



Tuesday, July 26, 2022

Jenifer Hakkarinen
PDC Energy
1775 Sherman Street #3000
Denver, CO 80203

Re: ALS Workorder: 2207304
Project Name: Brown 23P-221
Project Number: 09A2073010

Dear Ms. Hakkarinen:

One water sample was received from PDC Energy, on 7/14/2022. The sample was scheduled for the following analyses:

Dissolved Gasses

GC/MS Volatiles

Inorganics

Metals

Total Extractable Petroleum Hydrocarbons (Diesel)

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,

Margaret G. O'Brien

For
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.



2207304

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.

Metals:

The sample was 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.

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: 2207304

Client Name: PDC Energy

Client Project Name: Brown 23P-221

Client Project Number: 09A2073010

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Brown 23P-221	2207304-1		WATER	14-Jul-22	11:50



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

WORKORDER	2207304
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Jeff Braden

PROJECT NAME		Brown 23P-221		SAMPLER		Jeff Braden		DATE		7/14/22		PAGE		1 of 1	
PROJECT No.		09A2073010		FACILITY ID		123-42657		TURNAROUND		Standard		DISPOSAL		By Lab or Return to Client	
COMPANY NAME		PDC Energy		EDD FORMAT		COGCC EDD, LTE		Dissolved Methane, Ethane, Propane		Total Dissolved Solids					
SEND REPORT TO		Jennifer Hakkarinen		PURCHASE ORDER		N/A		TPH DRO		Total Anions - see comments					
ADDRESS		1775 Sherman Street, Suite 3000		BILL TO COMPANY		PDC Energy		Alkalinity, Carbonate, Bicarbonate, Total		Total Cations - see comments					
CITY / STATE / ZIP		Denver, Colorado 80203		INVOICE ATTN TO		Jennifer Hakkarinen		BTEX & TPH GRO		EPA200.7/200.8					
PHONE		303.860.5815		ADDRESS		1775 Sherman Street, Suite 3000		SW8260_26		EPA300.0					
FAX				CITY / STATE / ZIP		Denver, Colorado 80203		SK 175		SM2320B					
E-MAIL		jenifer.hakkarinen@pdce.com		PHONE		303.860.5815		Matrix		SW8015M					
		jessica.johannsen@pdce.com		FAX				Sample Date		SW8260_26					
		jbraden@ensolum.com		E-MAIL		jenifer.hakkarinen@pdce.com		Sample Time		EPA200.7/200.8					
Lab ID		Brown 23P-221		Field ID				Pres.		Total Dissolved Solids					
				Matrix		W		# Bottles		Total Anions - see comments					
						7/14/22		1150		Total Cations - see comments					
										Total Anions - see comments					
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*Time Zone (Circle): EST CST MST PST Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

For metals or anions, please detail analytes below.		Comments:		Cations/Anions:		QC PACKAGE (check below)	
Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate Samples analyzed per 6 2.00		Comments: Cations/Anions:		Level I (Standard OC) Level II (Std OC + forms) Level III (Std OC + forms + raw data)		<input type="checkbox"/> LEVEL I (Standard OC)	
						<input type="checkbox"/> LEVEL II (Std OC + forms)	
						<input type="checkbox"/> LEVEL III (Std OC + forms + raw data)	
						<input type="checkbox"/>	
Samples analyzed per 6 2.00		Comments: Cations/Anions:		Level I (Standard OC) Level II (Std OC + forms) Level III (Std OC + forms + raw data)		<input type="checkbox"/> LEVEL I (Standard OC)	
Samples analyzed per 6 2.00		Comments: Cations/Anions:		Level I (Standard OC) Level II (Std OC + forms) Level III (Std OC + forms + raw data)		<input type="checkbox"/> LEVEL II (Std OC + forms)	
Samples analyzed per 6 2.00		Comments: Cations/Anions:		Level I (Standard OC) Level II (Std OC + forms) Level III (Std OC + forms + raw data)		<input type="checkbox"/> LEVEL III (Std OC + forms + raw data)	
Samples analyzed per 6 2.00		Comments: Cations/Anions:		Level I (Standard OC) Level II (Std OC + forms) Level III (Std OC + forms + raw data)		<input type="checkbox"/>	

Preservative Key:		1-HCl	2-HNO3	3-H2SO4	4-NaOH	5-NaHSO4	7-Other	8-4 degrees C	9-5035

RELINQUISHED BY	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	Jeff Braden	7/14/20	
RECEIVED BY	<i>[Signature]</i>	Amy Kepner		1320
RELINQUISHED BY				
RECEIVED BY				
RELINQUISHED BY				
RECEIVED BY				



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: PDC Workorder No: 2207304
 Project Manager: KMO Initials: AXK Date: 07/13/2022

		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, Sample Handling Guidelines)		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>2.0</u> # of custody seals on cooler: <u>0</u> External µR/hr reading: <u>-</u> Background µR/hr reading: <u>12</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.

