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December 23, 2022

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

Work Order: **HS22120630**

Laboratory Results for: **B-Farm LD 18-037HC**

Dear Jenifer Hakkarinen,

ALS Environmental received 1 sample(s) on Dec 09, 2022 for the analysis presented in the following report.

The analytical data provided relates directly to the samples received by ALS Environmental and for only the analyses requested. Results are expressed as "as received" unless otherwise noted.

QC sample results for this data met EPA or laboratory specifications except as noted in the Case Narrative or as noted with qualifiers in the QC batch information. Should this laboratory report need to be reproduced, it should be reproduced in full unless written approval has been obtained by ALS Environmental. Samples will be disposed in 30 days unless storage arrangements are made.

If you have any questions regarding this report, please feel free to call me.

Sincerely,

Generated By: JUMOKE.LAWAL
Tyler Monroe

Client: PDC Energy
Project: B-Farm LD 18-037HC
Work Order: HS22120630

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22120630-01	B-Farm LD 18-037HC	Water		08-Dec-2022 09:20	09-Dec-2022 09:15	<input type="checkbox"/>

Client: PDC Energy
Project: B-Farm LD 18-037HC
Work Order: HS22120630

CASE NARRATIVE

GC Semivolatiles by Method RSK-175**Batch ID: R424044**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

GC Semivolatiles by Method SW8015M**Batch ID: 187300****Sample ID: B-Farm LD 18-037HC (HS22120630-01)**

- Surrogate recoveries were outside of the control limits due to matrix interference.

GC Volatiles by Method SW8015**Batch ID: R423904****Sample ID: B-Farm LD 18-037HC (HS22120630-01)**

- Dilution required due to foamy matrix.

GCMS Volatiles by Method SW8260**Batch ID: R424374**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Metals by Method E200.8**Batch ID: 187661****Sample ID: HS22120950-01MSD**

- MS and MSD are for an unrelated sample

Sample ID: HS22120950-03MS

- MS and MSD are for an unrelated sample

Wet Chemistry by Method E300**Batch ID: R424508****Sample ID: HS22120878-01MS**

- MS/MSD was performed on an unrelated sample.

Sample ID: HS22120881-01MS

- MS/MSD was performed on an unrelated sample.

WetChemistry by Method SM2320B**Batch ID: R424581**

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: PDC Energy
Project: B-Farm LD 18-037HC
Work Order: HS22120630

CASE NARRATIVE

WetChemistry by Method M2540C

Batch ID: R424200

- The test results meet requirements of the current NELAP standards, state requirements or programs where applicable.

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 Sample ID: B-Farm LD 18-037HC
 Collection Date: 08-Dec-2022 09:20

