HALL ENVIRONMENTAL ANALYSIS LABORATORY

Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

December 06, 2019

Vernon Marcum
MARATHON
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX:

RE: Carbon Canister OrderNo.: 1912057

Dear Vernon Marcum:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/3/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report
Lab Order **1912057**
Date Reported: **12/6/2019**

CLIENT: MARATHON
Client Sample ID: South Carbon Canister
Project: Carbon Canister
Collection Date: 12/2/2019 7:35:00 AM
Lab ID: 1912057-001
Matrix: AQUEOUS
Received Date: 12/3/2019 9:23:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE							Analyst: **BRM**	
Diesel Range Organics (DRO)	ND	0.71	1.0		mg/L	1	12/5/2019 11:55:26 AM	49156
Surr: DNOP	105	0	70-130		%Rec	1	12/5/2019 11:55:26 AM	49156
EPA METHOD 300.0: ANIONS							Analyst: **CJS**	
Fluoride	8.4	0.23	1.0	*	mg/L	10	12/4/2019 1:00:20 AM	R64888
Chloride	220	25	50		mg/L	100	12/4/2019 1:25:01 AM	R64888
Bromide	1.1	0.50	1.0		mg/L	10	12/4/2019 1:00:20 AM	R64888
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0		mg/L	10	12/4/2019 1:00:20 AM	R64888
Sulfate	230	2.5	5.0		mg/L	10	12/4/2019 1:00:20 AM	R64888
Nitrate+Nitrite as N	ND	0.24	2.0		mg/L	10	12/4/2019 1:37:22 AM	R64888
EPA METHOD 200.7: TOTAL METALS							Analyst: **bcv**	
Calcium	42	0.027	1.0		mg/L	1	12/4/2019 9:40:02 AM	49126
Magnesium	8.3	0.010	1.0		mg/L	1	12/4/2019 9:40:02 AM	49126
Potassium	30	0.062	1.0		mg/L	1	12/4/2019 9:40:02 AM	49126
Sodium	360	4.7	10		mg/L	10	12/4/2019 9:42:02 AM	49126
EPA METHOD 8260: VOLATILES SHORT LIST							Analyst: **CCM**	
Benzene	0.20	0.17	0.50	J	µg/L	1	12/3/2019 12:02:00 PM	S64880
Toluene	ND	0.35	1.0		µg/L	1	12/3/2019 12:02:00 PM	S64880
Ethylbenzene	ND	0.13	1.0		µg/L	1	12/3/2019 12:02:00 PM	S64880
Methyl tert-butyl ether (MTBE)	ND	0.46	1.0		µg/L	1	12/3/2019 12:02:00 PM	S64880
Xylenes, Total	ND	0.45	1.5		µg/L	1	12/3/2019 12:02:00 PM	S64880
Surr: 1,2-Dichloroethane-d4	99.5	0	70-130		%Rec	1	12/3/2019 12:02:00 PM	S64880
Surr: 4-Bromofluorobenzene	100	0	70-130		%Rec	1	12/3/2019 12:02:00 PM	S64880
Surr: Dibromofluoromethane	99.8	0	70-130		%Rec	1	12/3/2019 12:02:00 PM	S64880
Surr: Toluene-d8	99.3	0	70-130		%Rec	1	12/3/2019 12:02:00 PM	S64880
SM2510B: SPECIFIC CONDUCTANCE							Analyst: **JRR**	
Conductivity	2200	5.0	5.0		µmhos/c	1	12/3/2019 1:14:01 PM	R64887
SM4500-H+B / 9040C: PH							Analyst: **JRR**	
pH	9.11			*H	pH units	1	12/3/2019 1:14:01 PM	R64887

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT
Hall Environmental Analysis Laboratory, Inc.

WO#: **1912057**
06-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: **MB-49126** SampType: **MBLK** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **PBW** Batch ID: **49126** RunNo: **64926**
Prep Date: **12/3/2019** Analysis Date: **12/4/2019** SeqNo: **2226648** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	0.011	1.0								J
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLLCS-49126** SampType: **LCSLL** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **BatchQC** Batch ID: **49126** RunNo: **64926**
Prep Date: **12/3/2019** Analysis Date: **12/4/2019** SeqNo: **2226649** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.52	1.0	0.5000	0	105	50	150			J
Magnesium	0.52	1.0	0.5000	0	105	50	150			J
Potassium	0.45	1.0	0.5000	0	90.0	50	150			J
Sodium	0.54	1.0	0.5000	0	107	50	150			J

Sample ID: **LCS-49126** SampType: **LCS** TestCode: **EPA Method 200.7: Total Metals**
Client ID: **LCSW** Batch ID: **49126** RunNo: **64926**
Prep Date: **12/3/2019** Analysis Date: **12/4/2019** SeqNo: **2226651** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	51	1.0	50.00	0	102	85	115			
Magnesium	51	1.0	50.00	0	102	85	115			
Potassium	51	1.0	50.00	0	101	85	115			
Sodium	50	1.0	50.00	0	100	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1912057**

06-Dec-19

Client: MARATHON

Project: Carbon Canister

Sample ID: **MB**	SampType: **mblk**	TestCode: **EPA Method 300.0: Anions**
Client ID: **PBW**	Batch ID: **R64888**	RunNo: **64888**
Prep Date:	Analysis Date: **12/3/2019**	SeqNo: **2226021** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Bromide	ND	0.10								
Phosphorus, Orthophosphate (As P	ND	0.50								
Sulfate	ND	0.50								
Nitrate+Nitrite as N	ND	0.20								

Sample ID: **LCS**	SampType: **lcs**	TestCode: **EPA Method 300.0: Anions**
Client ID: **LCSW**	Batch ID: **R64888**	RunNo: **64888**
Prep Date:	Analysis Date: **12/3/2019**	SeqNo: **2226022** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.49	0.10	0.5000	0	97.4	90	110			
Chloride	4.6	0.50	5.000	0	92.2	90	110			
Bromide	2.4	0.10	2.500	0	94.4	90	110			
Phosphorus, Orthophosphate (As P	4.6	0.50	5.000	0	91.4	90	110			
Sulfate	9.4	0.50	10.00	0	93.8	90	110			
Nitrate+Nitrite as N	3.3	0.20	3.500	0	95.2	90	110			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1912057**

06-Dec-19

Client: MARATHON

Project: Carbon Canister

Sample ID: **LCS-49156**	SampType: **LCS**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **LCSW**	Batch ID: **49156**	RunNo: **64959**
Prep Date: **12/4/2019**	Analysis Date: **12/5/2019**	SeqNo: **2227789** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	111	71.8	135			
Surr: DNOP	0.52		0.5000		104	70	130			

Sample ID: **MB-49156**	SampType: **MBLK**	TestCode: **EPA Method 8015M/D: Diesel Range**
Client ID: **PBW**	Batch ID: **49156**	RunNo: **64959**
Prep Date: **12/4/2019**	Analysis Date: **12/5/2019**	SeqNo: **2227790** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Surr: DNOP	0.98		1.000		98.2	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1912057**

06-Dec-19

Client: MARATHON

Project: Carbon Canister

Sample ID: **100ng lcs**	SampType: **LCS**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **LCSW**	Batch ID: **S64880**	RunNo: **64880**
Prep Date:	Analysis Date: **12/3/2019**	SeqNo: **2225829** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	19	1.0	20.00	0	94.6	70	130			
Toluene	19	1.0	20.00	0	93.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		100	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		101	70	130			
Surr: Dibromofluoromethane	10		10.00		99.8	70	130			
Surr: Toluene-d8	9.8		10.00		98.1	70	130			

Sample ID: **rb**	SampType: **MBLK**	TestCode: **EPA Method 8260: Volatiles Short List**
Client ID: **PBW**	Batch ID: **S64880**	RunNo: **64880**
Prep Date:	Analysis Date: **12/3/2019**	SeqNo: **2225830** Units: **µg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.9		10.00		99.4	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		100	70	130			
Surr: Dibromofluoromethane	9.8		10.00		97.9	70	130			
Surr: Toluene-d8	10		10.00		99.6	70	130			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: **1912057**

06-Dec-19

Client: MARATHON

Project: Carbon Canister

Sample ID: **lcs-1 99.9uS eC**	SampType: **lcs**	TestCode: **SM2510B: Specific Conductance**
Client ID: **LCSW**	Batch ID: **R64887**	RunNo: **64887**
Prep Date:	Analysis Date: **12/3/2019**	SeqNo: **2225422** Units: **µmhos/cm**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	102	85	115			

Qualifiers:

*	Value exceeds Maximum Contaminant Level.
D	Sample Diluted Due to Matrix
H	Holding times for preparation or analysis exceeded
ND	Not Detected at the Reporting Limit
PQL	Practical Quanitative Limit
S	% Recovery outside of range due to dilution or matrix
B	Analyte detected in the associated Method Blank
E	Value above quantitation range
J	Analyte detected below quantitation limits
P	Sample pH Not In Range
RL	Reporting Limit

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Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: MARATHON GALLUP Work Order Number: 1912057 RcptNo: 1

Received By: Yazmine Garduno 12/3/2019 9:23:00 AM

Completed By: Desiree Dominguez 12/3/2019 9:44:11 AM

Reviewed By: YG 12/3/19

Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes ☑ No ☐ Not Present ☐
2. How was the sample delivered? Courier

Log In

3. Was an attempt made to cool the samples? Yes ☑ No ☐ NA ☐
4. Were all samples received at a temperature of >0° C to 6.0°C Yes ☑ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☑ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☑ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☑ No ☐
8. Was preservative added to bottles? Yes ☐ No ☑ NA ☐
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes ☑ No ☐ NA ☐
10. Were any sample containers received broken? Yes ☐ No ☑
11. Does paperwork match bottle labels? (Note discrepancies on chain of custody) Yes ☑ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☑ No ☐
13. Is it clear what analyses were requested? Yes ☑ No ☐
14. Were all holding times able to be met? (If no, notify customer for authorization.) Yes ☑ No ☐

# of preserved bottles checked for pH: 2 (<2 or >12 unless noted)
Adjusted? NO
Checked by: ENM 12/3/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified: Date:
By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:
Client Instructions:

16. Additional remarks:

17. **Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good				
2	1.8	Good				

Chain-of-Custody Record

Client: MARATHON

Gallup Refinery

Mailing Address:

92 GIANT CROSSING RD, GALLUP, NM 87301

Phone #: 505-722-3833

email or Fax#: 505-863-0930

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other_____

☐ EDD (Type) _____

Turn-Around Time:

☐ Standard Rush: [redacted]

Project Name:

CARBON CANISTER

Project #:

WWTP - BWON

Project Manager:

VMARCUM@MARATHONPETROLEUM.COM

Sampler: WWTP OPS / CJOHNSON

On Ice: ☑ Yes ☐ No

Sample Temperature: 1.7 | 0.1 | 1.5 | 0.2 | 1.6

HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No. 1912057	Analysis Request: 8260+MTBE (SHORT LIST)	SPEC COND; Ph	8015B (DRO)	CATIONS	ANIONS	Air Bubbles (Y or N)
12/2/19	0735	Aqueous	South Carbon Canister	MISC	MISC	-001	X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	
		Aqueous	_____ Carbon Canister	MISC	MISC		X	X	X	X	X	

Date:	Time:	Relinquished by:	Received by:	Date	Time
12/2/19	0900				
Date:	Time:	Relinquished by:	Received by:	Date	Time
			courier	12/3/19	0923

Remarks:

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.