



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

December 31, 2019

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

RE: Carbon Canister

OrderNo.: 1912847

Dear Vernon Marcum:

Hall Environmental Analysis Laboratory received 4 sample(s) on 12/17/2019 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,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1912847

Date Reported: 12/31/2019

CLIENT: MARATHON

Client Sample ID: South Carbon Canister

Project: Carbon Canister

Collection Date: 12/16/2019 7:30:00 AM

Lab ID: 1912847-001

Matrix: AQUEOUS

Received Date: 12/17/2019 9:00:00 AM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE								
Analyst: BRM								
Diesel Range Organics (DRO)	6.2	0.71	1.0		mg/L	1	12/19/2019 7:57:55 PM	49407
Surr: DNOP	110	0	70-130		%Rec	1	12/19/2019 7:57:55 PM	49407
EPA METHOD 300.0: ANIONS								
Analyst: MRA								
Fluoride	11	2.3	10	*	mg/L	100	12/18/2019 9:44:23 PM	R6527E
Chloride	180	2.5	5.0		mg/L	10	12/18/2019 9:19:34 PM	R6527E
Bromide	ND	0.50	1.0		mg/L	10	12/18/2019 9:19:34 PM	R6527E
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	H	mg/L	10	12/18/2019 9:19:34 PM	R6527E
Sulfate	460	2.5	5.0	*	mg/L	10	12/18/2019 9:19:34 PM	R6527E
Nitrate+Nitrite as N	0.24	0.24	2.0	J	mg/L	10	12/18/2019 9:56:48 PM	R6527E
EPA METHOD 200.7: TOTAL METALS								
Analyst: bcv								
Calcium	43	0.027	1.0		mg/L	1	12/19/2019 10:12:41 P	49417
Magnesium	10	0.010	1.0		mg/L	1	12/19/2019 10:12:41 P	49417
Potassium	21	0.062	1.0		mg/L	1	12/19/2019 10:12:41 P	49417
Sodium	430	4.7	10		mg/L	10	12/29/2019 2:39:17 PM	49538
EPA METHOD 8260: VOLATILES SHORT LIST								
Analyst: CCM								
Benzene	ND	3.3	10		µg/L	20	12/17/2019 6:26:00 PM	SL_652
Toluene	ND	7.0	20		µg/L	20	12/17/2019 6:26:00 PM	SL_652
Ethylbenzene	ND	2.6	20		µg/L	20	12/17/2019 6:26:00 PM	SL_652
Methyl tert-butyl ether (MTBE)	ND	9.1	20		µg/L	20	12/17/2019 6:26:00 PM	SL_652
Xylenes, Total	ND	9.1	30		µg/L	20	12/17/2019 6:26:00 PM	SL_652
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	20	12/17/2019 6:26:00 PM	SL_652
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	20	12/17/2019 6:26:00 PM	SL_652
Surr: Dibromofluoromethane	98.6	0	70-130		%Rec	20	12/17/2019 6:26:00 PM	SL_652
Surr: Toluene-d8	96.9	0	70-130		%Rec	20	12/17/2019 6:26:00 PM	SL_652
SM2510B: SPECIFIC CONDUCTANCE								
Analyst: JRR								
Conductivity	2900	5.0	5.0		µmhos/c	1	12/18/2019 10:23:42 A	R6527E
SM4500-H+B / 9040C: PH								
Analyst: JRR								
pH	8.51			*H	pH units	1	12/18/2019 10:23:42 A	R6527E

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1912847

Date Reported: 12/31/2019

CLIENT: MARATHON

Client Sample ID: North Carbon Canister

Project: Carbon Canister

Collection Date: 12/15/2019 8:00:00 AM

Lab ID: 1912847-002

Matrix: AQUEOUS

Received Date: 12/17/2019 9:00:00 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	12/19/2019 8:21:49 PM	49407
Surr: DNOP	108	0	70-130		%Rec	1	12/19/2019 8:21:49 PM	49407
EPA METHOD 300.0: ANIONS								
Analyst: MRA								
Fluoride	17	0.23	1.0	*	mg/L	10	12/18/2019 10:46:27 P	R6527E
Chloride	170	2.5	5.0		mg/L	10	12/18/2019 10:46:27 P	R6527E
Bromide	ND	0.50	1.0		mg/L	10	12/18/2019 10:46:27 P	R6527E
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	H	mg/L	10	12/18/2019 10:46:27 P	R6527E
Sulfate	460	25	50	*	mg/L	100	12/18/2019 11:11:15 P	R6527E
Nitrate+Nitrite as N	ND	0.24	2.0		mg/L	10	12/18/2019 11:23:41 P	R6527E
EPA METHOD 200.7: TOTAL METALS								
Analyst: bcv								
Calcium	45	0.027	1.0		mg/L	1	12/23/2019 2:53:56 PM	49417
Magnesium	9.3	0.010	1.0		mg/L	1	12/23/2019 2:53:56 PM	49417
Potassium	37	0.062	1.0		mg/L	1	12/23/2019 2:53:56 PM	49417
Sodium	390	4.7	10		mg/L	10	12/29/2019 2:41:08 PM	49538
EPA METHOD 8260: VOLATILES SHORT LIST								
Analyst: CCM								
Benzene	ND	3.3	10		µg/L	20	12/17/2019 6:49:00 PM	SL_652
Toluene	ND	7.0	20		µg/L	20	12/17/2019 6:49:00 PM	SL_652
Ethylbenzene	ND	2.6	20		µg/L	20	12/17/2019 6:49:00 PM	SL_652
Methyl tert-butyl ether (MTBE)	ND	9.1	20		µg/L	20	12/17/2019 6:49:00 PM	SL_652
Xylenes, Total	ND	9.1	30		µg/L	20	12/17/2019 6:49:00 PM	SL_652
Surr: 1,2-Dichloroethane-d4	101	0	70-130		%Rec	20	12/17/2019 6:49:00 PM	SL_652
Surr: 4-Bromofluorobenzene	101	0	70-130		%Rec	20	12/17/2019 6:49:00 PM	SL_652
Surr: Dibromofluoromethane	99.3	0	70-130		%Rec	20	12/17/2019 6:49:00 PM	SL_652
Surr: Toluene-d8	95.9	0	70-130		%Rec	20	12/17/2019 6:49:00 PM	SL_652
SM2510B: SPECIFIC CONDUCTANCE								
Analyst: JRR								
Conductivity	3100	5.0	5.0		µmhos/c	1	12/18/2019 10:31:45 A	R6527E
SM4500-H+B / 9040C: PH								
Analyst: JRR								
pH	8.08			H	pH units	1	12/18/2019 10:31:45 A	R6527E