Bottle 11 had initial pH of 6; added 0.5ml HNO3 lot 288568 to achieve pH <2.

Bottles 3 & 9 have headspace

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

If applicable, was the client contacted? YES / NO / NA Contact: Margaret G. Brown Date/Time: 7/15/22

Project Manager Signature / Date: Margaret G. Brown

7/15/22

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SAMPLE SUMMARY REPORT

Client: PDC Energy
 Project: 09A2073010 Brown 23P-221
 Sample ID: Brown 23P-221
 Legal Location:
 Collection Date: 7/14/2022 11:50

Date: 26-Jul-22
 Work Order: 2207304
 Lab ID: 2207304-1
 Matrix: WATER
 Percent Moisture:

Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
Alkalinity as Calcium Carbonate		SM2320B			Prep Date: 7/21/2022	PrepBy: AOW
TOTAL ALKALINITY AS CaCO3	2900		20	MG/L	1	7/21/2022
BICARBONATE AS CaCO3	ND		20	MG/L	1	7/21/2022
CARBONATE AS CaCO3	1100		20	MG/L	1	7/21/2022
Diesel Range Organics		SW8015M			Prep Date: 7/19/2022	PrepBy: JRS
Diesel Range Organics	15		0.99	MG/L	1	7/22/2022 07:28
Surr: O-TERPHENYL	87		69-120	%REC	1	7/22/2022 07:28
Dissolved Gasses		RSK175			Prep Date: 7/20/2022	PrepBy: JRS
METHANE	10000		6	UG/L	3	7/22/2022 16:18
ETHANE	2900		12	UG/L	3	7/22/2022 16:18
PROPANE	1600		18	UG/L	3	7/22/2022 16:18
GC/MS Volatiles		SW8260_25			Prep Date: 7/20/2022	PrepBy: TWK
BENZENE	1300		50	UG/L	50	7/20/2022 21:55
TOLUENE	2200		50	UG/L	50	7/20/2022 21:55
ETHYLBENZENE	40	J	50	UG/L	50	7/20/2022 21:55
M+P-XYLENE	460		50	UG/L	50	7/20/2022 21:55
O-XYLENE	160		50	UG/L	50	7/20/2022 21:55
TOTAL XYLENES	620		1	UG/L	1	7/20/2022 21:55
Surr: 4-BROMOFLUOROBENZENE	104		80-120	%REC	50	7/20/2022 21:55
Surr: DIBROMOFLUOROMETHANE	90		80-120	%REC	50	7/20/2022 21:55
Surr: TOLUENE-D8	103		80-120	%REC	50	7/20/2022 21:55
GASOLINE RANGE ORGANICS	15000		5000	UG/L	50	7/20/2022 21:55
Ion Chromatography		EPA300.0			Prep Date: 7/19/2022	PrepBy: AOW
CHLORIDE	1700		50	MG/L	250	7/19/2022 12:40
SULFATE	1300		250	MG/L	250	7/19/2022 12:40
Total Recoverable Metals by 200.8		EPA200.8			Prep Date: 7/18/2022	PrepBy: ETC
CALCIUM	17		1	MG/L	10	7/19/2022 18:23
MAGNESIUM	ND		0.1	MG/L	10	7/19/2022 18:23
POTASSIUM	800		1	MG/L	10	7/19/2022 18:23
SODIUM	2700		1	MG/L	10	7/19/2022 18:23
Total Dissolved Solids		SM2540C			Prep Date: 7/19/2022	PrepBy: AOW
TOTAL DISSOLVED SOLIDS	9300		400	MG/L	1	7/21/2022

Client: PDC Energy
Project: 09A2073010 Brown 23P-221
Sample ID: Brown 23P-221
Legal Location:
Collection Date: 7/14/2022 11:50

Date: 26-Jul-22
Work Order: 2207304
Lab ID: 2207304-1
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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Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

Date: 7/26/2022 12:45:

QC BATCH REPORT

Batch ID: **HC220719-81-1** Instrument ID: **FUELS-1** Method: **SW8015M**

LCS Sample ID: **HC220719-81** Units: **MG/L** Analysis Date: **7/22/2022 01:48**

Client ID: Run ID: **HC220722-82A** Prep Date: **7/19/2022** 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	7.39	1.07	8.33		89	53-120				20	
Surr: O-TERPHENYL	1.87		1.67		112	69-120					

LCSD Sample ID: **HC220719-81** Units: **MG/L** Analysis Date: **7/22/2022 02:09**

