



Friday, July 30, 2021

Max Trehus
Great Western Operating Company, LLC
4093 Specialty Place, Unit B
Longmont, CO 80504

Re: ALS Workorder: 2106733
Project Name: Rio LC 12-366 HNX
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 6/29/2021. The samples were scheduled for the following analyses:

- Dissolved Gasses
- GC/MS Volatiles
- Inorganics
- Metals
- Total Extractable Petroleum Hydrocarbons (Diesel)
- Total Volatile Petroleum Hydrocarbons (Gasoline)

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained from ALS Environmental.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental
Katie M. O'Brien
Project Manager

Accreditations: ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environmental – Fort Collins	
Accreditation Body	License or Certification Number
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
PJ-LA (DoD ELAP/ISO 170250)	95377
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO010992018-1
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	TN02976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

40 CFR Part 136: All analyses for Clean Water Act samples are analyzed using the 40 CFR Part 136 specified method and include all the QC requirements.



2106733

GC/MS Volatiles:

The sample was analyzed using GC/MS following the current revision of SOP 525 based on SW-846 Method 8260C.

All acceptance criteria were met.

Dissolved Gasses:

The sample was prepared and analyzed according to method RSK-175 procedures and the current revision of SOP 449.

All acceptance criteria were met.

DRO:

The sample was analyzed following the current revision of SOP 406 generally based on SW-846 Methods 8000C and 8015D. TEPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C10 to C28.

All acceptance criteria were met.

GRO:

The sample was analyzed following the current revision of SOP 425 generally based on SW-846 Methods 8000C and 8015D. TVPH is a multicomponent mixture and is quantitated by summing the entire carbon range, rather than individual peaks. The carbon range integrated in this test extends from C6 to C10.

All acceptance criteria were met.

Metals:

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by Trace ICP followed method 200.7 and the current revision of SOP 834.

Sample 2106733-2 was to be analyzed for dissolved metals. The sample was filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.

All acceptance criteria were met.



Inorganics:

The sample was analyzed following Standard Method procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	SM2320B	1106
Bicarbonate	SM2320B	1106
Carbonate	SM2320B	1106
TDS	SM2540C	1101
Chloride	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

The sample was analyzed outside of hold time for chloride and sulfate (See NCR #15310).

All remaining acceptance criteria were met.

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Sample Number(s) Cross-Reference Table

OrderNum: 2106733

Client Name: Great Western Operating Company, LLC

Client Project Name: Rio LC 12-366 HNX

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
12-366 HNX A	2106733-1		WATER	28-Jun-21	14:20
12-366 HNX B	2106733-2		WATER	28-Jun-21	14:20



ALS Environmental

225 Commerce Drive, Fort Collins, Colorado 80524
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Turnaround time for samples received after 2 p.m. will be calculated beginning from the next business day.
 Turnaround time for samples received Saturday will be calculated beginning from the next business day.

1 copy to...

ALS WORKORDER #
2106733

TURNAROUND TIME: _____ SAMPLER: _____

PROJECT NAME: **Rio LC 12-366 HNX**

PROJECT No. _____

COMPANY NAME: **Great Western**

SEND REPORT TO: **Max Tehus**

ADDRESS: _____

CITY / STATE / ZIP: _____

PHONE: _____

FAX: _____

E-MAIL: **M.Tehus@GWP.com**

SITE ID: _____

EDD FORMAT: _____

PURCHASE ORDER: _____

BILL TO COMPANY: _____

INVOICE ATTN TO: _____

ADDRESS: _____

CITY / STATE / ZIP: _____

PHONE: _____

FAX: _____

E-MAIL: _____

PARAMETER/METHOD REQUEST FOR ANALYSIS

A **Dissolved Gases**

B **BYEX**

C **DRD**

D **GRO**

E **Anions Alk TDS**

F **DS Metals**

G **TR Metals**

H _____

I _____

J _____

LAB ID	FIELD ID	MATRIX	SAMPLE DATE	SAMPLE TIME	# OF BOTTLES	PRESERVATIVE	QC	A	B	C	D	E	F	G	H	I	J	SEE NOTES SECTION
①	12-366 HNX A	w	6/29/21	14:20	3	-		X										
②	12-366 HNO A				3	HCL			X									
③	12-366 HNX A				3	HCL			X									
④	12-366 HNX A				3	HCL				X								
⑤	12-366 HNX A				1	-						X						
⑥	12-366 HNX B				1	-							X					
⑦	12-366 HNX A				1	HNO3								X				