ANALYTICAL REPORT

WorkOrder: HS22120630
 Lab ID: HS22120630-01
 Matrix: Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method: SW8260		Analyst: FT		
Benzene	71		50	ug/L	50	20-Dec-2022 10:40
Ethylbenzene	52		50	ug/L	50	20-Dec-2022 10:40
m,p-Xylene	170		100	ug/L	50	20-Dec-2022 10:40
o-Xylene	100		50	ug/L	50	20-Dec-2022 10:40
Toluene	160		50	ug/L	50	20-Dec-2022 10:40
Xylenes, Total	270		50	ug/L	50	20-Dec-2022 10:40
Surr: 1,2-Dichloroethane-d4	115		70-126	%REC	50	20-Dec-2022 10:40
Surr: 4-Bromofluorobenzene	101		77-113	%REC	50	20-Dec-2022 10:40
Surr: Dibromofluoromethane	107		77-123	%REC	50	20-Dec-2022 10:40
Surr: Toluene-d8	102		82-127	%REC	50	20-Dec-2022 10:40
GASOLINE RANGE ORGANICS BY SW8015C		Method: SW8015		Analyst: FT		
Gasoline Range Organics	ND		2.50	mg/L	50	13-Dec-2022 15:10
Surr: 4-Bromofluorobenzene	102		70-123	%REC	50	13-Dec-2022 15:10
DISSOLVED GASES BY RSK-175		Method: RSK-175		Analyst: SAM		
Ethane	25.2		1.00	ug/L	1	14-Dec-2022 11:22
Methane	328		5.00	ug/L	10	14-Dec-2022 11:53
Propane	24.4		1.00	ug/L	1	14-Dec-2022 11:22
TPH DRO/ORO BY SW8015C		Method: SW8015M		Prep: SW3511 / 13-Dec-2022 Analyst: PPM		
TPH (Diesel Range)	11		0.51	mg/L	10	22-Dec-2022 13:02
Surr: 2-Fluorobiphenyl	213	S	60-135	%REC	10	22-Dec-2022 13:02
TOTAL METALS BY E200.8, REV 5.4, 1994		Method: E200.8		Prep: E200.8 / 21-Dec-2022 Analyst: JC		
Calcium	164		25.0	mg/L	5	21-Dec-2022 22:47
Magnesium	ND		5.00	mg/L	1	22-Dec-2022 12:24
Potassium	5,500		25.0	mg/L	5	21-Dec-2022 22:47
Sodium	2,190		10.0	mg/L	5	21-Dec-2022 22:47
ANIONS BY E300.0, REV 2.1, 1993		Method: E300		Analyst: TH		
Chloride	1,080		25.0	mg/L	50	21-Dec-2022 11:54
Sulfate	326		25.0	mg/L	50	21-Dec-2022 11:54
TOTAL DISSOLVED SOLIDS BY SM2540C-2011		Method: M2540C		Analyst: CWG		
Total Dissolved Solids (Residue, Filterable)	15,300		10.0	mg/L	1	15-Dec-2022 20:25
ALKALINITY BY SM 2320B-2011		Method: SM2320B		Analyst: JAC		
Alkalinity, Bicarbonate (As CaCO3)	ND		5.00	mg/L	1	22-Dec-2022 00:48
Alkalinity, Carbonate (As CaCO3)	ND		5.00	mg/L	1	22-Dec-2022 00:48
Alkalinity, Total (As CaCO3)	ND		5.00	mg/L	1	22-Dec-2022 00:48

Note: See Qualifiers Page for a list of qualifiers and their explanation.

Weight / Prep Log

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

Batch ID: 187300	Start Date: 13 Dec 2022 08:09	End Date: 13 Dec 2022 13:00
Method: SW3511		Prep Code: 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22120630-01		32.53 (mL)	2 (mL)	0.06148	40 mL Amber

Batch ID: 187661	Start Date: 21 Dec 2022 09:00	End Date: 21 Dec 2022 15:00
Method: TOTAL METALS PREP BY E200.8, REV 5.4, 1994		Prep Code: 200.8PR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22120630-01		1 (mL)	10 (mL)	10	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 187300 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20		13 Dec 2022 08:09	22 Dec 2022 13:02	10
Batch ID: 187661 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20		21 Dec 2022 09:00	22 Dec 2022 12:24	1
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20		21 Dec 2022 09:00	21 Dec 2022 22:47	5
Batch ID: R423904 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			13 Dec 2022 15:10	50
Batch ID: R424044 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			14 Dec 2022 11:53	10
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			14 Dec 2022 11:22	1
Batch ID: R424200 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			15 Dec 2022 20:25	1
Batch ID: R424374 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			20 Dec 2022 10:40	50
Batch ID: R424508 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			21 Dec 2022 11:54	50
Batch ID: R424581 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS22120630-01	B-Farm LD 18-037HC	08 Dec 2022 09:20			22 Dec 2022 00:48	1

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: 187300 (0)		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C						
MBLK	Sample ID: MBLK-187300	Units: mg/L		Analysis Date: 16-Dec-2022 08:13						
Client ID:	Run ID: FID-16_424411		SeqNo: 7042068		PrepDate: 13-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	0.050								
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.03914</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>65.2</i>	<i>60 - 135</i>				
LCS	Sample ID: LCS-187300	Units: mg/L		Analysis Date: 16-Dec-2022 08:42						
Client ID:	Run ID: FID-16_424411		SeqNo: 7042069		PrepDate: 13-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5487	0.050	0.6	0	91.4	70 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06162</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>103</i>	<i>60 - 135</i>				
LCSD	Sample ID: LCSD-187300	Units: mg/L		Analysis Date: 16-Dec-2022 09:11						
Client ID:	Run ID: FID-16_424411		SeqNo: 7042070		PrepDate: 13-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5657	0.050	0.6	0	94.3	70 - 130	0.5487	3.06	20	
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06202</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>103</i>	<i>60 - 135</i>	<i>0.06162</i>	<i>0.647</i>	<i>20</i>	
The following samples were analyzed in this batch: HS22120630-01										