Client ID: Run ID: **HC220722-82A** Prep Date: **7/19/2022** 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	8.12	1.07	8.33		97	53-120		7.39	9	20	
Surr: O-TERPHENYL	1.71		1.67		103	69-120			9		

MB Sample ID: **HC220719-81** Units: **MG/L** Analysis Date: **7/22/2022 01:27**

Client ID: Run ID: **HC220722-82A** Prep Date: **7/19/2022** 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	ND	1.1									
Surr: O-TERPHENYL	1.51				91	69-120					

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **HC220720-91-2** Instrument ID: **MEE-1** Method: **RSK175**

LCS Sample ID: **HC220720-91** Units: **UG/L** Analysis Date: **7/22/2022 14:29**

Client ID: Run ID: **HC220725-91A** Prep Date: **7/20/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	152	2	142		107	76-125				25	
ETHANE	288	4	267		108	70-120				25	
PROPANE	426	6	391		109	72-120				25	

LCSD Sample ID: **HC220720-91** Units: **UG/L** Analysis Date: **7/22/2022 15:20**

Client ID: Run ID: **HC220725-91A** Prep Date: **7/20/2022** DF: **1**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
METHANE	156	2	142		110	76-125		152	3	25	
ETHANE	292	4	267		110	70-120		288	2	25	
PROPANE	430	6	391		110	72-120		426	1	25	

MB Sample ID: **HC220720-91** Units: **UG/L** Analysis Date: **7/22/2022 14:32**

Client ID: Run ID: **HC220725-91A** Prep Date: **7/20/2022** DF: **1**

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

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **IP220718-1-1** Instrument ID: **ICPMS2** Method: **EPA200.8**

LCS Sample ID: **IM220718-1** Units: **MG/L** Analysis Date: **7/19/2022 17:56**

Client ID: Run ID: **IM220719-10A10** Prep Date: **7/18/2022** DF: **10**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	10.4	1	10		104	85-115				20	
MAGNESIUM	9.48	0.1	10		95	85-115				20	
POTASSIUM	4.52	1	5		90	85-115				20	
SODIUM	9.86	1	10		99	85-115				20	

LCSD Sample ID: **IM220718-1** Units: **MG/L** Analysis Date: **7/19/2022 18:02**

Client ID: Run ID: **IM220719-10A10** Prep Date: **7/18/2022** DF: **10**

Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CALCIUM	10.4	1	10		104	85-115		10.4	0	20	
MAGNESIUM	9.63	0.1	10		96	85-115		9.48	2	20	
POTASSIUM	4.65	1	5		93	85-115		4.52	3	20	
SODIUM	9.92	1	10		99	85-115		9.86	1	20	

MB Sample ID: **IP220718-1** Units: **MG/L** Analysis Date: **7/19/2022 17:53**

Client ID: Run ID: **IM220719-10A10** Prep Date: **7/18/2022** DF: **10**

Analyte	Result	ReportLimit	Qual
CALCIUM	ND	1	
MAGNESIUM	ND	0.1	
POTASSIUM	ND	1	
SODIUM	ND	1	

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **VL220720-4-1** Instrument ID: **HPV4** Method: **SW8260_25**

LCS		Sample ID: VL220720-44			Units: UG/L			Analysis Date: 7/20/2022 10:31				
Client ID:		Run ID: VL220720-4A			Prep Date: 7/20/2022			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	861	100	1000		86	75-121				20		

LCSD		Sample ID: VL220720-44			Units: UG/L			Analysis Date: 7/20/2022 10:51				
Client ID:		Run ID: VL220720-4A			Prep Date: 7/20/2022			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	881	100	1000		88	75-121		861	2	20		

MB		Sample ID: VL220720-4			Units: UG/L		Analysis Date: 7/20/2022 13:52		
Client ID:		Run ID: VL220720-4A			Prep Date: 7/20/2022			DF: 1	
Analyte		Result	ReportLimit		Qual				
GASOLINE RANGE ORGANICS		ND	100						

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **VL220720-4-2** Instrument ID: **HPV4** Method: **SW8260_25**

LCS		Sample ID: VL220720-4			Units: %REC		Analysis Date: 7/20/2022 11:32					
Client ID:		Run ID: VL220720-4A			Prep Date: 7/20/2022		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	24.6		25		99	80-120						
Surr: DIBROMOFLUOROMETHANE	24.5		25		98	80-120						
Surr: TOLUENE-D8	25.2		25		101	80-120						
BENZENE	10.3	1	10		103	80-120				20		
TOLUENE	10.6	1	10		106	80-120				20		
ETHYLBENZENE	10.6	1	10		106	80-120				20		
M+P-XYLENE	21.4	1	20		107	80-120				20		
O-XYLENE	10.6	1	10		106	80-120				20		

LCSD		Sample ID: VL220720-4			Units: %REC		Analysis Date: 7/20/2022 11:53					
Client ID:		Run ID: VL220720-4A			Prep Date: 7/20/2022		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	24.8		25		99	80-120			0			
Surr: DIBROMOFLUOROMETHANE	24.6		25		98	80-120			0			
Surr: TOLUENE-D8	25.2		25		101	80-120			0			
BENZENE	9.81	1	10		98	80-120		10.3	5	20		
TOLUENE	9.96	1	10		100	80-120		10.6	6	20		
ETHYLBENZENE	10	1	10		100	80-120		10.6	6	20		
M+P-XYLENE	20.1	1	20		101	80-120		21.4	6	20		
O-XYLENE	10.1	1	10		101	80-120		10.6	5	20		

MB		Sample ID: VL220720-4		Units: %REC		Analysis Date: 7/20/2022 13:52	
Client ID:		Run ID: VL220720-4A		Prep Date: 7/20/2022		DF: 1	
Analyte		Result	ReportLimit			Qual	
Surr: 4-BROMOFLUOROBENZENE		27.4		110	80-120		
Surr: DIBROMOFLUOROMETHANE		25.2		101	80-120		
Surr: TOLUENE-D8		26.9		108	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:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **AK220721-2-2** Instrument ID: **NONE** Method: **SM2320B**

LCS		Sample ID: AK220721-2				Units: MG/L		Analysis Date: 7/21/2022			
Client ID:		Run ID: AK220721-2A1				Prep Date: 7/21/2022			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	101	5	100		101	85-115				15	

MB		Sample ID: AK220721-2		Units: MG/L		Analysis Date: 7/21/2022	
Client ID:		Run ID: AK220721-2A1		Prep Date: 7/21/2022		DF: 1	
Analyte		Result	ReportLimit	Qual			
TOTAL ALKALINITY AS CaCO3		ND	5				
BICARBONATE AS CaCO3		ND	5				
CARBONATE AS CaCO3		ND	5				

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **IC220719-1-1** Instrument ID: **IC3** Method: **EPA300.0**

LCS	Sample ID: IC220719-1				Units: MG/L		Analysis Date: 7/19/2022 15:12				
Client ID:	Run ID: IC220719-1A1				Prep Date: 7/19/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	10.1	0.2	10		101	90-110				15	
SULFATE	50.6	1	50		101	90-110				15	

LCSD		Sample ID: IC220719-1			Units: MG/L		Analysis Date: 7/19/2022 11:34				
Client ID:		Run ID: IC220719-1A1			Prep Date: 7/19/2022			DF: 1			
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	RPD Ref Value	RPD	RPD Limit	Qual
CHLORIDE	9.97	0.2	10		100	90-110		10.1	2	15	
SULFATE	48.4	1	50		97	90-110		50.6	4	15	

MB		Sample ID: IC220719-1		Units: MG/L		Analysis Date: 7/19/2022 10:27	
Client ID:		Run ID: IC220719-1A1		Prep Date: 7/19/2022		DF: 1	
Analyte		Result	ReportLimit	Qual			
CHLORIDE		ND	0.2				
SULFATE		ND	1				

The following samples were analyzed in this batch:

2207304-1

Client: PDC Energy
Work Order: 2207304
Project: 09A2073010 Brown 23P-221

QC BATCH REPORT

Batch ID: **TD220719-1-2** Instrument ID: **Balance** Method: **SM2540C**

DUP		Sample ID: 2207304-1				Units: MG/L		Analysis Date: 7/21/2022			
Client ID: Brown 23P-221		Run ID: TD220721-1A1				Prep Date: 7/19/2022		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	9040	400						9300	3	14	

LCS		Sample ID: TD220719-1				Units: MG/L		Analysis Date: 7/21/2022			
Client ID:		Run ID: TD220721-1A1				Prep Date: 7/19/2022		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	386	20	400		96	85-115				14	

LCSD		Sample ID: TD220719-1				Units: MG/L		Analysis Date: 7/21/2022			
Client ID:		Run ID: TD220721-1A1				Prep Date: 7/19/2022		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	406	20	400		101	85-115		386	5	14	

MB		Sample ID: TD220719-1				Units: MG/L		Analysis Date: 7/21/2022			
Client ID:		Run ID: TD220721-1A1				Prep Date: 7/19/2022		DF: 1			
Analyte	Result	ReportLimit									Qual
TOTAL DISSOLVED SOLIDS	ND	20									

The following samples were analyzed in this batch:

2207304-1