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

Form 2029

REPORT LEVEL / QC REQUIRED

Summary (Standard QC)

LEVEL II (Standard QC)

LEVEL III (Std QC + forms)

LEVEL IV (Std QC + forms + raw)

QC + forms + raw

RELINQUISHED BY: **Kenny Syatt** DATE: **6-29-21** TIME: **12:45**

RECEIVED BY: **Client**

RELINQUISHED BY: **Angela** DATE: **6/29/21** TIME: **1:00**

RECEIVED BY: **Angela** DATE: **6/29/21** TIME: **1:00**

RELINQUISHED BY: _____

RECEIVED BY: _____

PRELIMINARY KEY: 1-HCI 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other

6 of 20



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CONDITION OF SAMPLE UPON RECEIPT FORM

Client: Great Western Oil Workorder No: 2106733
 Project Manager: KMO Initials: AL Date: 06/29/2021

		N/A	YES	NO
1.	Are airbills / shipping documents present and/or removable?	X		
	Tracking number:			
2.	Are custody seals on shipping containers intact?	X		
3.	Are custody seals on sample containers intact?	X		
4.	Is there a COC (chain-of-custody) present?		X	
5.	Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)		X	
6.	Are short-hold samples present?			X
7.	Are all samples within holding times for the requested analyses?		X	
8.	Were all sample containers received intact? (not broken or leaking)		X	
9.	Is there sufficient sample for the requested analyses?		X	
10.	Are samples in proper containers for requested analyses? (form 250, <i>Sample Handling Guidelines</i>)		X	
11.	Are all aqueous samples preserved correctly, if required? (excluding volatiles)		X	
12.	Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm (1/4 inch) diameter? (i.e. size of green pea)		X	
13.	Were the samples shipped on ice?		X	
14.	Were cooler temperatures measured at 0.1-6.0°C?	IR gun used*:	#5	RAD ONLY
Cooler #: <u>1</u> Temperature (°C): <u>6.0</u> # of custody seals on cooler: <u>0</u> External µR/hr reading: <u>0</u> Background µR/hr reading: <u>11</u> Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES (If no, see Form 008.)				

* Please provide details here for NO responses to boxes above - for 2 thru 5 & 7 thru 12, notify PM & continue w/ login.

Were unpreserved bottles pH checked? NA All client bottle ID's vs ALS lab ID's double-checked by AL

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: 7/02/21

Project Manager Signature / Date: [Signature]

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SAMPLE SUMMARY REPORT

Client: Great Western Operating Company, LLC
 Project: Rio LC 12-366 HNX
 Sample ID: 12-366 HNX A
 Legal Location:
 Collection Date: 6/28/2021 14:20