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1912847

Date Reported: 12/31/2019

CLIENT: MARATHON

Client Sample ID: North Carbon Canister

Project: Carbon Canister

Collection Date: 12/14/2019 8:00:00 AM

Lab ID: 1912847-003

Matrix: AQUEOUS

Received Date: 12/17/2019 9:00:00 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	12/19/2019 8:45:44 PM	49407
Surr: DNOP	105	0	70-130		%Rec	1	12/19/2019 8:45:44 PM	49407
EPA METHOD 300.0: ANIONS								
Analyst: MRA								
Fluoride	9.7	0.23	1.0	*	mg/L	10	12/18/2019 11:48:29 P	R6527E
Chloride	160	2.5	5.0		mg/L	10	12/18/2019 11:48:29 P	R6527E
Bromide	ND	0.50	1.0		mg/L	10	12/18/2019 11:48:29 P	R6527E
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	H	mg/L	10	12/18/2019 11:48:29 P	R6527E
Sulfate	420	2.5	5.0	*	mg/L	10	12/18/2019 11:48:29 P	R6527E
Nitrate+Nitrite as N	ND	0.24	2.0		mg/L	10	12/19/2019 12:25:42 A	R6527E
EPA METHOD 200.7: TOTAL METALS								
Analyst: bcv								
Calcium	48	0.027	1.0		mg/L	1	12/23/2019 2:57:30 PM	49417
Magnesium	11	0.010	1.0		mg/L	1	12/23/2019 2:57:30 PM	49417
Potassium	17	0.062	1.0		mg/L	1	12/23/2019 2:57:30 PM	49417
Sodium	320	4.7	10		mg/L	10	12/29/2019 2:42:58 PM	49538
EPA METHOD 8260: VOLATILES SHORT LIST								
Analyst: CCM								
Benzene	ND	3.3	10		µg/L	20	12/17/2019 7:13:00 PM	SL_652
Toluene	ND	7.0	20		µg/L	20	12/17/2019 7:13:00 PM	SL_652
Ethylbenzene	ND	2.6	20		µg/L	20	12/17/2019 7:13:00 PM	SL_652
Methyl tert-butyl ether (MTBE)	ND	9.1	20		µg/L	20	12/17/2019 7:13:00 PM	SL_652
Xylenes, Total	ND	9.1	30		µg/L	20	12/17/2019 7:13:00 PM	SL_652
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	20	12/17/2019 7:13:00 PM	SL_652
Surr: 4-Bromofluorobenzene	103	0	70-130		%Rec	20	12/17/2019 7:13:00 PM	SL_652
Surr: Dibromofluoromethane	98.8	0	70-130		%Rec	20	12/17/2019 7:13:00 PM	SL_652
Surr: Toluene-d8	98.3	0	70-130		%Rec	20	12/17/2019 7:13:00 PM	SL_652
SM2510B: SPECIFIC CONDUCTANCE								
Analyst: JRR								
Conductivity	2600	5.0	5.0		µmhos/c	1	12/18/2019 10:35:47 A	R6527E
SM4500-H+B / 9040C: PH								
Analyst: JRR								
pH	8.13			H	pH units	1	12/18/2019 10:35:47 A	R6527E

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

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

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1912847

Date Reported: 12/31/2019

CLIENT: MARATHON

Client Sample ID: North Carbon Canister

Project: Carbon Canister

Collection Date: 12/13/2019 8:00:00 AM

Lab ID: 1912847-004

Matrix: AQUEOUS

Received Date: 12/17/2019 9:00:00 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	12/19/2019 9:09:36 PM	49407
Surr: DNOP	106	0	70-130		%Rec	1	12/19/2019 9:09:36 PM	49407
EPA METHOD 300.0: ANIONS								
Analyst: MRA								
Fluoride	9.9	0.23	1.0	*	mg/L	10	12/19/2019 1:15:22 AM	R6527E
Chloride	150	2.5	5.0		mg/L	10	12/19/2019 1:15:22 AM	R6527E
Bromide	ND	0.50	1.0		mg/L	10	12/19/2019 1:15:22 AM	R6527E
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0	H	mg/L	10	12/19/2019 1:15:22 AM	R6527E
Sulfate	410	2.5	5.0	*	mg/L	10	12/19/2019 1:15:22 AM	R6527E
Nitrate+Nitrite as N	ND	0.24	2.0		mg/L	10	12/19/2019 1:52:37 AM	R6527E
EPA METHOD 200.7: TOTAL METALS								
Analyst: bcv								
Calcium	45	0.027	1.0		mg/L	1	12/23/2019 3:01:02 PM	49417
Magnesium	9.2	0.010	1.0		mg/L	1	12/23/2019 3:01:02 PM	49417
Potassium	17	0.062	1.0		mg/L	1	12/23/2019 3:01:02 PM	49417
Sodium	320	4.7	10		mg/L	10	12/29/2019 2:44:48 PM	49538
EPA METHOD 8260: VOLATILES SHORT LIST								
Analyst: CCM								
Benzene	ND	3.3	10		µg/L	20	12/17/2019 7:37:00 PM	SL_652
Toluene	ND	7.0	20		µg/L	20	12/17/2019 7:37:00 PM	SL_652
Ethylbenzene	ND	2.6	20		µg/L	20	12/17/2019 7:37:00 PM	SL_652
Methyl tert-butyl ether (MTBE)	ND	9.1	20		µg/L	20	12/17/2019 7:37:00 PM	SL_652
Xylenes, Total	ND	9.1	30		µg/L	20	12/17/2019 7:37:00 PM	SL_652
Surr: 1,2-Dichloroethane-d4	99.3	0	70-130		%Rec	20	12/17/2019 7:37:00 PM	SL_652
Surr: 4-Bromofluorobenzene	99.9	0	70-130		%Rec	20	12/17/2019 7:37:00 PM	SL_652
Surr: Dibromofluoromethane	100	0	70-130		%Rec	20	12/17/2019 7:37:00 PM	SL_652
Surr: Toluene-d8	96.1	0	70-130		%Rec	20	12/17/2019 7:37:00 PM	SL_652
SM2510B: SPECIFIC CONDUCTANCE								
Analyst: JRR								
Conductivity	2600	5.0	5.0		µmhos/c	1	12/18/2019 10:39:49 A	R6527E
SM4500-H+B / 9040C: PH								
Analyst: JRR								
pH	8.22			H	pH units	1	12/18/2019 10:39:49 A	R6527E

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

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: MB-49417	SampType: MBLK	TestCode: EPA Method 200.7: Total Metals								
Client ID: PBW	Batch ID: 49417	RunNo: 65314								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243659	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.039	1.0								J
Magnesium	ND	1.0								
Potassium	ND	1.0								

Sample ID: LLCS-49417	SampType: LCSSL	TestCode: EPA Method 200.7: Total Metals								
Client ID: BatchQC	Batch ID: 49417	RunNo: 65314								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243660	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	103	50	150			J
Magnesium	0.51	1.0	0.5000	0	102	50	150			J
Potassium	0.49	1.0	0.5000	0	97.7	50	150			J

Sample ID: LCS-49417	SampType: LCS	TestCode: EPA Method 200.7: Total Metals								
Client ID: LCSW	Batch ID: 49417	RunNo: 65314								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243661	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	50	1.0	50.00	0	99.0	85	115			

Sample ID: 1912847-001DMS	SampType: MS	TestCode: EPA Method 200.7: Total Metals								
Client ID: South Carbon Canis	Batch ID: 49417	RunNo: 65314								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243663	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	92	1.0	50.00	42.53	99.4	70	130			
Magnesium	60	1.0	50.00	10.34	99.8	70	130			
Potassium	70	1.0	50.00	21.31	97.2	70	130			

Sample ID: 1912847-001DMSD	SampType: MSD	TestCode: EPA Method 200.7: Total Metals								
Client ID: South Carbon Canis	Batch ID: 49417	RunNo: 65314								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243664	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	93	1.0	50.00	42.53	100	70	130	0.602	20	
Magnesium	61	1.0	50.00	10.34	101	70	130	0.696	20	
Potassium	70	1.0	50.00	21.31	98.0	70	130	0.564	20	

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 Quantitative 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#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: MB-49538	SampType: MBLK	TestCode: EPA Method 200.7: Total Metals								
Client ID: PBW	Batch ID: 49538	RunNo: 65452								
Prep Date: 12/27/2019	Analysis Date: 12/29/2019	SeqNo: 2248291	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	ND	1.0								

Sample ID: LL LCS-49538	SampType: LCSLL	TestCode: EPA Method 200.7: Total Metals								
Client ID: BatchQC	Batch ID: 49538	RunNo: 65452								
Prep Date: 12/27/2019	Analysis Date: 12/29/2019	SeqNo: 2248292	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	0.31	1.0	0.5000	0	61.2	50	150			J

Sample ID: LCS-49538	SampType: LCS	TestCode: EPA Method 200.7: Total Metals								
Client ID: LCSW	Batch ID: 49538	RunNo: 65452								
Prep Date: 12/27/2019	Analysis Date: 12/29/2019	SeqNo: 2248293	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Sodium	48	1.0	50.00	0	96.6	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: MB	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBW	Batch ID: R65278	RunNo: 65278								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2241860	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: ics	TestCode: EPA Method 300.0: Anions								
Client ID: LCSW	Batch ID: R65278	RunNo: 65278								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2241861	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Chloride	4.8	0.50	5.000	0	96.2	90	110			
Bromide	2.5	0.10	2.500	0	98.5	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	93.9	90	110			
Sulfate	9.8	0.50	10.00	0	97.6	90	110			
Nitrate+Nitrite as N	3.5	0.20	3.500	0	99.1	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 Quantitative 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#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: LCS-49407	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range								
Client ID: LCSW	Batch ID: 49407	RunNo: 65281								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243140	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	0.49		0.5000		97.4	70	130			

Sample ID: MB-49407	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range								
Client ID: PBW	Batch ID: 49407	RunNo: 65281								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243141	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	1.1		1.000		109	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 Quantitative 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#: 1912847

31-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: SL_65226	RunNo: 65226								
Prep Date:	Analysis Date: 12/17/2019	SeqNo: 2240274	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	19	1.0	20.00	0	97.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	9.7		10.00		97.3	70	130			

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: PBW	Batch ID: SL_65226	RunNo: 65226								
Prep Date:	Analysis Date: 12/17/2019	SeqNo: 2240275	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	9.7		10.00		97.3	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.8		10.00		97.8	70	130			

Qualifiers:

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- E Value above quantitation range
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- P Sample pH Not In Range
- RL Reporting Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: ics-1 99.9uS eC	SampType: ics	TestCode: SM2510B: Specific Conductance								
Client ID: LCSW	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2242079	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	97	5.0	99.90	0	97.2	85	115			

Sample ID: 1912847-001c dup	SampType: dup	TestCode: SM2510B: Specific Conductance								
Client ID: South Carbon Canis	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2242081	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	3000	5.0						4.05	20	

Sample ID: ics-2 99.9uS eC	SampType: ics	TestCode: SM2510B: Specific Conductance								
Client ID: LCSW	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2242105	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	103	85	115			

Qualifiers:

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

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912847

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: 1912847-001c dup	SampType: dup	TestCode: SM4500-H+B / 9040C: pH								
Client ID: South Carbon Canis	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2241928 Units: pH units								
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
pH	8.51									*H

Qualifiers:

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J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Limit

Sample Log-In Check List

Client Name: **MARATHON GALLUP**

Work Order Number: **1912847**

RcptNo: 1

Received By: **Desiree Dominguez** 12/17/2019 9:00:00 AM

Completed By: **Erin Melendrez** 12/17/2019 9:34:29 AM

Reviewed By: **DAD 12/17/19**

DD
EM

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? Yes No
 (Note discrepancies on chain of custody)
 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? Yes No
 (If no, notify customer for authorization.)

of preserved bottles checked for pH: 8
 (<2 or >12 unless noted)
 Adjusted? NO
 Checked by: JR 12/17/19

Special Handling (if applicable)

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

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.2	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:
 Project Name:
CARBON CANISTER
 Project #:
WWTP - BWON
 Project Manager:
VMARCUM@MARATHONPETROLEUM.COM
 Sampler: WWTP OPS / CJOHNSON
 On Ice: Yes No
 Sample Temperature: **0.9 + 0.3 = 1.2°C**

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
12/16/19	0730	Aqueous	South carbon Canister	MISC	MISC	1917847
12/15	0800	Aqueous	NORTH Carbon Canister	MISC	MISC	-002
12/14	0800	Aqueous	NORTH Carbon Canister	MISC	MISC	-003
12/13	0800	Aqueous	NORTH Carbon Canister	MISC	MISC	-004
		Aqueous	Carbon Canister	MISC	MISC	
		Aqueous	Carbon Canister	MISC	MISC	
		Aqueous	Carbon Canister	MISC	MISC	
		Aqueous	Carbon Canister	MISC	MISC	

Relinquished by: Date: 12/16/19 Time: 0800

Received by: Date: 12/17/19 Time: 9:00

Remarks:



HALL ENVIRONMENTAL ANALYSIS LABORATORY
 www.hallenvironmental.com
 4901 Hawkins NE - Albuquerque, NM 87109
 Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

8260+MTBE (SHORT LIST)	SPEC COND; Ph	8015B (DRO)	CATIONS	ANIONS	Air Bubbles (Y or N)
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	
X	X	X	X	X	

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.