



Saturday, January 30, 2021

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

Re: ALS Workorder: 2101345
Project Name: Raindance RD 20-362 HNX
Project Number:

Dear Mr. Trehus:

Two water samples were received from Great Western Operating Company, LLC, on 1/20/2021. 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. OBrien
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.



2101345

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	-1	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.

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 Trace ICP followed method 200.7 and the current revision of SOP 834.

Sample 2101345-2 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 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.

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Sample Number(s) Cross-Reference Table

OrderNum: 2101345

Client Name: Great Western Operating Company, LLC

Client Project Name: Raindance RD 20-362 HNX

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
20-362 HNX A through E, G	2101345-1		WATER	20-Jan-21	13:20
20-362 HNX F	2101345-2		WATER	20-Jan-21	13:20



Chain-of-Custody

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

ALS WORKORDER #

2, 3, 4, 5

[illegible]



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM


Client Name/ID: Great Western

Workorder No: 2101345

Project Manager: KMO

Initials: TM

Date: 1/20/21

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 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 type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Cooler #: 1 Temperature (°C): 12.5 # 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) <input checked="" type="checkbox"/> N/A <input type="checkbox"/> YES <input type="checkbox"/> 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.) 345-1-2 read initial pH of 12; added 0.5mL HNO3 (lot# 234822) for final pH of 10			
All client bottle ID's vs ALS lab ID's double-checked by: TM			
If applicable, was the client contacted? <input type="checkbox"/> YES <input type="checkbox"/> N/A Contact Name: Date:			
Project Manager Signature / Date:  1/21/21			

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SAMPLE SUMMARY REPORT

Client: Great Western Operating Company, LLC

Date: 30-Jan-21

Project: Raintance RD 20-362 HNX

Work Order: 2101345

Sample ID: 20-362 HNX A through E, G

Lab ID: 2101345-1

Legal Location:

Matrix: WATER

Collection Date: 1/20/2021 13:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate		SM2320B			Prep Date: 1/22/2021	PrepBy: KJS
BICARBONATE AS CaCO3	ND		500	MG/L	1	1/22/2021
CARBONATE AS CaCO3	1000		500	MG/L	1	1/22/2021
TOTAL ALKALINITY AS CaCO3	10000		500	MG/L	1	1/22/2021
Diesel Range Organics		SW8015M			Prep Date: 1/28/2021	PrepBy: ASZ
Diesel Range Organics	3.1		1	MG/L	1	1/28/2021 17:42
Surr: O-TERPHENYL	88		69-120	%REC	1	1/28/2021 17:42
Dissolved Gasses		RSK175			Prep Date: 1/29/2021	PrepBy: ASZ
METHANE	120		1	UG/L	1	1/29/2021 09:03
ETHANE	68		2	UG/L	1	1/29/2021 09:03
PROPANE	39		1	UG/L	1	1/29/2021 09:03
Gasoline Range Organics		SW8015			Prep Date: 1/28/2021	PrepBy: ASZ
GASOLINE RANGE ORGANICS	1.5		1	MG/L	10	1/28/2021 09:11
Surr: 2,3,4-TRIFLUOROTOLUENE	116		80-120	%REC	10	1/28/2021 09:11
GC/MS Volatiles		SW8260_25			Prep Date: 1/25/2021	PrepBy: AEW
BENZENE	17		1	UG/L	1	1/25/2021 22:20
TOLUENE	28		1	UG/L	1	1/25/2021 22:20
ETHYLBENZENE	6.3		1	UG/L	1	1/25/2021 22:20
M+P-XYLENE	22		1	UG/L	1	1/25/2021 22:20
O-XYLENE	13		1	UG/L	1	1/25/2021 22:20
TOTAL XYLENES	34		1	UG/L	1	1/25/2021 22:20
Surr: 4-BROMOFLUOROBENZENE	93		80-120	%REC	1	1/25/2021 22:20
Surr: DIBROMOFLUOROMETHANE	37	*	80-120	%REC	1	1/25/2021 22:20
Surr: TOLUENE-D8	99		80-120	%REC	1	1/25/2021 22:20
Ion Chromatography		EPA300.0			Prep Date: 1/22/2021	PrepBy: KJS
CHLORIDE	670		10	MG/L	50	1/22/2021 18:52
SULFATE	480		10	MG/L	10	1/22/2021 19:05
Total Recoverable Metals by 200.7		EPA200.7			Prep Date: 1/22/2021	PrepBy: TXS
CALCIUM	110		10	MG/L	10	1/26/2021 12:32
POTASSIUM	4500		100	MG/L	100	1/26/2021 12:54
MAGNESIUM	ND		10	MG/L	10	1/26/2021 12:32
SODIUM	1900		100	MG/L	100	1/26/2021 12:54
Total Dissolved Solids		SM2540C			Prep Date: 1/25/2021	PrepBy: LMC
TOTAL DISSOLVED SOLIDS	7300		1000	MG/L	1	1/27/2021

Client: Great Western Operating Company, LLC

Date: 30-Jan-21

Project: Raindance RD 20-362 HNX

Work Order: 2101345

Sample ID: 20-362 HNX F

Lab ID: 2101345-2

Legal Location:

Matrix: WATER

Collection Date: 1/20/2021 13:20

Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
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Dissolved Metals by 200.7**EPA200.7**

Prep Date: 1/22/2021

PrepBy: TXS

CALCIUM	110		10	MG/L	10	1/26/2021 12:36
POTASSIUM	4500		100	MG/L	100	1/26/2021 12:55
MAGNESIUM	ND		10	MG/L	10	1/26/2021 12:36
SODIUM	1900		100	MG/L	100	1/26/2021 12:55

Client: Great Western Operating Company, LLC
Project: Raindance RD 20-362 HNX
Sample ID: 20-362 HNX F
Legal Location:
Collection Date: 1/20/2021 13:20

Date: 30-Jan-21
Work Order: 2101345
Lab ID: 2101345-2
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: 1/30/2021 2:30:3

Client: Great Western Operating Company, LLC

QC BATCH REPORT

Work Order: 2101345

Project: Raindance RD 20-362 HNX

Batch ID: HC210128-61-1

Instrument ID: FUELS-1

Method: SW8015

LCS	Sample ID: HC210128-61				Units: MG/L		Analysis Date: 1/28/2021 08:24				
Client ID:	Run ID: HC210128-61A				Prep Date: 1/28/2021			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	0.457	0.1	0.5		91	80-120				20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.116		0.1		116	80-120					

LCSD	Sample ID: HC210128-61				Units: MG/L		Analysis Date: 1/28/2021 13:31				
Client ID:	Run ID: HC210128-61A				Prep Date: 1/28/2021			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	0.451	0.1	0.5		90	80-120		0.457	1	20	
Surr: 2,3,4-TRIFLUOROTOLUENE	0.116		0.1		116	80-120			0		

MB	Sample ID: HC210128-61	Units: MG/L	Analysis Date: 1/28/2021 08:48		
Client ID:	Run ID: HC210128-61A		Prep Date: 1/28/2021		DF: 1
Analyte	Result	ReportLimit	Qual		
GASOLINE RANGE ORGANICS	ND	0.1			
Surr: 2,3,4-TRIFLUOROTOLUENE	0.108		108	80-120	

The following samples were analyzed in this batch:

2101345-1

Client: Great Western Operating Company, LLC
Work Order: 2101345
Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **HC210128-82-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS		Sample ID: HC210128-82			Units: MG/L			Analysis Date: 1/28/2021 20:31				
Client ID:		Run ID: HC210128-81A			Prep Date: 1/28/2021			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	7.34	1.07	8.33		88	53-120				20		
Surr: O-TERPHENYL	1.73		1.67		104	69-120						

LCSD		Sample ID: HC210128-82			Units: MG/L			Analysis Date: 1/28/2021 20:52				
Client ID:		Run ID: HC210128-81A			Prep Date: 1/28/2021			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	7.03	1.07	8.33		84	53-120		7.34	4	20		
Surr: O-TERPHENYL	1.81		1.67		108	69-120			4			

MB		Sample ID: HC210128-82			Units: MG/L			Analysis Date: 1/28/2021 17:20				
Client ID:		Run ID: HC210128-81A			Prep Date: 1/28/2021			DF: 1				
Analyte	Result	ReportLimit									Qual	
Diesel Range Organics	ND	1.1										
Surr: O-TERPHENYL	1.57				94	69-120						

The following samples were analyzed in this batch:

2101345-1

Client: Great Western Operating Company, LLC
Work Order: 2101345
Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **HC210129-91-1** Instrument ID: **MEE-1** Method: **RSK175**

DUP		Sample ID: 2101345-1			Units: UG/L		Analysis Date: 1/29/2021 09:07				
Client ID: 20-362 HNX A through E, G			Run ID: HC210129-91A			Prep Date: 1/29/2021			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	103	1						120	15	25	
ETHANE	63.6	2						68	6	25	
PROPANE	41.7	1						39	7	25	

LCS	Sample ID: HC210129-91				Units: UG/L		Analysis Date: 1/29/2021 08:56				
Client ID:		Run ID: HC210129-91A				Prep Date: 1/29/2021			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				25	
ETHANE	279	2	267		104	70-120				25	
PROPANE	407	1	391		104	72-120				25	

LCSD	Sample ID: HC210129-91				Units: UG/L		Analysis Date: 1/29/2021 09:28				
Client ID:	Run ID: HC210129-91A				Prep Date: 1/29/2021			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	164	1	142		115	76-125		155	6	25	
ETHANE	297	2	267		111	70-120		279	6	25	
PROPANE	432	1	391		110	72-120		407	6	25	

MB		Sample ID: HC210129-91		Units: UG/L		Analysis Date: 1/29/2021 08:59	
Client ID:		Run ID: HC210129-91A		Prep Date: 1/29/2021		DF: 1	
Analyte		Result	ReportLimit			Qual	
METHANE		ND	1				
ETHANE		ND	2				
PROPANE		ND	1				

The following samples were analyzed in this batch:

2101345-1

Client: Great Western Operating Company, LLC
Work Order: 2101345
Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **IP210122-1-4** Instrument ID: **ICPTrace2** Method: **EPA200.7**

LCS	Sample ID: IP210122-1			Units: MG/L			Analysis Date: 1/26/2021 12:24				
Client ID:		Run ID: IT210126-1A9			Prep Date: 1/22/2021			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	38	1	40		95	85-115				20	
MAGNESIUM	39.2	1	40		98	85-115				20	
POTASSIUM	41.1	1	40		103	85-115				20	
SODIUM	39.3	1	40		98	85-115				20	

LCSD	Sample ID: IP210122-1				Units: MG/L		Analysis Date: 1/26/2021 12:25				
Client ID:	Run ID: IT210126-1A9				Prep Date: 1/22/2021				DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	38.1	1	40		95	85-115		38	0	20	
MAGNESIUM	39.5	1	40		99	85-115		39.2	1	20	
POTASSIUM	41.4	1	40		104	85-115		41.1	1	20	
SODIUM	39.6	1	40		99	85-115		39.3	1	20	

MB		Sample ID: FP210121-1		Units: MG/L		Analysis Date: 1/26/2021 12:22	
Client ID:		Run ID: IT210126-1A9		Prep Date: 1/22/2021		DF: 1	
Analyte		Result	ReportLimit	Qual			
CALCIUM		ND	1				
MAGNESIUM		ND	1				
POTASSIUM		ND	1				
SODIUM		ND	1				

MB		Sample ID: IP210122-1		Units: MG/L		Analysis Date: 1/26/2021 12:23	
Client ID:		Run ID: IT210126-1A9		Prep Date: 1/22/2021		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:

2101345-1 2101345-2

Client: Great Western Operating Company, LLC
 Work Order: 2101345
 Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **VL210125-3-4** Instrument ID: **HPV3** Method: **SW8260_25**

LCS		Sample ID: VL210125-3			Units: %REC		Analysis Date: 1/25/2021 12:22				
Client ID:		Run ID: VL210125-3A			Prep Date: 1/25/2021			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	22.6		25		91	80-120					
Surr: DIBROMOFLUOROMETHANE	26.1		25		104	80-120					
Surr: TOLUENE-D8	25.1		25		100	80-120					
BENZENE	9.25	1	10		92	80-120				20	
TOLUENE	9.24	1	10		92	80-120				20	
ETHYLBENZENE	9.62	1	10		96	80-120				20	
M+P-XYLENE	19.9	1	20		100	80-120				20	
O-XYLENE	9.66	1	10		97	80-120				20	

LCSD		Sample ID: VL210125-3			Units: %REC		Analysis Date: 1/25/2021 12:46				
Client ID:		Run ID: VL210125-3A			Prep Date: 1/25/2021			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	22.8		25		91	80-120			1		
Surr: DIBROMOFLUOROMETHANE	25.9		25		104	80-120			1		
Surr: TOLUENE-D8	25.2		25		101	80-120			0		
BENZENE	9.01	1	10		90	80-120		9.25	3	20	
TOLUENE	8.74	1	10		87	80-120		9.24	6	20	
ETHYLBENZENE	9.23	1	10		92	80-120		9.62	4	20	
M+P-XYLENE	18.9	1	20		94	80-120		19.9	6	20	
O-XYLENE	9.33	1	10		93	80-120		9.66	3	20	

MB		Sample ID: VL210125-3		Units: %REC		Analysis Date: 1/25/2021 13:59	
Client ID:		Run ID: VL210125-3A		Prep Date: 1/25/2021		DF: 1	
Analyte	Result	ReportLimit					Qual
Surr: 4-BROMOFLUOROBENZENE	22.9		92	80-120			
Surr: DIBROMOFLUOROMETHANE	25.9		104	80-120			
Surr: TOLUENE-D8	25.2		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:

2101345-1

Client: Great Western Operating Company, LLC
Work Order: 2101345
Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **AK210122-1-3** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK210122-1			Units: MG/L		Analysis Date: 1/22/2021				
Client ID:		Run ID: AK210122-1a1					Prep Date: 1/22/2021			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	97.5	5	100		97	85-115				15	

LCSD		Sample ID: AK210122-1			Units: MG/L		Analysis Date: 1/22/2021				
Client ID:		Run ID: AK210122-1a1			Prep Date: 1/22/2021			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	98.5	5	100		98	85-115		97.5	1	15	

MB		Sample ID: AK210122-1		Units: MG/L		Analysis Date: 1/22/2021	
Client ID:		Run ID: AK210122-1a1		Prep Date: 1/22/2021		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:

2101345-1

Client: Great Western Operating Company, LLC
 Work Order: 2101345
 Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **IC210122-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS	Sample ID: IC210122-1				Units: MG/L		Analysis Date: 1/22/2021 07:45				
Client ID:		Run ID: IC210122-1a1				Prep Date: 1/22/2021			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.95	0.2	10		100	90-110				15	
SULFATE	49.6	1	50		99	90-110				15	

LCSD	Sample ID: IC210122-1			Units: MG/L			Analysis Date: 1/22/2021 10:23				
Client ID:	Run ID: IC210122-1a1			Prep Date: 1/22/2021			DF: 1				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.94	0.2	10		99	90-110		9.95	0	15	
SULFATE	49.6	1	50		99	90-110		49.6	0	15	

MB		Sample ID: IC210122-1		Units: MG/L		Analysis Date: 1/22/2021 07:58	
Client ID:		Run ID: IC210122-1a1		Prep Date: 1/22/2021		DF: 1	
Analyte		Result	ReportLimit	Qual			
CHLORIDE		ND	0.2				
SULFATE		ND	1				

The following samples were analyzed in this batch:

2101345-1

Client: Great Western Operating Company, LLC
Work Order: 2101345
Project: Raindance RD 20-362 HNX

QC BATCH REPORT

Batch ID: **TD210125-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS	Sample ID: TD210125-1			Units: MG/L			Analysis Date: 1/27/2021				
Client ID:	Run ID: TD210127-1A1			Prep Date: 1/25/2021			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	358	20	400		89	85-115				14	

LCSD		Sample ID: TD210125-1			Units: MG/L		Analysis Date: 1/27/2021				
Client ID:		Run ID: TD210127-1A1			Prep Date: 1/25/2021			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	395	20	400		99	85-115		358	10	14	

MB		Sample ID: TD210125-1			Units: MG/L		Analysis Date: 1/27/2021			
Client ID:		Run ID: TD210127-1A1			Prep Date: 1/25/2021			DF: 1		
Analyte		Result	ReportLimit							Qual
TOTAL DISSOLVED SOLIDS		ND	20							

The following samples were analyzed in this batch:

2101345-1