Date: 30-Jul-21
 Work Order: 2106733
 Lab ID: 2106733-1
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 7/12/2021	PrepBy: BMK
BICARBONATE AS CaCO3	ND		20	MG/L	1	7/12/2021
CARBONATE AS CaCO3	240		20	MG/L	1	7/12/2021
TOTAL ALKALINITY AS CaCO3	720		20	MG/L	1	7/12/2021
Diesel Range Organics			SW8015M		Prep Date: 7/7/2021	PrepBy: JRS
Diesel Range Organics	1500	L	120	MG/L	100	7/23/2021 19:12
Surr: O-TERPHENYL	80		69-120	%REC	100	7/23/2021 19:12
Dissolved Gasses			RSK175		Prep Date: 7/12/2021	PrepBy: JRS
METHANE	610		1	UG/L	1	7/12/2021 17:27
ETHANE	130		2	UG/L	1	7/12/2021 17:27
PROPANE	74		1	UG/L	1	7/12/2021 17:27
Gasoline Range Organics			SW8015		Prep Date: 7/7/2021	PrepBy: JRS
GASOLINE RANGE ORGANICS	74		2	MG/L	20	7/7/2021 15:38
Surr: 2,3,4-TRIFLUOROTOLUENE	115		80-120	%REC	20	7/7/2021 15:38
GC/MS Volatiles			SW8260_25		Prep Date: 7/12/2021	PrepBy: AEW
BENZENE	130		20	UG/L	20	7/12/2021 18:05
TOLUENE	590		20	UG/L	20	7/12/2021 18:05
ETHYLBENZENE	390		20	UG/L	20	7/12/2021 18:05
M+P-XYLENE	1300		20	UG/L	20	7/12/2021 18:05
O-XYLENE	670		20	UG/L	20	7/12/2021 18:05
TOTAL XYLENES	2000		1	UG/L	1	7/12/2021 18:05
Surr: 4-BROMOFLUOROBENZENE	102		80-120	%REC	20	7/12/2021 18:05
Surr: DIBROMOFLUOROMETHANE	103		80-120	%REC	20	7/12/2021 18:05
Surr: TOLUENE-D8	100		80-120	%REC	20	7/12/2021 18:05
Ion Chromatography			EPA300.0		Prep Date: 7/26/2021	PrepBy: LMC
CHLORIDE	8500		100	MG/L	500	7/28/2021 14:30
SULFATE	770		50	MG/L	50	7/26/2021 22:37
Total Recoverable Metals by 200.7			EPA200.7		Prep Date: 7/27/2021	PrepBy: TXS
CALCIUM	3100		10	MG/L	10	7/28/2021 12:54
POTASSIUM	540		10	MG/L	10	7/28/2021 12:54
MAGNESIUM	ND		10	MG/L	10	7/28/2021 12:54
SODIUM	820		10	MG/L	10	7/28/2021 12:54
Total Dissolved Solids			SM2540C		Prep Date: 7/2/2021	PrepBy: BMK
TOTAL DISSOLVED SOLIDS	21000		400	MG/L	1	7/13/2021

Client: Great Western Operating Company, LLC

Date: 30-Jul-21

Project: Rio LC 12-366 HNX

Work Order: 2106733

Sample ID: 12-366 HNX B

Lab ID: 2106733-2

Legal Location:

Matrix: WATER

Collection Date: 6/28/2021 14:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Dissolved Metals by 200.7			EPA200.7		Prep Date: 7/27/2021	PrepBy: TXS
CALCIUM	3100		10	MG/L	10	7/28/2021 12:55
POTASSIUM	540		10	MG/L	10	7/28/2021 12:55
MAGNESIUM	ND		10	MG/L	10	7/28/2021 12:55
SODIUM	820		10	MG/L	10	7/28/2021 12:55

Client: Great Western Operating Company, LLC
Project: Rio LC 12-366 HNX
Sample ID: 12-366 HNX B
Legal Location:
Collection Date: 6/28/2021 14:20

Date: 30-Jul-21
Work Order: 2106733
Lab ID: 2106733-2
Matrix: WATER
Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Explanation of Qualifiers

Radiochemistry:

- "Report Limit" is the MDC
- U or ND - Result is less than the sample specific MDC.
- Y1 - Chemical Yield is in control at 100-110%. Quantitative yield is assumed.
- Y2 - Chemical Yield outside default limits.
- W - DER is greater than Warning Limit of 1.42
- * - Aliquot Basis is 'As Received' while the Report Basis is 'Dry Weight'.
- # - Aliquot Basis is 'Dry Weight' while the Report Basis is 'As Received'.
- G - Sample density differs by more than 15% of LCS density.
- D - DER is greater than Control Limit
- M - Requested MDC not met.
- M3 - The requested MDC was not met, but the reported activity is greater than the reported MDC.
- L - LCS Recovery below lower control limit.
- H - LCS Recovery above upper control limit.
- P - LCS, Matrix Spike Recovery within control limits.
- N - Matrix Spike Recovery outside control limits
- NC - Not Calculated for duplicate results less than 5 times MDC
- B - Analyte concentration greater than MDC.
- B3 - Analyte concentration greater than MDC but less than Requested MDC.

Inorganics:

- B - Result is less than the requested reporting limit but greater than the instrument method detection limit (MDL).
- U or ND - Indicates that the compound was analyzed for but not detected.
- E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
- M - Duplicate injection precision was not met.
- N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
- Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
- * - Duplicate analysis (relative percent difference) not within control limits.
- S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

Organics:

- U or ND - Indicates that the compound was analyzed for but not detected.
- B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user.
- E - Analyte concentration exceeds the upper level of the calibration range.
- J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL).
- A - A tentatively identified compound is a suspected aldol-condensation product.
- X - The analyte was diluted below an accurate quantitation level.
- * - The spike recovery is equal to or outside the control criteria used.
- + - The relative percent difference (RPD) equals or exceeds the control criteria.
- G - A pattern resembling gasoline was detected in this sample.
- D - A pattern resembling diesel was detected in this sample.
- M - A pattern resembling motor oil was detected in this sample.
- C - A pattern resembling crude oil was detected in this sample.
- 4 - A pattern resembling JP-4 was detected in this sample.
- 5 - A pattern resembling JP-5 was detected in this sample.
- H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest.
- L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest.
- Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:
 - gasoline
 - JP-8
 - diesel
 - mineral spirits
 - motor oil
 - Stoddard solvent
 - bunker C

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Date: 7/30/2021 2:52:

Client: Great Western Operating Company, LLC

QC BATCH REPORT

Work Order: 2106733

Project: Rio LC 12-366 HNX

Batch ID: HC210707-61-1

Instrument ID FUELS-1

Method: SW8015

LCS Sample ID: HC210707-61 Units: **MG/L** Analysis Date: 7/7/2021 14:30

Client ID: Run ID: HC210707-61A Prep Date: 7/7/2021 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.483	0.1	0.5		97	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.118		0.1		118	80-120					

LCSD Sample ID: HC210707-61 Units: **MG/L** Analysis Date: 7/7/2021 20:08

Client ID: Run ID: HC210707-61A Prep Date: 7/7/2021 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.472	0.1	0.5		94	80-120		0.483	2	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.118		0.1		118	80-120			0		

MB Sample ID: HC210707-61 Units: **MG/L** Analysis Date: 7/7/2021 14:52

Client ID: Run ID: HC210707-61A Prep Date: 7/7/2021 DF: 1

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	ND	0.1									
Surr: 2,3,4-TRIFLUOROTOLUENE	0.112				112	80-120					

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2106733
 Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **HC210707-81-1** Instrument ID **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC210707-81			Units: MG/L		Analysis Date: 7/23/2021 17:26				
Client ID:		Run ID: HC210707-81A			Prep Date: 7/7/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	6.95	1.07	8.33		83	53-120				20	
Surr: O-TERPHENYL	1.7		1.67		102	69-120					

LCSD		Sample ID: HC210707-81			Units: MG/L		Analysis Date: 7/23/2021 13:19				
Client ID:		Run ID: HC210707-81A			Prep Date: 7/7/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Diesel Range Organics	6.69	1.07	8.33		80	53-120		6.95	4	20	
Surr: O-TERPHENYL	1.65		1.67		99	69-120			3		

MB		Sample ID: HC210707-81			Units: MG/L		Analysis Date: 7/23/2021 12:36					
Client ID:		Run ID: HC210707-81A			Prep Date: 7/7/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
Diesel Range Organics	ND	1.1										
Surr: O-TERPHENYL	1.59				96	69-120						

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2106733
 Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **HC210712-91-1** Instrument ID **MEE-1** Method: **RSK175**

LCS		Sample ID: HC210712-91			Units: UG/L		Analysis Date: 7/12/2021 16:01				
Client ID:		Run ID: HC210712-91B			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	166	1	142		117	76-125				25	
ETHANE	312	2	267		117	70-120				25	
PROPANE	460	1	391		118	72-120				25	

LCSD		Sample ID: HC210712-91			Units: UG/L		Analysis Date: 7/12/2021 17:00				
Client ID:		Run ID: HC210712-91B			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
METHANE	166	1	142		117	76-125		166	0	25	
ETHANE	309	2	267		116	70-120		312	1	25	
PROPANE	455	1	391		116	72-120		460	1	25	

MB		Sample ID: HC210712-91			Units: UG/L		Analysis Date: 7/12/2021 16:06					
Client ID:		Run ID: HC210712-91B			Prep Date: 7/12/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
METHANE	ND	1										
ETHANE	ND	2										
PROPANE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
 Work Order: 2106733
 Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **IP210727-3-2** Instrument ID **ICPTrace2** Method: **EPA200.7**