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424044 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-221214	Units: ug/L		Analysis Date: 14-Dec-2022 10:19					
Client ID:	Run ID: FID-4_424044	SeqNo: 7033239		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	ND	1.00							
Methane	ND	0.500							
Propane	ND	1.00							

LCS	Sample ID: LCS-221214	Units: ug/L		Analysis Date: 14-Dec-2022 10:35					
Client ID:	Run ID: FID-4_424044	SeqNo: 7033240		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	17.39	1.00	18.04	0	96.4	75 - 125			
Methane	8.472	0.500	9.647	0	87.8	75 - 125			
Propane	27.69	1.00	26.46	0	105	75 - 125			

LCSD	Sample ID: LCSD-221214	Units: ug/L		Analysis Date: 14-Dec-2022 10:53					
Client ID:	Run ID: FID-4_424044	SeqNo: 7033241		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	18.33	1.00	18.04	0	102	75 - 125	17.39	5.25	30
Methane	8.823	0.500	9.647	0	91.5	75 - 125	8.472	4.06	30
Propane	27.35	1.00	26.46	0	103	75 - 125	27.69	1.24	30

The following samples were analyzed in this batch: HS22120630-01

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R423904 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-221213	Units: mg/L		Analysis Date: 13-Dec-2022 11:47						
Client ID:	Run ID: FID-20_423904		SeqNo: 7030500		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	ND	0.0500								
Surr: 4-Bromofluorobenzene	0.09405	0.00500	0.1	0	94.0	70 - 121				
LCS	Sample ID: LCS-221213	Units: mg/L		Analysis Date: 13-Dec-2022 11:19						
Client ID:	Run ID: FID-20_423904		SeqNo: 7030498		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8341	0.0500	1	0	83.4	76 - 124				
Surr: 4-Bromofluorobenzene	0.1033	0.00500	0.1	0	103	52 - 138				
LCSD	Sample ID: LCSD-221213	Units: mg/L		Analysis Date: 13-Dec-2022 11:33						
Client ID:	Run ID: FID-20_423904		SeqNo: 7030499		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8629	0.0500	1	0	86.3	76 - 124	0.8341	3.39	20	
Surr: 4-Bromofluorobenzene	0.1058	0.00500	0.1	0	106	52 - 138	0.1033	2.4	20	

The following samples were analyzed in this batch: HS22120630-01

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: 187661 (0)		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
MBLK	Sample ID: MBLK-187661	Units: ug/L		Analysis Date: 22-Dec-2022 12:12					
Client ID:	Run ID: ICPMS06_424622	SeqNo: 7046879		PrepDate: 21-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	ND	500							
Magnesium	ND	500							
Potassium	ND	500							
Sodium	ND	200							

LCS	Sample ID: LCS-187661	Units: ug/L		Analysis Date: 21-Dec-2022 22:14					
Client ID:	Run ID: ICPMS06_424482	SeqNo: 7046132		PrepDate: 21-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	4993	500	5000	0	99.9	85 - 115			
Magnesium	5096	500	5000	0	102	85 - 115			
Potassium	5087	500	5000	0	102	85 - 115			
Sodium	5028	200	5000	0	101	85 - 115			

MS	Sample ID: HS22120950-03MS	Units: ug/L		Analysis Date: 21-Dec-2022 22:29					
Client ID:	Run ID: ICPMS06_424482	SeqNo: 7046139		PrepDate: 21-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	160200	500	5000	171600	-227	70 - 130			SO
Magnesium	15880	500	5000	12180	74.2	70 - 130			
Potassium	10420	500	5000	6075	86.9	70 - 130			
Sodium	55660	200	5000	56600	-18.9	70 - 130			SO

MS	Sample ID: HS22120950-01MS	Units: ug/L		Analysis Date: 21-Dec-2022 22:24					
Client ID:	Run ID: ICPMS06_424482	SeqNo: 7046136		PrepDate: 21-Dec-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Calcium	142900	500	5000	133900	180	70 - 130			SO
Magnesium	57120	500	5000	50530	132	70 - 130			SO
Potassium	15300	500	5000	9813	110	70 - 130			
Sodium	79690	200	5000	71960	155	70 - 130			SO

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: 187661 (0)		Instrument: ICPMS06		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
MSD		Sample ID: HS22120950-03MSD		Units: ug/L		Analysis Date: 21-Dec-2022 22:31				
Client ID:		Run ID: ICPMS06_424482		SeqNo: 7046140		PrepDate: 21-Dec-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	158900	500	5000	171600	-254	70 - 130	160200	0.857	20	SO
Magnesium	15960	500	5000	12180	75.6	70 - 130	15880	0.462	20	
Potassium	10540	500	5000	6075	89.4	70 - 130	10420	1.18	20	
Sodium	56150	200	5000	56600	-9.02	70 - 130	55660	0.884	20	SO
MSD		Sample ID: HS22120950-01MSD		Units: ug/L		Analysis Date: 21-Dec-2022 22:26				
Client ID:		Run ID: ICPMS06_424482		SeqNo: 7046137		PrepDate: 21-Dec-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	152200	500	5000	133900	366	70 - 130	142900	6.3	20	SO
Magnesium	61190	500	5000	50530	213	70 - 130	57120	6.89	20	SO
Potassium	16260	500	5000	9813	129	70 - 130	15300	6.08	20	
Sodium	85170	200	5000	71960	264	70 - 130	79690	6.65	20	SO
The following samples were analyzed in this batch: HS22120630-01										

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424374 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-221220	Units: ug/L		Analysis Date: 20-Dec-2022 09:16					
Client ID:	Run ID: VOA11_424374	SeqNo: 7041344		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	ND	1.0							
Ethylbenzene	ND	1.0							
m,p-Xylene	ND	2.0							
o-Xylene	ND	1.0							
Toluene	ND	1.0							
Xylenes, Total	ND	1.0							
Surr: 1,2-Dichloroethane-d4	54.87	1.0	50	0	110	70 - 123			
Surr: 4-Bromofluorobenzene	47.36	1.0	50	0	94.7	77 - 113			
Surr: Dibromofluoromethane	53.88	1.0	50	0	108	73 - 126			
Surr: Toluene-d8	52.02	1.0	50	0	104	81 - 120			

LCS	Sample ID: VLCSW-221220	Units: ug/L		Analysis Date: 20-Dec-2022 08:34					
Client ID:	Run ID: VOA11_424374	SeqNo: 7041343		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.38	1.0	20	0	102	74 - 120			
Ethylbenzene	19.52	1.0	20	0	97.6	77 - 117			
m,p-Xylene	38.69	2.0	40	0	96.7	77 - 122			
o-Xylene	19.5	1.0	20	0	97.5	75 - 119			
Toluene	19.62	1.0	20	0	98.1	77 - 118			
Xylenes, Total	58.19	1.0	60	0	97.0	75 - 122			
Surr: 1,2-Dichloroethane-d4	54.89	1.0	50	0	110	70 - 123			
Surr: 4-Bromofluorobenzene	48.07	1.0	50	0	96.1	77 - 113			
Surr: Dibromofluoromethane	54.01	1.0	50	0	108	73 - 126			
Surr: Toluene-d8	51.37	1.0	50	0	103	81 - 120			

Client: PDC Energy
 Project: B-Farm LD 18-037HC
 WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424374 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C					
MS		Sample ID: HS22120622-01MS		Units: ug/L		Analysis Date: 20-Dec-2022 11:01			
Client ID:		Run ID: VOA11_424374		SeqNo: 7041349		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.26	1.0	20	0	91.3	70 - 127			
Ethylbenzene	17.66	1.0	20	0	88.3	70 - 124			
m,p-Xylene	34.17	2.0	40	0	85.4	70 - 130			
o-Xylene	17.23	1.0	20	0	86.2	70 - 124			
Toluene	17.73	1.0	20	0	88.6	70 - 123			
Xylenes, Total	51.4	1.0	60	0	85.7	70 - 130			
Surr: 1,2-Dichloroethane-d4	55.15	1.0	50	0	110	70 - 126			
Surr: 4-Bromofluorobenzene	48.77	1.0	50	0	97.5	77 - 113			
Surr: Dibromofluoromethane	54.2	1.0	50	0	108	77 - 123			
Surr: Toluene-d8	51.21	1.0	50	0	102	82 - 127			

MSD		Sample ID: HS22120622-01MSD		Units: ug/L		Analysis Date: 20-Dec-2022 11:22			
Client ID:		Run ID: VOA11_424374		SeqNo: 7041350		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.24	1.0	20	0	91.2	70 - 127	18.26	0.146	20
Ethylbenzene	17.69	1.0	20	0	88.4	70 - 124	17.66	0.137	20
m,p-Xylene	34.85	2.0	40	0	87.1	70 - 130	34.17	1.96	20
o-Xylene	17.01	1.0	20	0	85.1	70 - 124	17.23	1.29	20
Toluene	17.96	1.0	20	0	89.8	70 - 123	17.73	1.28	20
Xylenes, Total	51.86	1.0	60	0	86.4	70 - 130	51.4	0.88	20
Surr: 1,2-Dichloroethane-d4	55.95	1.0	50	0	112	70 - 126	55.15	1.44	20
Surr: 4-Bromofluorobenzene	48.19	1.0	50	0	96.4	77 - 113	48.77	1.21	20
Surr: Dibromofluoromethane	54.69	1.0	50	0	109	77 - 123	54.2	0.889	20
Surr: Toluene-d8	52.37	1.0	50	0	105	82 - 127	51.21	2.25	20

The following samples were analyzed in this batch: HS22120630-01

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424200 (0)		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011						
MBLK	Sample ID: WBLK-121522	Units: mg/L		Analysis Date: 15-Dec-2022 20:25						
Client ID:	Run ID: Balance1_424200	SeqNo: 7037058		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)		ND	10.0							
LCS	Sample ID: WLCS-121522	Units: mg/L		Analysis Date: 15-Dec-2022 20:25						
Client ID:	Run ID: Balance1_424200	SeqNo: 7037059		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)		1048	10.0	1000	0	105	85 - 115			
DUP	Sample ID: HS22120617-17DUP	Units: mg/L		Analysis Date: 15-Dec-2022 20:25						
Client ID:	Run ID: Balance1_424200	SeqNo: 7037055		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)		14000	10.0				13880	0.861	5	
DUP	Sample ID: HS22120508-01DUP	Units: mg/L		Analysis Date: 15-Dec-2022 20:25						
Client ID:	Run ID: Balance1_424200	SeqNo: 7037037		PrepDate:		DF: 1				
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)		426	10.0				430	0.935	5	
The following samples were analyzed in this batch: HS22120630-01										

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424508 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 21-Dec-2022 11:06					
Client ID:	Run ID: ICS-Integrion_424508		SeqNo: 7044454		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	ND	0.500							
Sulfate	ND	0.500							
LCS	Sample ID: LCS	Units: mg/L		Analysis Date: 21-Dec-2022 11:12					
Client ID:	Run ID: ICS-Integrion_424508		SeqNo: 7044455		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	19.51	0.500	20	0	97.6	90 - 110			
Sulfate	19.64	0.500	20	0	98.2	90 - 110			
MS	Sample ID: HS22120881-01MS	Units: mg/L		Analysis Date: 21-Dec-2022 11:38					
Client ID:	Run ID: ICS-Integrion_424508		SeqNo: 7044460		PrepDate:		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	156.6	2.50	50	113.4	86.5	80 - 120			
Sulfate	249.5	2.50	50	213.3	72.3	80 - 120			SO
MS	Sample ID: HS22120878-01MS	Units: mg/L		Analysis Date: 21-Dec-2022 11:22					
Client ID:	Run ID: ICS-Integrion_424508		SeqNo: 7044457		PrepDate:		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	168.2	2.50	50	124.9	86.6	80 - 120			
Sulfate	255.9	2.50	50	219.1	73.5	80 - 120			SO
MSD	Sample ID: HS22120881-01MSD	Units: mg/L		Analysis Date: 21-Dec-2022 11:43					
Client ID:	Run ID: ICS-Integrion_424508		SeqNo: 7044461		PrepDate:		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	156.7	2.50	50	113.4	86.7	80 - 120	156.6	0.0638	20
Sulfate	250.8	2.50	50	213.3	74.9	80 - 120	249.5	0.518	20 SO

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424508 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
MSD		Sample ID: HS22120878-01MSD		Units: mg/L		Analysis Date: 21-Dec-2022 11:28				
Client ID:		Run ID: ICS-Integrion_424508		SeqNo: 7044458		PrepDate:		DF: 5		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	169	2.50	50	124.9	88.4	80 - 120	168.2	0.516	20	
Sulfate	257.6	2.50	50	219.1	76.9	80 - 120	255.9	0.67	20	SO

The following samples were analyzed in this batch: HS22120630-01

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

QC BATCH REPORT

Batch ID: R424581 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW2-122122	Units: mg/L		Analysis Date: 22-Dec-2022 00:11					
Client ID:	Run ID: ManTech01_424581	SeqNo: 7045965		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	ND	5.00							
Alkalinity, Carbonate (As CaCO3)	ND	5.00							
Alkalinity, Total (As CaCO3)	ND	5.00							

LCS	Sample ID: LCS2-122122	Units: mg/L		Analysis Date: 21-Dec-2022 23:41					
Client ID:	Run ID: ManTech01_424581	SeqNo: 7045961		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1026	5.00	1000	0	103	85 - 115			
Alkalinity, Total (As CaCO3)	1051	5.00	1000	0	105	85 - 115			

LCSD	Sample ID: LCSD1-122122	Units: mg/L		Analysis Date: 21-Dec-2022 23:49					
Client ID:	Run ID: ManTech01_424581	SeqNo: 7045962		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Carbonate (As CaCO3)	1029	5.00	1000	0	103	85 - 115	1026	0.251	20
Alkalinity, Total (As CaCO3)	1038	5.00	1000	0	104	85 - 115	1051	1.23	20

DUP	Sample ID: HS22120618-02DUP	Units: mg/L		Analysis Date: 22-Dec-2022 00:24					
Client ID:	Run ID: ManTech01_424581	SeqNo: 7045967		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Alkalinity, Bicarbonate (As CaCO3)	306	5.00					305.4	0.203	20
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20
Alkalinity, Total (As CaCO3)	306	5.00					305.4	0.203	20

The following samples were analyzed in this batch: HS22120630-01

Client: PDC Energy
Project: B-Farm LD 18-037HC
WorkOrder: HS22120630

**QUALIFIERS,
ACRONYMS, UNITS**

Qualifier	Description
*	Value exceeds Regulatory Limit
a	Not accredited
B	Analyte detected in the associated Method Blank above the Reporting Limit
E	Value above quantitation range
H	Analyzed outside of Holding Time
J	Analyte detected below quantitation limit
M	Manually integrated, see raw data for justification
n	Not offered for accreditation
ND	Not Detected at the Reporting Limit
O	Sample amount is > 4 times amount spiked
P	Dual Column results percent difference > 40%
R	RPD above laboratory control limit
S	Spike Recovery outside laboratory control limits
U	Analyzed but not detected above the MDL/SDL

Acronym	Description
DCS	Detectability Check Study
DUP	Method Duplicate
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MBLK	Method Blank
MDL	Method Detection Limit
MQL	Method Quantitation Limit
MS	Matrix Spike
MSD	Matrix Spike Duplicate
PDS	Post Digestion Spike
PQL	Practical Quantitation Limit
SD	Serial Dilution
SDL	Sample Detection Limit
TRRP	Texas Risk Reduction Program

Unit Reported	Description
mg/L	Milligrams per Liter

CERTIFICATIONS,ACCREDITATIONS & LICENSES

Agency	Number	Expire Date
Arkansas	22-041-0	27-Mar-2023
California	2919 2022-2023	30-Apr-2023
Dept of Defense	L21-682	31-Dec-2023
Florida	E87611-36	30-Jun-2023
Illinois	2000322022-9	09-May-2023
Kansas	E-10352; 2022-2023	31-Jul-2023
Kentucky	123043, 2022-2023	30-Apr-2023
Louisiana	03087, 2022-2023	30-Jun-2023
Maryland	343, 2022-2023	30-Jun-2023
North Carolina	624-2022	31-Dec-2022
North Dakota	R-193 2022-2023	30-Apr-2023
Oklahoma	2022-141	31-Aug-2023
Texas	T104704231-22-29	30-Apr-2023
Utah	TX026932022-13	31-Jul-2023

Sample Receipt Checklist

Work Order ID: HS22120630

Date/Time Received: 09-Dec-2022 09:15

Client Name: PDC Energy 80203

Received by: Paresh M. Giga

Completed By: /S/ Nelson D. Dusara

10-Dec-2022 11:18

Reviewed by: /S/ Tyler Monroe

13-Dec-2022 08:28

eSignature

Date/Time

eSignature

Date/Time

Matrices: **WATER**Carrier name: **FedEx**

Shipping container/cooler in good condition?

Yes ☒No ☐Not Present ☐

Custody seals intact on shipping container/cooler?

Yes ☐No ☐Not Present ☒

Custody seals intact on sample bottles?

Yes ☐No ☐Not Present ☒

VOA/TX1005/TX1006 Solids in hermetically sealed vials?

Yes ☐No ☐Not Present ☒

Chain of custody present?

Yes ☒No ☐

1 Page(s)

Chain of custody signed when relinquished and received?

Yes ☒No ☐

COC IDs:n/a

Samplers name present on COC?

Yes ☐No ☒

Chain of custody agrees with sample labels?

Yes ☒No ☐

Samples in proper container/bottle?

Yes ☒No ☐

Sample containers intact?

Yes ☒No ☐

Sufficient sample volume for indicated test?

Yes ☒No ☐

All samples received within holding time?

Yes ☒No ☐

Container/Temp Blank temperature in compliance?

Yes ☒No ☐

Temperature(s)/Thermometer(s):

2.4/1.9 C UC/C

IR 31

Cooler(s)/Kit(s):

Red

Date/Time sample(s) sent to storage:

DEC/10/2022 06:50

Water - VOA vials have zero headspace?

Yes ☒No ☐No VOA vials submitted ☐

Water - pH acceptable upon receipt?

Yes ☐No ☒N/A ☐

pH adjusted?

Yes ☒No ☐N/A ☐

pH adjusted by:

Si Ma

Login Notes: SX # B-Farm LD 18-037HC Metals pH>2(14) Preserved with 1.0ml HNO3

On 12/10/2022 at 06:50 by Sima Acid Lot # 320070308

After Preserved pH (14)

Client Contacted:

Date Contacted:

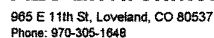
Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:



Form 202r8

		1	of	1
	PAGE			
DISPOSAL	By Lab	or	Return to Client	

PDC Energy
B-Farm LD 18-037HC

*Time Zone (Circle): EST CST 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.

Comments:	Cations/Anions:	QC PACKAGE (check below)	
Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate Samples analyzed per COGCC Bradenhead Sampling Program			LEVEL II (Standard QC)
			LEVEL III (Std QC + forms)
			LEVEL IV (Std QC + forms + raw data)
Preservative Key: 1-HCl 2-HNO3 3-H2SO4 4-NaOH 5-NaHSO4 1-Other B-4 degrees C 9-5035			

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY	<i>[Signature]</i>	Jeff Braden	12/8/22	1040
RECEIVED BY	<i>[Signature]</i>	Amy Kepner	12/8/22	1040
RELINQUISHED BY	<i>[Signature]</i>	Amy Kepner	12/8/22	1545
RECEIVED BY	<i>[Signature]</i>	P. G. C. A.	12/8/22	CR 10
RELINQUISHED BY				
RECEIVED BY				

Res 2.40
#31 112-05

TXN# 6182 5243 3953
0201
FRI - 09 DEC 10:30A
PRIORITY OVERNIGHT
77099
TX-US IAH
XA SCRA
