



INDEPENDENT TESTING LAB

830 ROBINWOOD COURT, TRAVERSE CITY, MI 49686

PH: 231-929-0905

FAX: 231-929-0894

www.gtanalytical.com

Company: MAVERICK NATURAL RESOURCES Site Addr: EPA-UIC ANNUAL SAMPLES
Name:
ClientProj: BREITBURN OPERATING LP
GTA ProjNo: 071919-3
Sampled By: BBOP
Date Rec: 7/19/2019
Time Rec: 3:07 PM

Sample No.	Sample ID	Date Sampled	Time Sampled	Sample Matrix
1	ECHO LAKE D4-6 228997.010.00	7/11/2019	11:46 AM	UIC
2	TERRA ENERGY 1-8 21A510718.00	7/11/2019	4:17 PM	UIC
3	GREEN RIVER 1-4 228501.031.00	7/12/2019	2:30 PM	UIC
4	GENERAL CUSTER C1-11 2285053012.00	7/11/2019	9:00 AM	UIC
5	NOMEKO 1-10 21D250.00	7/18/2019	6:30 AM	UIC
6	CAPLE 1-19 2128062119.00	7/12/2019	9:00 AM	UIC
7	MANCELONA WEST 1-27 858.00	7/11/2019	1:00 PM	UIC
8	MANCELONA 1-26 818.00	7/11/2019	9:00 AM	UIC
9	ST. MANCELONA 4-26 227871.011.00	7/12/2019	9:00 AM	UIC
10	MANCELONA WEST D4-29 228503.031.00	7/11/2019	1:10 PM	UIC
11	MANCELONA EAST 1-25 228502035.00	7/11/2019	11:20 AM	UIC
12	WHYTE 1-33 2214286.00	7/18/2019	9:00 AM	UIC

ELECTRONIC SIGNATURE REPORT. This is a final report for the following pages of data for the samples specified above. All analysis was performed by the methods stated and all quality control measures required were completed. All quality control information is available upon request.

Kirk L Chase

Kirk L. Chase/Chemist
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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	1
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/11/2019
		TIME SAMPLED:	11:46 AM
		DATE RECEIVED:	7/19/2019
	MI	TIME RECEIVED:	3:07 PM
SAMPLED BY:	BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	ECHO LAKE D4-6 228997.010.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	2.5	0.010	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	1,800	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	0.19	0.10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	1,100	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	210	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	35,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: ECHO LAKE D4-6 228997.010.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 1
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 11:46 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	870	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	53,000	2,000	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	140,000	5.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	7.6	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	6.9	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.067	-	-	LV	7/30/2019
SULFATE EPA 300.0	2,300	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	88,000	5.0	mg/L (PPM)	TR	7/25/2019

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071919-3

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 2

DATE SAMPLED: 7/11/2019

TIME SAMPLED: 4:17 PM

DATE RECEIVED: 7/19/2019

TIME RECEIVED: 3:07 PM

SAMPLED BY: MI
BBOP

SAMPLE MATRIX: UIC

SAMPLE ID: TERRA ENERGY 1-8 21A510718.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	24	0.010	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	400	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	41	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	370	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	120	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	15,000	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: **TERRA ENERGY 1-8 21A510718.00**

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 2
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 4:17 PM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	1,200	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	15	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	20,000	2,000	mg/L (PPM)	LV	7/22/2019
CONDUCTIVITY SM2510-B	53,000	1.0	uS/cm@25C	LV	7/22/2019
pH EPA 150.1 - LAB	8.1	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	19	-	ohms x cm	LV	7/22/2019
SPECIFIC GRAVITY SM 2710F	1.028	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/22/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	32,000	5.0	mg/L (PPM)	TR	7/25/2019

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PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	3
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/12/2019
		TIME SAMPLED:	2:30 PM
		DATE RECEIVED:	7/19/2019
	MI	TIME RECEIVED:	3:07 PM
SAMPLED BY:	BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	GREEN RIVER 1-4 228501.031.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	41	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	2,900	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	310	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	1,400	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	260	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	31,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: GREEN RIVER 1-4 228501.031.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 3
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/12/2019
 TIME SAMPLED: 2:30 PM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	100	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	65,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	160,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	6.6	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	6.3	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.069	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	110,000	5.0	mg/L (PPM)	TR	7/25/2019

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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	4
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/11/2019
		TIME SAMPLED:	9:00 AM
		DATE RECEIVED:	7/19/2019
		TIME RECEIVED:	3:07 PM
SAMPLED BY:	MI BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	GENERAL CUSTER C1-11 2285053012.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	47	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	3,500	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	51	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	1,600	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	240	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	42,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	4
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE RECEIVED:	7/19/2019
	MI	TIME RECEIVED:	3:07 PM
SAMPLED BY:	BBOP	DATE SAMPLED:	7/11/2019
		TIME SAMPLED:	9:00 AM
SAMPLE ID:	GENERAL CUSTER C1-11 2285053012.00	SAMPLE MATRIX:	UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	410	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	92,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	220,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.3	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	4.6	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.082	-	-	LV	7/30/2019
SULFATE EPA 300.0	290	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	140,000	5.0	mg/L (PPM)	TR	7/25/2019

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: NOMEKO 1-10 21D250.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 5
 DATE SAMPLED: 7/18/2019
 TIME SAMPLED: 6:30 AM
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 SAMPLE MATRIX: UIC

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	9.6	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	310	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	24	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	260	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	26	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	8,100	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: NOMEKO 1-10 21D250.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 5
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/18/2019
 TIME SAMPLED: 6:30 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	570	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	11,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	34,000	1.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	8.1	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	30	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.018	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	19,000	5.0	mg/L (PPM)	TR	7/25/2019

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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	6
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/12/2019
		TIME SAMPLED:	9:00 AM
		DATE RECEIVED:	7/19/2019
	MI	TIME RECEIVED:	3:07 PM
SAMPLED BY:	BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	CAPLE 1-19 2128062119.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	32	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	910	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	130	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	700	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	150	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	23,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: CAPLE 1-19 2128062119.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 6
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/12/2019
 TIME SAMPLED: 9:00 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	640	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	38,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	97,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.8	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	10	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.046	-	-	LV	7/30/2019
SULFATE EPA 300.0	59	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	57,000	5.0	mg/L (PPM)	TR	7/25/2019

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COMPANY: MAVERICK NATURAL RESOURCES

GTA PROJECT NO: 071919-3

PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES

GTA SAMPLE NO: 7

DATE SAMPLED: 7/11/2019

TIME SAMPLED: 1:00 PM

DATE RECEIVED: 7/19/2019

TIME RECEIVED: 3:07 PM

SAMPLED BY: MI
BBOP

SAMPLE MATRIX: UIC

SAMPLE ID: MANCELONA WEST 1-27 858.00

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	52	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	8,100	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	100	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	4,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	410	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	68,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED



INDEPENDENT TESTING LAB

830 ROBINWOOD COURT, TRAVERSE CITY, MI 49686

PH: 231-929-0905

FAX: 231-929-0894

www.gtanalytical.com

COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: MANCELONA WEST 1-27 858.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 7
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 1:00 PM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	160	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	140,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	310,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.1	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.2	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.126	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	190,000	5.0	mg/L (PPM)	TR	7/25/2019

ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION
 s.u. = STANDARD pH UNITS REPORTED AT 25 C
 DISS = DISSOLVED



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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	8
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/11/2019
		TIME SAMPLED:	9:00 AM
		DATE RECEIVED:	7/19/2019
		TIME RECEIVED:	3:07 PM
SAMPLED BY:	MI BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	MANCELONA 1-26 818.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	1.8	0.010	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	55,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	4.3	0.10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	3,900	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	13,000	1000	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	3,800	1000	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED



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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: MANCELONA 1-26 818.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 8
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 9:00 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	290	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	150,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	300,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	6.4	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.3	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.151	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	170,000	5.0	mg/L (PPM)	TR	7/25/2019

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 LOD = LIMIT OF DETECTION
 s.u. = STANDARD pH UNITS REPORTED AT 25 C
 DISS = DISSOLVED



INDEPENDENT TESTING LAB

830 ROBINWOOD COURT, TRAVERSE CITY, MI 49686

PH: 231-929-0905

FAX: 231-929-0894

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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	9
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/12/2019
		TIME SAMPLED:	9:00 AM
		DATE RECEIVED:	7/19/2019
		TIME RECEIVED:	3:07 PM
SAMPLED BY:	MI BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	ST. MANCELONA 4-26 227871.011.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	34	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	4,200	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	96	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	3,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	320	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	55,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED



INDEPENDENT TESTING LAB

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PH: 231-929-0905

FAX: 231-929-0894

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: ST. MANCELONA 4-26
 227871.011.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 9
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/12/2019
 TIME SAMPLED: 9:00 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	230	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	120,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	280,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.2	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.6	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.112	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	170,000	5.0	mg/L (PPM)	TR	7/25/2019

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 DISS = DISSOLVED



INDEPENDENT TESTING LAB

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FAX: 231-929-0894

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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	10
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/11/2019
		TIME SAMPLED:	1:10 PM
		DATE RECEIVED:	7/19/2019
	MI	TIME RECEIVED:	3:07 PM
SAMPLED BY:	BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	MANCELONA WEST D4-29 228503.031.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	42	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	5,800	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	160	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	3,500	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	340	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	59,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED



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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: MANCELONA WEST D4-29
 228503.031.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 10
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 1:10 PM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	360	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	120,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	280,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.2	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.5	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.118	-	-	LV	7/30/2019
SULFATE EPA 300.0	ND	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	190,000	5.0	mg/L (PPM)	TR	7/25/2019

ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION
 s.u. = STANDARD pH UNITS REPORTED AT 25 C
 DISS = DISSOLVED



INDEPENDENT TESTING LAB

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PH: 231-929-0905

FAX: 231-929-0894

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COMPANY: MAVERICK NATURAL RESOURCES
PROJECT NO: BREITBURN OPERATING LP
LOCATION: EPA-UIC ANNUAL SAMPLES
MI
SAMPLED BY: BBOP
SAMPLE ID: MANCELONA EAST 1-25 228502035.00

GTA PROJECT NO: 071919-3
GTA SAMPLE NO: 11
DATE SAMPLED: 7/11/2019
TIME SAMPLED: 11:20 AM
DATE RECEIVED: 7/19/2019
TIME RECEIVED: 3:07 PM
SAMPLE MATRIX: UIC

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	42	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	7,200	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	100	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	4,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	410	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	69,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD
LOD = LIMIT OF DETECTION
DISS = DISSOLVED



INDEPENDENT TESTING LAB

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PH: 231-929-0905

FAX: 231-929-0894

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: MANCELONA EAST 1-25
 228502035.00

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 11
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/11/2019
 TIME SAMPLED: 11:20 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	180	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	120,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	290,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	7.2	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.4	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.119	-	-	LV	7/30/2019
SULFATE EPA 300.0	160	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	180,000	5.0	mg/L (PPM)	TR	7/25/2019

ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION
 s.u. = STANDARD pH UNITS REPORTED AT 25 C
 DISS = DISSOLVED



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COMPANY:	MAVERICK NATURAL RESOURCES	GTA PROJECT NO:	071919-3
PROJECT NO:	BREITBURN OPERATING LP	GTA SAMPLE NO:	12
LOCATION:	EPA-UIC ANNUAL SAMPLES	DATE SAMPLED:	7/18/2019
		TIME SAMPLED:	9:00 AM
		DATE RECEIVED:	7/19/2019
		TIME RECEIVED:	3:07 PM
SAMPLED BY:	MI BBOP	SAMPLE MATRIX:	UIC
SAMPLE ID:	WHYTE 1-33 2214286.00		

METALS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Completed</u>	<u>Digestion Method</u>
BARIUM DISS EPA 6020A	19	1.0	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
CALCIUM DISS EPA 6020A	27,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
IRON TOTAL EPA 6020A	600	10	mg/L (PPM)	MR/TR	8/12/2019	EPA 3020A
MAGNESIUM DISS EPA 6020A	2,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
POTASSIUM DISS EPA 6020A	3,500	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A
SODIUM DISS EPA 6020A	17,000	100	mg/L (PPM)	MR/TR	8/12/2019	EPA 3005A

ND = NOT DETECTED, RESULT < LOD

LOD = LIMIT OF DETECTION

DISS = DISSOLVED



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FAX: 231-929-0894

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COMPANY: MAVERICK NATURAL RESOURCES
 PROJECT NO: BREITBURN OPERATING LP
 LOCATION: EPA-UIC ANNUAL SAMPLES
 MI
 SAMPLED BY: BBOP
 SAMPLE ID: **WHYTE 1-33 2214286.00**

GTA PROJECT NO: 071919-3
 GTA SAMPLE NO: 12
 DATE RECEIVED: 7/19/2019
 TIME RECEIVED: 3:07 PM
 DATE SAMPLED: 7/18/2019
 TIME SAMPLED: 9:00 AM
 SAMPLE MATRIX: UIC

SAMPLE RESULTS

<u>Analysis</u>	<u>Concentration</u>	<u>LOD</u>	<u>Units</u>	<u>Analyst</u>	<u>Date Complete</u>
ALKALINITY SM 4500CO2D (BICARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
ALKALINITY SM 4500CO2D (CARBONATE)	ND	10	mg/L (PPM)	TR	7/25/2019
CHLORIDE EPA 300.0	130,000	2,000	mg/L (PPM)	LV	7/23/2019
CONDUCTIVITY SM2510-B	270,000	5.0	uS/cm@25C	LV	7/23/2019
pH EPA 150.1 - LAB	4.1	0.10	s.u.	TR	7/25/2019
RESISTIVITY SM 2510A	3.7	-	ohms x cm	LV	7/23/2019
SPECIFIC GRAVITY SM 2710F	1.120	-	-	LV	7/30/2019
SULFATE EPA 300.0	97	50	mg/L (PPM)	LV	7/23/2019
SULFIDE SM 4500S D	ND	1.0	mg/L (PPM)	KC	7/20/2019
TOTAL DISSOLVED SOLIDS EPA 160.1	210,000	5.0	mg/L (PPM)	TR	7/25/2019

ND = NOT DETECTED, RESULT < LOD
 LOD = LIMIT OF DETECTION
 s.u. = STANDARD pH UNITS REPORTED AT 25 C
 DISS = DISSOLVED

CHAIN OF CUSTODY

PROJECT NUMBER <i>Breithurn Operating, LP</i>	SITE NAME/ADDRESS <i>See Below</i>	COMPANY/NAME <i>Maverick Natural Resources</i>
SAMPLED BY <i>See Below</i>	COMPANY <i>See Below</i>	GTA PROJECT # <i>UIC 071919-3</i>

SAMPLE INFORMATION

#	SAMPLE ID	DATE SAMPLED	TIME	MATRIX	ANALYSIS
1	<i>Elk Lake DU-6</i>	<i>7-11-19</i>	<i>11:46am</i>	<i>UIC</i>	<i>228997-010-00</i>
2	<i>Terra Energy 1-8</i>	<i>7-11-19</i>	<i>4:07pm</i>	<i>UIC</i>	<i>21A510718-00</i>
3	<i>Green River 1-4</i>	<i>7-12-19</i>	<i>2:34pm</i>	<i>UIC</i>	<i>228501-031-00</i>
4	<i>General Custer CH1</i>	<i>7-11-19</i>	<i>9am</i>	<i>UIC</i>	<i>2285053012-00</i>
5	<i>Numerci 1-10</i>	<i>7-18-19</i>	<i>6:30am</i>	<i>UIC</i>	<i>2100250-00</i>
6	<i>Coyte 1-19</i>	<i>7-12-19</i>	<i>9am</i>	<i>UIC</i>	<i>2128062119-00</i>
7	<i>Manuelona West 1-27</i>	<i>7-11-19</i>	<i>1pm</i>	<i>UIC</i>	<i>858-00</i>
8	<i>Manuelona 1-26</i>	<i>7-11-19</i>	<i>9am</i>	<i>UIC</i>	<i>818-00</i>
9	<i>St Manuelona 4-26</i>	<i>7-12-19</i>	<i>9am</i>	<i>UIC</i>	<i>227871-011-00</i>
10	<i>Manuelona West DU-29</i>	<i>7-11-19</i>	<i>1:10pm</i>	<i>UIC</i>	<i>228503-031-00</i>
11	<i>Manuelona East 1-25</i>	<i>7-11-19</i>	<i>11:20am</i>	<i>UIC</i>	<i>228502035-00</i>
12	<i>Whyte 1-23</i>	<i>7-18-19</i>	<i>9am</i>	<i>UIC</i>	<i>2214286-00</i>

BILL TO: *Breithurn Operating, LP*
1165 Elkville
Gaylord, MI 49735

REPORT TO:
Lori Hansen at
lori.hansen@mavresources.com

RELEASED BY <i>Lori Hansen</i>	DATE/TIME <i>7-19-19</i>	RECEIVED BY <i>AS</i>	DATE/TIME <i>7/19/19 3:07</i>
<i>Scott Hansaw</i>	<i>7/19/19 3:09</i>		

REQUESTED TAT STANDARD 1 BUSINESS DAY 2 BUSINESS DAYS 3 BUSINESS DAYS