



Wednesday, December 23, 2020

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

Re: ALS Workorder: 2012012
Project Name: B Farms LD 18-034 HC
Project Number:

Dear Mr. Trehus:

Seven water samples were received from Great Western Operating Company, LLC, on 12/1/2020. 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. OBrien
Project Manager

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
Alaska (AK)	17-003
Arizona (AZ)	AZ0742
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



2012012

GC/MS Volatiles:

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

All surrogate recoveries were within acceptance criteria with the following exception:

Surrogate	Sample	Direction
Dibromofluoromethane	-2	Low

The low surrogate recovery is likely due to the high pH of the sample. No further action was taken.

All remaining 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.

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.

Sample -4 had a large peak outside of the GRO range, this caused a large interference to subsequent samples. See NCR# 15196.

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.

**Metals:**

The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures. Analysis by ICPMS followed method 200.8 and the current revision of SOP 827.

Sample 2012012-6 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 EMSL and 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

All acceptance criteria were met.

ALS -- Fort Collins

Sample Number(s) Cross-Reference Table

OrderNum: 2012012

Client Name: Great Western Operating Company, LLC

Client Project Name: B Farms LD 18-034 HC

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
18-034 HC A	2012012-1		WATER	30-Nov-20	12:05
18-034 HC B	2012012-2		WATER	30-Nov-20	12:05
18-034 HC C	2012012-3		WATER	30-Nov-20	12:05
18-034 HC D	2012012-4		WATER	30-Nov-20	12:05
18-034 HC E	2012012-5		WATER	30-Nov-20	12:05
18-034 HC F	2012012-6		WATER	30-Nov-20	12:05
18-034 HC G	2012012-7		WATER	30-Nov-20	12:05



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

*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter													
6 of 24		Facility ID: 452920		NOTES		38°							
		REPORT LEVEL / QC REQUIRED				RELINQUISHED BY		SIGNATURE		DATE		TIME	
		Summary (Standard QC)				RECEIVED BY							
		LEVEL II (Standard QC)				RELINQUISHED BY							
		LEVEL III (Std QC + forms)				RECEIVED BY							
		LEVEL IV (Std QC + forms + raw)				RELINQUISHED BY							
PRESERVATION KEY		1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaOH/ZnAcetate 6-NaHSO4 7-4°C 8-Other				RECEIVED BY							



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client Name/ID: Great Western

Workorder No: 2012012

Project Manager: KMO

Initials: RGA

Date: 12/01/2020

1. Are airbills / shipping documents present and/or removable?	<input checked="" type="checkbox"/> Drop Off	<input type="checkbox"/> YES	<input type="checkbox"/> NO
2. Are custody seals on shipping containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
3. Are custody seals on sample containers intact?	<input checked="" type="checkbox"/> NONE	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
4. Is there a COC (chain-of-custody) present?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
5. Is the COC in agreement with samples received? (IDs, dates, times, # of samples, # of containers, matrix, requested analyses, etc.)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
6. Are short-hold samples present?	<input type="checkbox"/>	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO
7. Are all samples within holding times for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
8. Were all sample containers received intact? (not broken or leaking)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
9. Is there sufficient sample for the requested analyses?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
10. Are samples in proper containers for requested analyses? (form 250, Sample Handling Guidelines)	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO*
11. Are all aqueous samples preserved correctly, if required?	<input type="checkbox"/> N/A	<input type="checkbox"/> YES	<input checked="" type="checkbox"/> NO*
12. Were unpreserved samples pH checked, if required?	<input checked="" type="checkbox"/> N/A	<input type="checkbox"/> YES	<input type="checkbox"/> NO
13. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, radon) free of bubbles > 6 mm in diameter?	<input checked="" type="checkbox"/> N/A	<input checked="" type="checkbox"/> YES	<input type="checkbox"/> NO
14. Were the samples shipped on ice?	<input checked="" type="checkbox"/>	<input type="checkbox"/> YES	<input type="checkbox"/> NO
15. Were cooler temperatures measured at 0.1 - 6.0°C?	IR gun used: <input type="checkbox"/> #3 <input checked="" type="checkbox"/> #5	<input type="checkbox"/> Rad Only	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO

Cooler #: 1

Temperature (°C): 3.8

of custody seals on cooler: 0

External mR/hr reading: -

Background mR/hr reading: 9

Were external mR/hr readings ≤ two times background and within DOT acceptance criteria? (If no, see Form 008)

☒ N/A ☐ YES ☐ NO

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

11) Sample 2012012-7 had a pH of 14, 0.5 ml of HNO₃ was added. The final pH was 13.

All client bottle ID's vs ALS lab ID's double-checked by: RGA

If applicable, was the client contacted? ☐ YES ☐ N/A Contact Name

Date:

Project Manager Signature / Date:

[Signature] 12/2/20

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC A

Lab ID: 2012012-1

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Dissolved Gasses

RSK175

Prep Date: 12/7/2020

PrepBy: ASZ

METHANE	2800		1	UG/L	1	12/7/2020 11:21
ETHANE	730		2	UG/L	1	12/7/2020 11:21
PROPANE	540		1	UG/L	1	12/7/2020 11:21

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC B

Lab ID: 2012012-2

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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GC/MS Volatiles

SW8260_25

Prep Date: 12/7/2020

PrepBy: AEW

BENZENE	130		10	UG/L	10	12/7/2020 20:07
TOLUENE	290		10	UG/L	10	12/7/2020 20:07
ETHYLBENZENE	57		10	UG/L	10	12/7/2020 20:07
M+P-XYLENE	180		10	UG/L	10	12/7/2020 20:07
O-XYLENE	92		10	UG/L	10	12/7/2020 20:07
TOTAL XYLENES	280		1	UG/L	1	12/7/2020 20:07
Surr: 4-BROMOFLUOROBENZENE	98		80-120	%REC	10	12/7/2020 20:07
Surr: DIBROMOFLUOROMETHANE	53	*	80-120	%REC	10	12/7/2020 20:07
Surr: TOLUENE-D8	100		80-120	%REC	10	12/7/2020 20:07

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC C

Lab ID: 2012012-3

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Diesel Range Organics			SW8015M		Prep Date: 12/9/2020	PrepBy: ASZ
Diesel Range Organics	180		10	MG/L	10	12/13/2020 20:10
Surr: O-TERPHENYL	83		69-120	%REC	10	12/13/2020 20:10

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC D

Lab ID: 2012012-4

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Gasoline Range Organics**SW8015**

Prep Date: 12/14/2020

PrepBy: ASZ

GASOLINE RANGE ORGANICS**2.9****0.1 MG/L****1**

12/14/2020 17:49

Surr: 2,3,4-TRIFLUOROTOLUENE

100

80-120 %REC

1

12/14/2020 17:49

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC E

Lab ID: 2012012-5

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate			SM2320B		Prep Date: 12/11/2020	PrepBy: LMC
BICARBONATE AS CaCO3	ND		500	MG/L	1	12/11/2020
CARBONATE AS CaCO3	1100		500	MG/L	1	12/11/2020
TOTAL ALKALINITY AS CaCO3	11000		500	MG/L	1	12/11/2020
Ion Chromatography			EPA300.0		Prep Date: 12/4/2020	PrepBy: KJS
CHLORIDE	730		10	MG/L	50	12/4/2020 14:39
SULFATE	350		5	MG/L	5	12/4/2020 15:05
Total Dissolved Solids			SM2540C		Prep Date: 12/7/2020	PrepBy: LMC
TOTAL DISSOLVED SOLIDS	11000		1000	MG/L	1	12/10/2020

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC F

Lab ID: 2012012-6

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Dissolved Metals by 200.8**EPA200.8**

Prep Date: 12/7/2020

PrepBy: JML

CALCIUM	110000		1000	UG/L	10	12/8/2020 16:07
POTASSIUM	5400000		10000	UG/L	100	12/9/2020 12:50
MAGNESIUM	ND		100	UG/L	10	12/8/2020 16:07
SODIUM	2000000		1000	UG/L	10	12/8/2020 16:07

Client: Great Western Operating Company, LLC

Date: 23-Dec-20

Project: B Farms LD 18-034 HC

Work Order: 2012012

Sample ID: 18-034 HC G

Lab ID: 2012012-7

Legal Location:

Matrix: WATER

Collection Date: 11/30/2020 12:05

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Total Recoverable Metals by 200.8**EPA200.8**

Prep Date: 12/7/2020

PrepBy: JML

CALCIUM	150000		1000	UG/L	10	12/8/2020 16:10
POTASSIUM	5400000		10000	UG/L	100	12/9/2020 12:53
MAGNESIUM	110		100	UG/L	10	12/8/2020 16:10
SODIUM	2000000		1000	UG/L	10	12/8/2020 16:10

Client: Great Western Operating Company, LLC
Project: B Farms LD 18-034 HC
Sample ID: 18-034 HC G
Legal Location:
Collection Date: 11/30/2020 12:05

Date: 23-Dec-20
Work Order: 2012012
Lab ID: 2012012-7
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

ALS -- Fort Collins

Date: 12/23/2020 9:55:

Client: Great Western Operating Company, LLC

Work Order: 2012012

Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: HC201207-91-1

Instrument ID: MEE-1

Method: RSK175

LCS	Sample ID: HC201207-91				Units: UG/L	Analysis Date: 12/7/2020 10:14						
Client ID:	Run ID: HC201207-91A			Prep Date: 12/7/2020			DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	166	1	142		117	76-125				25		
ETHANE	297	2	267		111	70-120				25		
PROPANE	438	1	391		112	72-120				25		

LCSD	Sample ID: HC201207-91				Units: UG/L	Analysis Date: 12/7/2020 10:57						
Client ID:	Run ID: HC201207-91A			Prep Date: 12/7/2020			DF: 1					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
METHANE	155	1	142		109	76-125		166	7	25		
ETHANE	271	2	267		102	70-120		297	9	25		
PROPANE	393	1	391		100	72-120		438	11	25		

MB	Sample ID: HC201207-91			Units: UG/L		Analysis Date: 12/7/2020 10:18		
Client ID:	Run ID: HC201207-91A			Prep Date: 12/7/2020		DF: 1		
Analyte	Result	ReportLimit	Qual					
METHANE	ND	1						
ETHANE	ND	2						
PROPANE	ND	1						

The following samples were analyzed in this batch:

2012012-1

Client: Great Western Operating Company, LLC
 Work Order: 2012012
 Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **HC201209-81-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS	Sample ID: HC201209-81				Units: MG/L		Analysis Date: 12/13/2020 19:07				
Client ID:		Run ID: HC201213-81A				Prep Date: 12/9/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	7.04	1.07	8.33		85	53-120				20	
Surr: O-TERPHENYL	1.58		1.67		95	69-120					

LCSD	Sample ID: HC201209-81			Units: MG/L			Analysis Date: 12/13/2020 19:28				
Client ID:	Run ID: HC201213-81A			Prep Date: 12/9/2020			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Diesel Range Organics	6.88	1.07	8.33		83	53-120		7.04	2	20	
Surr: O-TERPHENYL	1.57		1.67		94	69-120			1		

MB	Sample ID: HC201209-81	Units: MG/L		Analysis Date: 12/13/2020 14:14	
Client ID:	Run ID: HC201213-81A	Prep Date: 12/9/2020		DF: 1	
Analyte	Result	ReportLimit	Qual		
Diesel Range Organics	ND	1.1			
Surr: O-TERPHENYL	1.71		102	69-120	

The following samples were analyzed in this batch:

2012012-3

Client: Great Western Operating Company, LLC
Work Order: 2012012
Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **HC201214-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

LCS	Sample ID: HC201214-61				Units: MG/L		Analysis Date: 12/15/2020 01:45				
Client ID:		Run ID: HC201214-61A				Prep Date: 12/14/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
GASOLINE RANGE ORGANICS	0.501	0.1	0.5		100	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.106		0.1		106	80-120					

MB		Sample ID: HC201214-61			Units: MG/L		Analysis Date: 12/14/2020 17:23		
Client ID:		Run ID: HC201214-61A			Prep Date: 12/14/2020			DF: 1	
Analyte		Result	ReportLimit		Qual				
GASOLINE RANGE ORGANICS		ND	0.1						
Surr: 2,3,4-TRIFLUOROTOLUENE		0.105			105	80-120			

The following samples were analyzed in this batch:

2012012-4

Client: Great Western Operating Company, LLC
Work Order: 2012012
Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **IP201207-5-1** Instrument ID: **ICPMS2** Method: **EPA200.8**

LCS		Sample ID: IM201207-5			Units: UG/L		Analysis Date: 12/8/2020 16:01				
Client ID:		Run ID: IM201208-10A7			Prep Date: 12/7/2020			DF: 10			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	10800	1000	10000		108	85-115				20	
MAGNESIUM	10300	100	10000		103	85-115				20	
POTASSIUM	4990	1000	5000		100	85-115				20	
SODIUM	11200	1000	10000		112	85-115				20	

MB		Sample ID: FP201204-5		Units: UG/L		Analysis Date: 12/8/2020 15:55	
Client ID:		Run ID: IM201208-10A7		Prep Date: 12/7/2020		DF: 10	
Analyte		Result	ReportLimit	Qual			
CALCIUM		ND	1000				
MAGNESIUM		ND	100				
POTASSIUM		ND	1000				
SODIUM		ND	1000				

MB		Sample ID: IP201207-5		Units: UG/L		Analysis Date: 12/8/2020 15:58	
Client ID:		Run ID: IM201208-10A7		Prep Date: 12/7/2020		DF: 10	
Analyte		Result	ReportLimit	Qual			
CALCIUM		ND	1000				
MAGNESIUM		ND	100				
POTASSIUM		ND	1000				
SODIUM		ND	1000				

The following samples were analyzed in this batch:

2012012-6	2012012-7
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Client: Great Western Operating Company, LLC
 Work Order: 2012012
 Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: VL201207-3-4 Instrument ID: HPV3 Method: SW8260_25

LCS		Sample ID: VL201207-3			Units: %REC		Analysis Date: 12/7/2020 13:26				
Client ID:		Run ID: VL201207-33A			Prep Date: 12/7/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24.9		25		100	80-120					
Surr: DIBROMOFLUOROMETHANE	25.3		25		101	80-120					
Surr: TOLUENE-D8	24.7		25		99	80-120					
BENZENE	9.48	1	10		95	80-120				20	
TOLUENE	9.4	1	10		94	80-120				20	
ETHYLBENZENE	9.76	1	10		98	80-120				20	
M+P-XYLENE	19.4	1	20		97	80-120				20	
O-XYLENE	9.38	1	10		94	80-120				20	

LCSD	Sample ID: VL201207-3				Units: %REC		Analysis Date: 12/7/2020 15:48				
Client ID:	Run ID: VL201207-33A				Prep Date: 12/7/2020				DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
Surr: 4-BROMOFLUOROBENZENE	24.8		25		99	80-120			0		
Surr: DIBROMOFLUOROMETHANE	25.4		25		102	80-120			1		
Surr: TOLUENE-D8	25		25		100	80-120			1		
BENZENE	11.1	1	10		111	80-120		9.48	16	20	
TOLUENE	10.7	1	10		107	80-120		9.4	13	20	
ETHYLBENZENE	11	1	10		110	80-120		9.76	12	20	
M+P-XYLENE	21.8	1	20		109	80-120		19.4	12	20	
O-XYLENE	10.9	1	10		109	80-120		9.38	15	20	

MB		Sample ID: VL201207-3		Units: %REC		Analysis Date: 12/7/2020 16:08	
Client ID:		Run ID: VL201207-33A		Prep Date: 12/7/2020		DF: 1	
Analyte	Result	ReportLimit					Qual
Surr: 4-BROMOFLUOROBENZENE	24.8		99	80-120			
Surr: DIBROMOFLUOROMETHANE	25.4		102	80-120			
Surr: TOLUENE-D8	25		100	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:

2012012-2

Client: Great Western Operating Company, LLC
Work Order: 2012012
Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **AK201211-1-1** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK201211-1				Units: MG/L		Analysis Date: 12/11/2020			
Client ID:		Run ID: AK201211-1A1				Prep Date: 12/11/2020			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	96	5	100		96	85-115				15	

LCSD		Sample ID: AK201211-1			Units: MG/L		Analysis Date: 12/11/2020				
Client ID:		Run ID: AK201211-1A1			Prep Date: 12/11/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL ALKALINITY AS CaCO3	95.8	5	100		96	85-115		96	0	15	

MB		Sample ID: AK201211-1		Units: MG/L		Analysis Date: 12/11/2020	
Client ID:		Run ID: AK201211-1A1		Prep Date: 12/11/2020		DF: 1	
Analyte		Result	ReportLimit	Qual			
BICARBONATE AS CaCO3		ND	5				
CARBONATE AS CaCO3		ND	5				
TOTAL ALKALINITY AS CaCO3		ND	5				

The following samples were analyzed in this batch:

2012012-5

Client: Great Western Operating Company, LLC
 Work Order: 2012012
 Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **IC201204-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS	Sample ID: IC201204-1			Units: MG/L			Analysis Date: 12/4/2020 07:32				
Client ID:	Run ID: IC201204-1A1			Prep Date: 12/4/2020			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.73	0.2	10		97	90-110				15	
SULFATE	48.1	1	50		96	90-110				15	

LCSD	Sample ID: IC201204-1				Units: MG/L			Analysis Date: 12/4/2020 10:10			
Client ID:	Run ID: IC201204-1A1				Prep Date: 12/4/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.76	0.2	10		98	90-110		9.73	0	15	
SULFATE	48.1	1	50		96	90-110		48.1	0	15	

MB	Sample ID: IC201204-1	Units: MG/L		Analysis Date: 12/4/2020 07:45	
Client ID:	Run ID: IC201204-1A1		Prep Date: 12/4/2020		DF: 1
Analyte	Result	ReportLimit	Qual		
CHLORIDE	ND	0.2			
SULFATE	ND	1			

MS	Sample ID: 2012012-5				Units: MG/L		Analysis Date: 12/4/2020 14:52				
Client ID: 18-034 HC E			Run ID: IC201204-1A1			Prep Date: 12/4/2020			DF: 50		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	998	10	250	730	107	85-115				15	
SULFATE	445	5	100	350	98	85-115				15	

The following samples were analyzed in this batch:

2012012-5

Client: Great Western Operating Company, LLC
Work Order: 2012012
Project: B Farms LD 18-034 HC

QC BATCH REPORT

Batch ID: **TD201207-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS	Sample ID: TD201207-1			Units: MG/L			Analysis Date: 12/10/2020				
Client ID:		Run ID: AK201210-1A1			Prep Date: 12/7/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	400	20	400		100	85-115				14	

LCSD		Sample ID: TD201207-1			Units: MG/L		Analysis Date: 12/10/2020				
Client ID:		Run ID: AK201210-1A1			Prep Date: 12/7/2020			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	406	20	400		101	85-115		400	1	14	

MB		Sample ID: TD201207-1			Units: MG/L		Analysis Date: 12/10/2020		
Client ID:		Run ID: AK201210-1A1			Prep Date: 12/7/2020		DF: 1		
Analyte		Result	ReportLimit						
TOTAL DISSOLVED SOLIDS		ND	20						

The following samples were analyzed in this batch:

2012012-5

CONTROLLED NON-CONFORMANCE REPORT

Non-Conformance

Initiated By: Aaron S. Ziegler on 12/22/2020

Event Type: Lab Contamination

Event Explanation: Sample 2012012-4 had a large peak outside of the GRO range, this caused a large interference to subsequent samples. Carry over peaks may have contributed to an elevated concentration in other samples. The GRO concentrations were confirmed by the 8260 analysis. Two passing CCV's before and after sample analysis were reported and samples suspected of this large interference will be screened at a larger dilution going forward. Samples could not be rerun due to limited sample volume.

Action To

Prevent Reccurence: Not Applicable

Corrective Action

Corrective Action: Document in Narrative

Department Manager Approval:

Approval Date:

Corrective Action Comments:

Workorders Affected

Workorder -- Procedure

2012012 -- SW8015
2012022 -- SW8015
2012023 -- SW8015
2012024 -- SW8015
2012076 -- SW8015

No client contact information.

Approved By

Approval Date

PENDING

Associated Batches

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

HC201214-61A created on 12/14/2020

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

Not Applicable

NCR Approval

Project Manager Approval:

Department Manager Approval:

QA Manager Approval: