	99.4	90-110%
Specific Conductivity	GP24562/GN46065			umhos/cm	998	984	98.6	90-110%
Sulfate	GP24543/GN46042	0.50	0.0	mg/l	5	5.02	100.4	90-110%
Sulfate Reducing Bacteria	MB1145	200	<200	CFU/ml				
pH	GN46064			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46064			su	6.00	6.01	100.2	99.1-100.9%

Associated Samples:
Batch MB1143: DA13369-1B
Batch MB1144: DA13369-1B
Batch MB1145: DA13369-1B
Batch GN46030: DA13369-1
Batch GN46064: DA13369-1
Batch GN46068: DA13369-1
Batch GN46069: DA13369-1
Batch GN46070: DA13369-1
Batch GP24543: DA13369-1
Batch GP24561: DA13369-1
Batch GP24562: DA13369-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN46070	DA13369-1	mg/l	465	465	0.2	0-20%
Phosphorus, Total	GP24561/GN46060	DA13388-1	mg/l	0.077	0.0760	1.3	0-20%
Solids, Total Dissolved	GN46030	DA13369-1	mg/l	608	616	1.3	0-5%
Specific Conductivity	GP24562/GN46065	DA13369-1	umhos/cm	970	964	0.6	0-20%
pH	GN46064	DA13369-1	su	8.67	8.65	0.2	0-5%

Associated Samples:
Batch GN46030: DA13369-1
Batch GN46064: DA13369-1
Batch GN46070: DA13369-1
Batch GP24561: DA13369-1
Batch GP24562: DA13369-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN46070	DA13296-1	mg/l	114	100	212	97.3	80-120%
Bromide	GP24543/GN46042	DA13356-2	mg/l	0.0	5	5.2	104.0	80-120%
Chloride	GP24543/GN46042	DA13356-2	mg/l	123	50	175	104.0	80-120%
Fluoride	GP24543/GN46042	DA13356-2	mg/l	0.57	10	11.0	104.3	80-120%
Nitrogen, Nitrate	GP24543/GN46042	DA13356-2	mg/l	4.4	1	5.5	110.0	80-120%
Nitrogen, Nitrite	GP24543/GN46042	DA13356-2	mg/l	0.0	0.5	0.50	100.0	80-120%
Phosphorus, Total	GP24561/GN46060	DA13311-1	mg/l	0.0	0.2	0.194	95.0	90-110%
Sulfate	GP24543/GN46042	DA13356-2	mg/l	134	50	187	106.0	80-120%

Associated Samples:
Batch GN46070: DA13369-1
Batch GP24543: DA13369-1
Batch GP24561: DA13369-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA13369
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Barclay_125634_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN46070	DA13296-1	mg/l	114	100	211	0.2	20%
Bromide	GP24543/GN46042	DA13356-2	mg/l	0.0	5	5.2	0.0	20%
Chloride	GP24543/GN46042	DA13356-2	mg/l	123	50	174	0.6	20%
Fluoride	GP24543/GN46042	DA13356-2	mg/l	0.57	10	10.7	2.8	20%
Nitrogen, Nitrate	GP24543/GN46042	DA13356-2	mg/l	4.4	1	5.5	0.0	20%
Nitrogen, Nitrite	GP24543/GN46042	DA13356-2	mg/l	0.0	0.5	0.50	0.0	20%
Sulfate	GP24543/GN46042	DA13356-2	mg/l	134	50	186	0.5	20%

Associated Samples:
Batch GN46070: DA13369-1
Batch GP24543: DA13369-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits