



Monday, June 20, 2022

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

Re: ALS Workorder: 2206026  
Project Name: Ivey LL 26-363HN BH  
Project Number:

Dear Mr. Trehus:

One waste liquid sample and two water samples were received from Great Western Operating Company, LLC, on 6/2/2022. The sample was 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

	<h1>Accreditations</h1>	Effective June 7, 2022
		ALS   Environmental – Fort Collins

**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
Arizona	AZ0828
California (CA)	2926
Colorado (CO)	CO01099
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
Oklahoma	1301
Louisiana	197538
Maryland (MD)	285
PJLA (DoD ELAP/ISO 170250)	95377
PJLA (DOE-AP/ISO 17025)	95377
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
Virginia	460305

**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.



## 2206026

### **GC/MS Volatiles:**

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

This sample contained 2 separate phases. The upper phase (90% of the sample) which was not miscible in water and a lower phase (10% of the sample). Since the upper phase comprised the majority of the sample volume, it was analyzed by methanol extraction.

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.

### **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 surrogate recoveries were within acceptance criteria with the following exception:

Surrogate	Sample	Direction
O-terphenyl	-1	High

The high surrogate recovery is due to matrix interferences. No further action was taken.



All remaining acceptance criteria were met.

**Metals:**

The sample was 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. Due to the matrix of the sample, the dissolved metals analysis could not be performed.

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

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**OrderNum:** 2206026

**Client Name:** PDC Energy

**Client Project Name:** Ivey LL 26-363HN BH

**Client Project Number:**

**Client PO Number:**

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
26-363HN A	2206026-1		WATER	01-Jun-22	15:50
26-363HN B	2206026-2		WATER	01-Jun-22	15:50
26-363HN A	2206026-3		WLIQUID	01-Jun-22	15:50



## Chain-of-Custody

Form 202-r8

**WORKORDER #**

2206028

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

**For metals or anions, please detail analytes below.**

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Plaintiff	6/2/22	12:18
RECEIVED BY		Plaintiff	6/2/22	12:18
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				

<div> <div>QC PACKAGE (check below)</div> <div> <div>LEVEL II (Standard QC)</div> <div>LEVEL III (Std QC + forms)</div> <div>LEVEL IV (Std QC + forms + raw data)</div> </div> </div>	<div> <div>Facility ID: 44015</div> <div>-1.12</div> </div>								
Preservative Key:		1-HCl	2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 degrees C	9-5035



**ALS Environmental - Fort Collins**  
**CONDITION OF SAMPLE UPON RECEIPT FORM**

Client: PDC Energy Workorder No: 2206026  
 Project Manager: KMO Initials: CXT Date: 06/02/2022

	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*: #6	RAD ONLY	X
Cooler #: <u>1</u> Temperature (°C): <u>-1.1</u> # of custody seals on cooler: <u>0</u> External µR/hr reading: <u>NA</u> Background µR/hr reading: <u>11</u> Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <u>NA</u> (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.

Sample 1 bottle 14 received at pH 7; added .75ml of concentrated HNO3 lot# 288568; final pH <2

Bottles not frozen

Were unpreserved bottles pH checked? NA All client bottle ID's vs ALS lab ID's double-checked by: CT  
 If applicable, was the client contacted? YES / NO / NA Contact: Margaret G. O'Brien Date/Time: 6/03/22  
 Project Manager Signature / Date: \_\_\_\_\_

## ALS -- Fort Collins

## SAMPLE SUMMARY REPORT

Client: PDC Energy  
 Project: Ivey LL 26-363HN BH  
 Sample ID: 26-363HN A  
 Legal Location:  
 Collection Date: 6/1/2022 15:50

Date: 20-Jun-22  
 Work Order: 2206026  
 Lab ID: 2206026-1  
 Matrix: WATER  
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>Alkalinity as Calcium Carbonate</b>			<b>SM2320B</b>		Prep Date: <b>6/8/2022</b>	PrepBy: <b>KRL</b>
BICARBONATE AS CaCO3	1100		20	MG/L	1	6/9/2022
CARBONATE AS CaCO3	ND		20	MG/L	1	6/9/2022
TOTAL ALKALINITY AS CaCO3	1100		20	MG/L	1	6/9/2022
<b>Diesel Range Organics</b>			<b>SW8015M</b>		Prep Date: <b>6/6/2022</b>	PrepBy: <b>JRS</b>
Diesel Range Organics	33000		1200	MG/L	1000	6/7/2022 13:40
Surr: O-TERPHENYL	1024	*	69-120	%REC	1000	6/7/2022 13:40
<b>Dissolved Gasses</b>			<b>RSK175</b>		Prep Date: <b>6/15/2022</b>	PrepBy: <b>JRS</b>
METHANE	9400		2	UG/L	1	6/16/2022 12:13
ETHANE	390		4	UG/L	1	6/16/2022 12:13
PROPANE	150		6	UG/L	1	6/16/2022 12:13
<b>Gasoline Range Organics</b>			<b>SW8015</b>		Prep Date: <b>6/8/2022</b>	PrepBy: <b>JRS</b>
GASOLINE RANGE ORGANICS	19000		500	MG/L	5000	6/9/2022 10:00
Surr: 2,3,4-TRIFLUOROTOLUENE	103		80-120	%REC	5000	6/9/2022 10:00
<b>Ion Chromatography</b>			<b>EPA300.0</b>		Prep Date: <b>6/8/2022</b>	PrepBy: <b>AOW</b>
CHLORIDE	3400		50	MG/L	250	6/8/2022 13:56
SULFATE	ND		100	MG/L	100	6/8/2022 12:50
<b>Total Recoverable Metals by 200.7</b>			<b>EPA200.7</b>		Prep Date: <b>6/8/2022</b>	PrepBy: <b>ETC</b>
CALCIUM	870		10	MG/L	1	6/9/2022 14:53
POTASSIUM	240		10	MG/L	1	6/9/2022 14:53
MAGNESIUM	31		10	MG/L	1	6/9/2022 14:53
SODIUM	1200		10	MG/L	1	6/9/2022 14:53
<b>Total Dissolved Solids</b>			<b>SM2540C</b>		Prep Date: <b>6/8/2022</b>	PrepBy: <b>AOW</b>
TOTAL DISSOLVED SOLIDS	10000		80	MG/L	1	6/10/2022



**Client:** PDC Energy  
**Project:** Ivey LL 26-363HN BH  
**Sample ID:** 26-363HN A  
**Legal Location:**  
**Collection Date:** 6/1/2022 15:50

**Date:** 20-Jun-22  
**Work Order:** 2206026  
**Lab ID:** 2206026-3  
**Matrix:** WLIQUID  
**Percent Moisture:**

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
<b>GC/MS Volatiles</b>		<b>SW8260_25</b>		Prep Date: <b>6/13/2022</b>		PrepBy: <b>TWK</b>
<b>BENZENE</b>	<b>20000</b>		<b>10000</b>	<b>UG/KG</b>	2000	6/14/2022 01:56
<b>TOLUENE</b>	<b>220000</b>		<b>10000</b>	<b>UG/KG</b>	2000	6/14/2022 01:56
<b>ETHYLBENZENE</b>	<b>330000</b>		<b>10000</b>	<b>UG/KG</b>	2000	6/14/2022 01:56
<b>M+P-XYLENE</b>	<b>440000</b>		<b>10000</b>	<b>UG/KG</b>	2000	6/14/2022 01:56
<b>O-XYLENE</b>	<b>200000</b>		<b>10000</b>	<b>UG/KG</b>	2000	6/14/2022 01:56
<b>TOTAL XYLENES</b>	<b>650000</b>		<b>1</b>	<b>UG/KG</b>	1	6/14/2022 01:56
<i>Surr: 4-BROMOFLUOROBENZENE</i>	<i>103</i>		<i>78-129</i>	<i>%REC</i>	2000	6/14/2022 01:56
<i>Surr: DIBROMOFLUOROMETHANE</i>	<i>96</i>		<i>80-124</i>	<i>%REC</i>	2000	6/14/2022 01:56
<i>Surr: TOLUENE-D8</i>	<i>100</i>		<i>81-119</i>	<i>%REC</i>	2000	6/14/2022 01:56

**Client:** PDC Energy  
**Project:** Ivey LL 26-363HN BH  
**Sample ID:** 26-363HN A  
**Legal Location:**  
**Collection Date:** 6/1/2022 15:50

**Date:** 20-Jun-22  
**Work Order:** 2206026  
**Lab ID:** 2206026-3  
**Matrix:** WLIQUID  
**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

Client: PDC Energy  
Work Order: 2206026  
Project: Ivey LL 26-363HN BH

Date: 6/20/2022 9:05:2

## QC BATCH REPORT

Batch ID: **HC220606-82-1** Instrument ID: **FUELS-1** Method: **SW8015M**

<b>LCS</b>	Sample ID: <b>HC220606-82</b>			Units: <b>MG/L</b>			Analysis Date: <b>6/6/2022 17:45</b>					
Client ID:	Run ID: <b>HC220607-81A</b>			Prep Date: <b>6/6/2022</b>			DF: <b>1</b>					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	8.73	1.07	8.33		105	53-120				20		
Surr: O-TERPHENYL	1.64		1.67		98	69-120						

<b>LCSD</b>	Sample ID: <b>HC220606-82</b>			Units: <b>MG/L</b>			Analysis Date: <b>6/6/2022 18:06</b>					
Client ID:	Run ID: <b>HC220607-81A</b>			Prep Date: <b>6/6/2022</b>			DF: <b>1</b>					
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
Diesel Range Organics	9.17	1.07	8.33		110	53-120		8.73	5	20		
Surr: O-TERPHENYL	1.63		1.67		98	69-120			1			

MB	Sample ID: <b>HC220606-82</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/6/2022 17:23</b>			
Client ID:		Run ID: <b>HC220607-81A</b>				Prep Date: <b>6/6/2022</b>		DF: <b>1</b>		
Analyte		Result	ReportLimit						Qual	
Diesel Range Organics		ND	1.1							
Surr: O-TERPHENYL		1.61			97	69-120				

The following samples were analyzed in this batch:

2206026-1

Client: PDC Energy  
Work Order: 2206026  
Project: Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **HC220608-61-1** Instrument ID: **FUELS-1** Method: **SW8015**

<b>LCS</b>		Sample ID: <b>HC220608-61</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/8/2022 15:36</b>				
Client ID:		Run ID: <b>HC220608-61A</b>				Prep Date: <b>6/8/2022</b>				DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
GASOLINE RANGE ORGANICS	0.445	0.1	0.5		89	80-120				20		
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0968		0.1		97	80-120						

<b>LCSD</b>		Sample ID: <b>HC220608-61</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/8/2022 15:51</b>				
Client ID:		Run ID: <b>HC220608-61A</b>				Prep Date: <b>6/8/2022</b>				DF: <b>1</b>		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual	
GASOLINE RANGE ORGANICS	0.465	0.1	0.5		93	80-120		0.445	4	20		
Surr: 2,3,4-TRIFLUOROTOLUENE	0.0964		0.1		96	80-120			0			

MB		Sample ID: <b>HC220608-61</b>				Units: <b>MG/L</b>		Analysis Date: <b>6/8/2022 16:07</b>	
Client ID:		Run ID: <b>HC220608-61A</b>				Prep Date: <b>6/8/2022</b>		DF: <b>1</b>	
Analyte		Result	ReportLimit		Qual				
GASOLINE RANGE ORGANICS		ND	0.1						
Surr: 2,3,4-TRIFLUOROTOLUENE		0.097			97	80-120			

The following samples were analyzed in this batch:

2206026-1

Client: PDC Energy  
Work Order: 2206026  
Project: Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **HC220615-61-1** Instrument ID: **MEE-1** Method: **RSK175**

**LCS** Sample ID: **HC220615-61** Units: **UG/L** Analysis Date: **6/15/2022 16:25**

Client ID: Run ID: **HC220615-91A** Prep Date: **6/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	155	2	142		109	76-125				25	
ETHANE	291	4	267		109	70-120				25	
PROPANE	426	6	391		109	72-120				25	

**LCSD** Sample ID: **HC220615-61** Units: **UG/L** Analysis Date: **6/15/2022 17:04**

Client ID: Run ID: **HC220615-91A** Prep Date: **6/15/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	155	2	142		109	76-125		155	0	25	
ETHANE	292	4	267		109	70-120		291	0	25	
PROPANE	423	6	391		108	72-120		426	1	25	

**MB** Sample ID: **HC220615-61** Units: **UG/L** Analysis Date: **6/15/2022 16:29**

Client ID: Run ID: **HC220615-91A** Prep Date: **6/15/2022** DF: **1**

Analyte	Result	ReportLimit	Qual
METHANE	ND	2	
ETHANE	ND	4	
PROPANE	ND	6	

The following samples were analyzed in this batch:

2206026-1

Client: PDC Energy  
Work Order: 2206026  
Project: Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **IP220608-7-2** Instrument ID: **ICP5900** Method: **EPA200.7**

LCS	Sample ID: IP220608-7				Units: MG/L		Analysis Date: 6/9/2022 14:38				
Client ID:		Run ID: IT220609-1A3				Prep Date: 6/8/2022			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	38.8	1	40		97	85-115				20	
MAGNESIUM	38.5	1	40		96	85-115				20	
POTASSIUM	39.5	1	40		99	85-115				20	
SODIUM	39	1	40		98	85-115				20	

LCSD		Sample ID: IP220608-7				Units: MG/L		Analysis Date: 6/9/2022 14:39			
Client ID:		Run ID: IT220609-1A3				Prep Date: 6/8/2022		DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	39.1	1	40		98	85-115		38.8	1	20	
MAGNESIUM	38.6	1	40		97	85-115		38.5	0	20	
POTASSIUM	39.7	1	40		99	85-115		39.5	0	20	
SODIUM	39.4	1	40		98	85-115		39	1	20	

MB		Sample ID: IP220608-7		Units: MG/L		Analysis Date: 6/9/2022 14:34	
Client ID:		Run ID: IT220609-1A3		Prep Date: 6/8/2022		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:

2206026-1

Client: PDC Energy  
Work Order: 2206026  
Project: Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: VL220613-3-2 Instrument ID: HPV3 Method: SW8260\_25

LCS		Sample ID: VL220613-3			Units: %REC		Analysis Date: 6/13/2022 16:55				
Client ID:		Run ID: VL220613-3A			Prep Date: 6/13/2022			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	25.5		25		102	80-120					
Surr: DIBROMOFLUOROMETHANE	25.3		25		101	80-120					
Surr: TOLUENE-D8	25.2		25		101	80-120					
BENZENE	10.1	1	10		101	80-120				20	
TOLUENE	10.2	1	10		102	80-120				20	
ETHYLBENZENE	10.1	1	10		101	80-120				20	
M+P-XYLENE	20.7	1	20		104	80-120				20	
O-XYLENE	10	1	10		100	80-120				20	

LCSD		Sample ID: VL220613-3			Units: %REC		Analysis Date: 6/13/2022 17:18				
Client ID:		Run ID: VL220613-3A			Prep Date: 6/13/2022			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	25		25		100	80-120			2		
Surr: DIBROMOFLUOROMETHANE	25.8		25		103	80-120			2		
Surr: TOLUENE-D8	25.3		25		101	80-120			0		
BENZENE	9.91	1	10		99	80-120		10.1	2	20	
TOLUENE	9.93	1	10		99	80-120		10.2	2	20	
ETHYLBENZENE	9.86	1	10		99	80-120		10.1	3	20	
M+P-XYLENE	20.1	1	20		101	80-120		20.7	3	20	
O-XYLENE	9.99	1	10		100	80-120		10	0	20	

MB		Sample ID: VL220613-3		Units: %REC		Analysis Date: 6/13/2022 18:07	
Client ID:		Run ID: VL220613-3A		Prep Date: 6/13/2022		DF: 1	
Analyte		Result	ReportLimit			Qual	
Surr: 4-BROMOFLUOROBENZENE		24.9		99	80-120		
Surr: DIBROMOFLUOROMETHANE		24.9		100	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				

**Client:** PDC Energy  
**Work Order:** 2206026  
**Project:** Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **VL220613-3-2** Instrument ID: **HPV3** Method: **SW8260\_25**

**MB** Sample ID: **VL220613-3M** Units: **%REC** Analysis Date: **6/13/2022 20:26**  
Client ID: Run ID: **VL220613-3A** Prep Date: **6/13/2022** DF: **50**

Analyte	Result	ReportLimit	Qual
Surr: 4-BROMOFLUOROBENZENE	1280	102	80-120
Surr: DIBROMOFLUOROMETHANE	1220	98	80-120
Surr: TOLUENE-D8	1200	96	80-120
BENZENE	ND	50	
TOLUENE	ND	50	
ETHYLBENZENE	ND	50	
M+P-XYLENE	ND	50	
O-XYLENE	ND	50	
TOTAL XYLENES	ND	1	

The following samples were analyzed in this batch:

2206026-3



**Client:** PDC Energy  
**Work Order:** 2206026  
**Project:** Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **AK220609-1-1** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK220609-1				Units: MG/L		Analysis Date: 6/9/2022			
Client ID:		Run ID: AK220609-1A1				Prep Date: 6/8/2022		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	102	5	100		102	85-115				15	

MB		Sample ID: AK220609-1		Units: MG/L		Analysis Date: 6/9/2022	
Client ID:		Run ID: AK220609-1A1		Prep Date: 6/8/2022		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:

2206026-1

**Client:** PDC Energy  
**Work Order:** 2206026  
**Project:** Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **IC220608-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS	Sample ID: IC220608-1				Units: MG/L		Analysis Date: 6/8/2022 11:05				
Client ID:	Run ID: IC220608-1A1				Prep Date: 6/8/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.71	0.2	10		97	90-110				15	
SULFATE	47.9	1	50		96	90-110				15	

LCSD		Sample ID: IC220608-1				Units: MG/L		Analysis Date: 6/8/2022 12:19			
Client ID:		Run ID: IC220608-1A1				Prep Date: 6/8/2022			DF: 1		
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	10.6	0.2	10		106	90-110		9.71	9	15	
SULFATE	52.6	1	50		105	90-110		47.9	9	15	

MB		Sample ID: IC220608-1		Units: MG/L		Analysis Date: 6/8/2022 11:13	
Client ID:		Run ID: IC220608-1A1		Prep Date: 6/8/2022		DF: 1	
Analyte		Result	ReportLimit	Qual			
CHLORIDE		ND	0.2				
SULFATE		ND	1				

The following samples were analyzed in this batch:

2206026-1

**Client:** PDC Energy  
**Work Order:** 2206026  
**Project:** Ivey LL 26-363HN BH

## QC BATCH REPORT

Batch ID: **TD220608-1-1** Instrument ID: **Balance** Method: **SM2540C**

LCS	Sample ID: <b>TD220608-1</b>			Units: <b>MG/L</b>		Analysis Date: <b>6/10/2022</b>					
Client ID:	Run ID: <b>TD220610-1A1</b>			Prep Date: <b>6/8/2022</b>			DF: <b>1</b>				
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
TOTAL DISSOLVED SOLIDS	416	20	400		104	85-115				14	

LCSD		Sample ID: TD220608-1			Units: MG/L		Analysis Date: 6/10/2022				
Client ID:		Run ID: TD220610-1A1			Prep Date: 6/8/2022			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	423	20	400		106	85-115		416	2	14	

MB		Sample ID: TD220608-1			Units: MG/L		Analysis Date: 6/10/2022		
Client ID:		Run ID: TD220610-1A1			Prep Date: 6/8/2022			DF: 1	
Analyte		Result	ReportLimit		Qual				
TOTAL DISSOLVED SOLIDS		ND	20						

The following samples were analyzed in this batch:

2206026-1