LCS		Sample ID: IP210727-3			Units: MG/L		Analysis Date: 7/28/2021 12:45				
Client ID:		Run ID: IT210728-1A5			Prep Date: 7/27/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	37.2	1	40		93	85-115				20	
MAGNESIUM	38.6	1	40		97	85-115				20	
POTASSIUM	38.5	1	40		96	85-115				20	
SODIUM	38.7	1	40		97	85-115				20	

LCSD		Sample ID: IP210727-3			Units: MG/L		Analysis Date: 7/28/2021 12:46				
Client ID:		Run ID: IT210728-1A5			Prep Date: 7/27/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CALCIUM	36.8	1	40		92	85-115		37.2	1	20	
MAGNESIUM	38.3	1	40		96	85-115		38.6	1	20	
POTASSIUM	38.3	1	40		96	85-115		38.5	1	20	
SODIUM	38.3	1	40		96	85-115		38.7	1	20	

MB		Sample ID: FP210719-3			Units: MG/L		Analysis Date: 7/28/2021 12:43				
Client ID:		Run ID: IT210728-1A5			Prep Date: 7/27/2021		DF: 1				
Analyte	Result	ReportLimit	Qual								
CALCIUM	ND	1									
MAGNESIUM	ND	1									
POTASSIUM	ND	1									
SODIUM	ND	1									

MB		Sample ID: IP210727-3			Units: MG/L		Analysis Date: 7/28/2021 12:44				
Client ID:		Run ID: IT210728-1A5			Prep Date: 7/27/2021		DF: 1				
Analyte	Result	ReportLimit	Qual								
CALCIUM	ND	1									
MAGNESIUM	ND	1									
POTASSIUM	ND	1									
SODIUM	ND	1									

The following samples were analyzed in this batch: 2106733-1 2106733-2

Client: Great Western Operating Company, LLC
 Work Order: 2106733
 Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: VL210712-3-3 Instrument ID: HPV1 Method: SW8260_25

LCS		Sample ID: VL210712-3			Units: %REC		Analysis Date: 7/12/2021 10:59				
Client ID:		Run ID: VL210712-3A			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	23.9		25		96	80-120					
Surr: DIBROMOFLUOROMETHANE	25.5		25		102	80-120					
Surr: TOLUENE-D8	24.5		25		98	80-120					
BENZENE	9.55	1	10		95	80-120				20	
TOLUENE	9.1	1	10		91	80-120				20	
ETHYLBENZENE	9.08	1	10		91	80-120				20	
M+P-XYLENE	18.3	1	20		92	80-120				20	
O-XYLENE	9.19	1	10		92	80-120				20	

LCSD		Sample ID: VL210712-3			Units: %REC		Analysis Date: 7/12/2021 12:12				
Client ID:		Run ID: VL210712-3A			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24		25		96	80-120			0		
Surr: DIBROMOFLUOROMETHANE	25.8		25		103	80-120			1		
Surr: TOLUENE-D8	24.6		25		98	80-120			0		
BENZENE	9.76	1	10		98	80-120		9.55	2	20	
TOLUENE	9.36	1	10		94	80-120		9.1	3	20	
ETHYLBENZENE	9.27	1	10		93	80-120		9.08	2	20	
M+P-XYLENE	18.7	1	20		93	80-120		18.3	2	20	
O-XYLENE	9.26	1	10		93	80-120		9.19	1	20	

MB		Sample ID: VL210712-3			Units: %REC		Analysis Date: 7/12/2021 11:49				
Client ID:		Run ID: VL210712-3A			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24.2		25		97	80-120					
Surr: DIBROMOFLUOROMETHANE	25.3		25		101	80-120					
Surr: TOLUENE-D8	25.3		25		101	80-120					
BENZENE	ND	1									
TOLUENE	ND	1									
ETHYLBENZENE	ND	1									
M+P-XYLENE	ND	1									
O-XYLENE	ND	1									
TOTAL XYLENES	ND	1									

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
Work Order: 2106733
Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **AK210712-1-1** Instrument ID **NONE** Method: **SM2320B**

LCS		Sample ID: AK210712-1			Units: MG/L		Analysis Date: 7/12/2021				
Client ID:		Run ID: AK210712-1A1			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	390	20	400		97	85-115				15	

MB		Sample ID: AK210712-1			Units: MG/L		Analysis Date: 7/12/2021				
Client ID:		Run ID: AK210712-1A1			Prep Date: 7/12/2021		DF: 1				
Analyte	Result	ReportLimit									
BICARBONATE AS CaCO3	ND	20									
CARBONATE AS CaCO3	ND	20									
TOTAL ALKALINITY AS CaCO3	ND	20									

The following samples were analyzed in this batch:

2106733-1

Client: Great Western Operating Company, LLC
 Work Order: 2106733
 Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **IC210726-1-1** Instrument ID **IC3** Method: **EPA300.0**

LCS		Sample ID: IC210726-1			Units: MG/L		Analysis Date: 7/26/2021 14:22				
Client ID:		Run ID: IC210726-1A1			Prep Date: 7/26/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10.1	0.2	10		101	90-110				15	
SULFATE	50	1	50		100	90-110				15	

LCSD		Sample ID: IC210726-1			Units: MG/L		Analysis Date: 7/26/2021 18:08				
Client ID:		Run ID: IC210726-1A1			Prep Date: 7/26/2021		DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
CHLORIDE	10.3	0.2	10		103	90-110		10.1	1	15	
SULFATE	53	1	50		106	90-110		50	6	15	

MB		Sample ID: IC210726-1			Units: MG/L		Analysis Date: 7/26/2021 14:36					
Client ID:		Run ID: IC210726-1A1			Prep Date: 7/26/2021		DF: 1					
Analyte	Result	ReportLimit										Qual
CHLORIDE	ND	0.2										
SULFATE	ND	1										

The following samples were analyzed in this batch:

Client: Great Western Operating Company, LLC
Work Order: 2106733
Project: Rio LC 12-366 HNX

QC BATCH REPORT

Batch ID: **TD210702-1-1** Instrument ID **Balance** Method: **SM2540C**

LCS	Sample ID: TD210702-1					Units: MG/L	Analysis Date: 7/13/2021				
Client ID:		Run ID: TD210713-1A1				Prep Date: 7/2/2021		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	453	20	400		113	85-115				14	

LCSD	Sample ID: TD210702-1					Units: MG/L	Analysis Date: 7/13/2021				
Client ID:		Run ID: TD210713-1A1				Prep Date: 7/2/2021		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	438	20	400		109	85-115		453	3	14	

MB	Sample ID: TD210702-1					Units: MG/L	Analysis Date: 7/13/2021					
Client ID:		Run ID: TD210713-1A1				Prep Date: 7/2/2021		DF: 1				
Analyte	Result	ReportLimit										Qual
TOTAL DISSOLVED SOLIDS	ND	20										

The following samples were analyzed in this batch:

CONTROLLED NON-CONFORMANCE REPORT

Non-Conformance

Initiated By: Lisa M. Champagne on 7/30/2021

Event Type: Hold Time Exceeded

Event Explanation: Due to analyst oversight samples were ran out of hold.

Action To

Prevent Recurrence: Not Applicable

Corrective Action

Corrective Action:

Department Manager Approval:

Approval Date:

Corrective Action Comments:

Workorders Affected

Workorder -- Procedure

Approved By

Approval Date

2106576 -- EPA300.0
2106576 -- EPA350.1
2106722 -- EPA300.0
2106733 -- EPA300.0

No client contact information.

PENDING

Associated Batches

The samples were originally associated with the following Batch(es):

All rework was completed in the following Batch(es):

IC210719-1A2 created on 7/19/2021
IC210719-1A1 created on 7/19/2021
IC210723-1A4 created on 7/23/2021
IC210726-1A1 created on 7/26/2021
IC210723-1A2 created on 7/23/2021
IC210727-1A1 created on 7/27/2021
IC210711-1A2 created on 7/11/2021
IC210726-1A3 created on 7/26/2021
IC210711-1A1 created on 7/11/2021
IC210727-1A2 created on 7/27/2021
IC210712-1A1 created on 7/12/2021
NH210716-1A1 created on 7/16/2021
IC210726-1A2 created on 7/26/2021
IC210723-1A3 created on 7/23/2021
IC210728-2A2 created on 7/28/2021
IC210728-2A1 created on 7/28/2021
IC210723-1A1 created on 7/23/2021
IC210712-1A2 created on 7/12/2021

Not Applicable



Ft. Collins, Colorado

NCR #: 15310

CONTROLLED NON-CONFORMANCE REPORT

NCR Approval

Project Manager Approval:

Department Manager Approval:

QA Manager Approval: