



10450 Stancliff Rd. Suite 210
Houston, TX 77099
T: +1 281 530 5656
F: +1 281 530 5887

March 29, 2023

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

Work Order: **HS23030820**

Laboratory Results for: **Postle IC 11-159HC**

Dear Jenifer Hakkarinen,

ALS Environmental received 1 sample(s) on Mar 15, 2023 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: Postle IC 11-159HC
Work Order: HS23030820

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS23030820-01	Postle IC 11-159HC	Water		14-Mar-2023 12:20	15-Mar-2023 09:45	<input type="checkbox"/>

Client: PDC Energy
Project: Postle IC 11-159HC
Work Order: HS23030820

CASE NARRATIVE

GC Semivolatiles by Method RSK-175

Batch ID: R430281

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

GC Semivolatiles by Method SW8015M

Batch ID: 190889

Sample ID: Postle IC 11-159HC (HS23030820-01)

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

GC Volatiles by Method SW8015

Batch ID: R430411

Sample ID: Postle IC 11-159HC (HS23030820-01)

- Surrogate failed outside of control limits high due to sample matrix interference. This was confirmed by sample reanalysis.

GCMS Volatiles by Method SW8260

Batch ID: R430407

Sample ID: Postle IC 11-159HC (HS23030820-01)

- Dilution required due to sample matrix.

Sample ID: HS23030708-05MS

- MS and MSD are for an unrelated sample

Metals by Method E200.8

Batch ID: 191487

Sample ID: HS23030945-01MS

- MS and MSD are for an unrelated sample

Sample ID: HS23031251-01MS

- MS and MSD are for an unrelated sample

WetChemistry by Method SM2320B

Batch ID: R431070

Sample ID: HS23030852-16DUP

- DUP is for an unrelated sample

WetChemistry by Method E300

Batch ID: R430647

Sample ID: HS23030847-05MS

- MS and MSD are for an unrelated sample (Chloride)

Client: PDC Energy
Project: Postle IC 11-159HC
Work Order: HS23030820

CASE NARRATIVE

WetChemistry by Method M2540C

Batch ID: R430463

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

Client: PDC Energy
 Project: Postle IC 11-159HC
 Sample ID: Postle IC 11-159HC
 Collection Date: 14-Mar-2023 12:20

ANALYTICAL REPORT

WorkOrder:HS23030820
 Lab ID:HS23030820-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: FT		
Benzene	ND		500	ug/L	500	18-Mar-2023 16:03
Ethylbenzene	ND		500	ug/L	500	18-Mar-2023 16:03
m,p-Xylene	ND		1000	ug/L	500	18-Mar-2023 16:03
o-Xylene	ND		500	ug/L	500	18-Mar-2023 16:03
Toluene	ND		500	ug/L	500	18-Mar-2023 16:03
Xylenes, Total	ND		500	ug/L	500	18-Mar-2023 16:03
Surr: 1,2-Dichloroethane-d4	105		70-126	%REC	500	18-Mar-2023 16:03
Surr: 4-Bromofluorobenzene	98.9		77-113	%REC	500	18-Mar-2023 16:03
Surr: Dibromofluoromethane	106		77-123	%REC	500	18-Mar-2023 16:03
Surr: Toluene-d8	101		82-127	%REC	500	18-Mar-2023 16:03
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: PJM		
Gasoline Range Organics	164		25.0	mg/L	500	17-Mar-2023 11:02
Surr: 4-Bromofluorobenzene	872	S	70-123	%REC	500	17-Mar-2023 11:02
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: SAM		
Ethane	931		200	ug/L	200	16-Mar-2023 14:25
Methane	4,800		100	ug/L	200	16-Mar-2023 14:25
Propane	796		200	ug/L	200	16-Mar-2023 14:25
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 16-Mar-2023		Analyst: SAM
TPH (Diesel Range)	1.8		0.051	mg/L	1	16-Mar-2023 12:55
Surr: 2-Fluorobiphenyl	150	S	60-135	%REC	1	16-Mar-2023 12:55
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 29-Mar-2023		Analyst: JC
Calcium	9.70		5.00	mg/L	10	29-Mar-2023 14:01
Magnesium	ND		0.500	mg/L	1	29-Mar-2023 14:33
Potassium	289		5.00	mg/L	10	29-Mar-2023 14:01
Sodium	1,150		2.00	mg/L	10	29-Mar-2023 14:01
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH		
Chloride	527		10.0	mg/L	20	21-Mar-2023 18:40
Sulfate	378		10.0	mg/L	20	21-Mar-2023 18:40
TOTAL DISSOLVED SOLIDS BY SM2540C-2011		Method:M2540C		Analyst: DC		
Total Dissolved Solids (Residue, Filterable)	3,180		10.0	mg/L	1	17-Mar-2023 14:00
ALKALINITY BY SM 2320B-2011		Method:SM2320B		Analyst: JAC		
Alkalinity, Bicarbonate (As CaCO3)	ND		5.00	mg/L	1	27-Mar-2023 11:43
Alkalinity, Carbonate (As CaCO3)	175		5.00	mg/L	1	27-Mar-2023 11:43
Alkalinity, Total (As CaCO3)	254		5.00	mg/L	1	27-Mar-2023 11:43

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

Weight / Prep Log

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

Batch ID: 190889	Start Date: 16 Mar 2023 11:16	End Date: 16 Mar 2023 17:00
Method: SW3511	Prep Code: 3511_DRO	

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS23030820-01		32.13 (mL)	2 (mL)	0.06225	40 mL Amber

Batch ID: 191487	Start Date: 29 Mar 2023 08:00	End Date: 29 Mar 2023 12:00
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	
HS23030820-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 190889 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20		16 Mar 2023 11:16	16 Mar 2023 12:55	1
Batch ID: 191487 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20		29 Mar 2023 08:00	29 Mar 2023 14:33	1
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20		29 Mar 2023 08:00	29 Mar 2023 14:01	10
Batch ID: R430281 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			16 Mar 2023 14:25	200
Batch ID: R430407 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			18 Mar 2023 16:03	500
Batch ID: R430411 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			17 Mar 2023 11:02	500
Batch ID: R430463 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			17 Mar 2023 14:00	1
Batch ID: R430647 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			21 Mar 2023 18:40	20
Batch ID: R431070 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS23030820-01	Postle IC 11-159HC	14 Mar 2023 12:20			27 Mar 2023 11:43	1

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: 190889 (0)	Instrument: FID-16	Method: TPH DRO/ORO BY SW8015C
-------------------------------	---------------------------	---------------------------------------

MBLK	Sample ID: MBLK-190889	Units: mg/L	Analysis Date: 16-Mar-2023 11:27							
Client ID:	Run ID: FID-16_430307	SeqNo: 7179459	PrepDate: 16-Mar-2023 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	0.050								
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.03872</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>64.5</i>	<i>60 - 135</i>				

LCS	Sample ID: LCS-190889	Units: mg/L	Analysis Date: 16-Mar-2023 11:56							
Client ID:	Run ID: FID-16_430307	SeqNo: 7179460	PrepDate: 16-Mar-2023 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5055	0.050	0.6	0	84.3	70 - 130				
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06487</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>108</i>	<i>60 - 135</i>				

LCSD	Sample ID: LCSD-190889	Units: mg/L	Analysis Date: 16-Mar-2023 12:26							
Client ID:	Run ID: FID-16_430307	SeqNo: 7179461	PrepDate: 16-Mar-2023 DF: 1							
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5765	0.050	0.6	0	96.1	70 - 130	0.5055	13.1	20	
<i>Surr: 2-Fluorobiphenyl</i>	<i>0.06355</i>	<i>0.0050</i>	<i>0.06</i>	<i>0</i>	<i>106</i>	<i>60 - 135</i>	<i>0.06487</i>	<i>2.05</i>	<i>20</i>	

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430281 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK		Sample ID: MBLK-230315		Units: ug/L		Analysis Date: 15-Mar-2023 10:13				
Client ID:		Run ID: FID-4_430281		SeqNo: 7178975		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-230315		Units: ug/L		Analysis Date: 15-Mar-2023 10:30				
Client ID:		Run ID: FID-4_430281		SeqNo: 7178976		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	19.92	1.00	18.04	0	110	75 - 125				
Methane	8.064	0.500	9.647	0	83.6	75 - 125				
Propane	30.63	1.00	26.46	0	116	75 - 125				

LCS D		Sample ID: LCS D-230315		Units: ug/L		Analysis Date: 15-Mar-2023 10:55				
Client ID:		Run ID: FID-4_430281		SeqNo: 7178977		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	20.59	1.00	18.04	0	114	75 - 125	19.92	3.29	30	
Methane	9.267	0.500	9.647	0	96.1	75 - 125	8.064	13.9	30	
Propane	30.43	1.00	26.46	0	115	75 - 125	30.63	0.644	30	

DUP		Sample ID: HS23030590-01DUP		Units: ug/L		Analysis Date: 16-Mar-2023 08:37				
Client ID:		Run ID: FID-4_430281		SeqNo: 7179730		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	12.1	1.00					12.31	1.72	30	
Methane	27.9	0.500					28.42	1.84	30	
Propane	20.34	1.00					20.39	0.235	30	

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430411 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-230317	Units: mg/L			Analysis Date: 17-Mar-2023 10:18					
Client ID:	Run ID: FID-20_430411	SeqNo: 7181889		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							
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.1072</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>107</i>	<i>70 - 121</i>			

LCS	Sample ID: LCS-230317	Units: mg/L			Analysis Date: 17-Mar-2023 09:36				
Client ID:	Run ID: FID-20_430411	SeqNo: 7181887		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Gasoline Range Organics	0.99	0.0500	1	0	99.0	76 - 124			
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.09204</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>92.0</i>	<i>52 - 138</i>			

LCSD	Sample ID: LCSD-230317	Units: mg/L			Analysis Date: 17-Mar-2023 09:50				
Client ID:	Run ID: FID-20_430411	SeqNo: 7181888		PrepDate:			DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Gasoline Range Organics	0.9852	0.0500	1	0	98.5	76 - 124	0.99	0.492	20
<i>Surr: 4-Bromofluorobenzene</i>	<i>0.0941</i>	<i>0.00500</i>	<i>0.1</i>	<i>0</i>	<i>94.1</i>	<i>52 - 138</i>	<i>0.09204</i>	<i>2.21</i>	<i>20</i>

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: 191487 (0) **Instrument:** ICPMS06 **Method:** TOTAL METALS BY E200.8, REV 5.4, 1994

MBLK		Sample ID: MBLK-191487		Units: ug/L		Analysis Date: 29-Mar-2023 13:22			
Client ID:		Run ID: ICPMS06_431233		SeqNo: 7202501		PrepDate: 29-Mar-2023		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-191487		Units: ug/L		Analysis Date: 29-Mar-2023 13:24			
Client ID:		Run ID: ICPMS06_431233		SeqNo: 7202502		PrepDate: 29-Mar-2023		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	4795	500	5000	0	95.9	85 - 115			
Magnesium	4950	500	5000	0	99.0	85 - 115			
Potassium	5030	500	5000	0	101	85 - 115			
Sodium	4797	200	5000	0	95.9	85 - 115			

MS		Sample ID: HS23031251-01MS		Units: ug/L		Analysis Date: 29-Mar-2023 13:55			
Client ID:		Run ID: ICPMS06_431233		SeqNo: 7202514		PrepDate: 29-Mar-2023		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	57770	500	5000	51140	132	70 - 130			SO
Magnesium	13520	500	5000	7767	115	70 - 130			
Potassium	22230	500	5000	16080	123	70 - 130			
Sodium	377700	200	5000	360700	339	70 - 130			SEO

MS		Sample ID: HS23030945-01MS		Units: ug/L		Analysis Date: 29-Mar-2023 13:42			
Client ID:		Run ID: ICPMS06_431233		SeqNo: 7202508		PrepDate: 29-Mar-2023		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	437900	5000	5000	434200	74.7	70 - 130			O
Magnesium	2767000	5000	5000	2735000	638	70 - 130			SEO
Potassium	16330	5000	5000	10460	117	70 - 130			
Sodium	2743000	2000	5000	2764000	-429	70 - 130			SEO

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: 191487 (0) **Instrument:** ICPMS06 **Method:** TOTAL METALS BY E200.8, REV 5.4, 1994

MSD		Sample ID: HS23031251-01MSD			Units: ug/L		Analysis Date: 29-Mar-2023 13:57			
Client ID:		Run ID: ICPMS06_431233			SeqNo: 7202515		PrepDate: 29-Mar-2023		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	57690	500	5000	51140	131	70 - 130	57770	0.138	20	SO
Magnesium	13530	500	5000	7767	115	70 - 130	13520	0.0671	20	
Potassium	22360	500	5000	16080	126	70 - 130	22230	0.582	20	
Sodium	382300	200	5000	360700	431	70 - 130	377700	1.21	20	SEO

MSD		Sample ID: HS23030945-01MSD			Units: ug/L		Analysis Date: 29-Mar-2023 13:44			
Client ID:		Run ID: ICPMS06_431233			SeqNo: 7202509		PrepDate: 29-Mar-2023		DF: 10	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	450400	5000	5000	434200	324	70 - 130	437900	2.8	20	SO
Magnesium	2769000	5000	5000	2735000	675	70 - 130	2767000	0.0665	20	SEO
Potassium	16400	5000	5000	10460	119	70 - 130	16330	0.476	20	
Sodium	2791000	2000	5000	2764000	527	70 - 130	2743000	1.73	20	SEO

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430407 (0) **Instrument:** VOA11 **Method:** LOW LEVEL VOLATILES BY SW8260C

MBLK		Sample ID: VBLKW-230318		Units: ug/L		Analysis Date: 18-Mar-2023 08:20			
Client ID:		Run ID: VOA11_430407		SeqNo: 7181788		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							
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>50.87</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.96</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>50.32</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>49.82</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>99.6</i>	<i>81 - 120</i>			

LCS		Sample ID: VLCSW-230318		Units: ug/L		Analysis Date: 18-Mar-2023 07:38			
Client ID:		Run ID: VOA11_430407		SeqNo: 7181787		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	18.59	1.0	20	0	93.0	74 - 120			
Ethylbenzene	18.95	1.0	20	0	94.8	77 - 117			
m,p-Xylene	39.69	2.0	40	0	99.2	77 - 122			
o-Xylene	19.59	1.0	20	0	98.0	75 - 119			
Toluene	18.55	1.0	20	0	92.8	77 - 118			
Xylenes, Total	59.29	1.0	60	0	98.8	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>49.08</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.2</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>49.07</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>98.1</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>48.6</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.2</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>50.9</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>102</i>	<i>81 - 120</i>			

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430407 (0)		Instrument: VOA11		Method: LOW LEVEL VOLATILES BY SW8260C						
MS	Sample ID: HS23030708-05MS	Units: ug/L			Analysis Date: 18-Mar-2023 09:23					
Client ID:	Run ID: VOA11_430407	SeqNo: 7181791		PrepDate:			DF: 25			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	9877	25	500	10170	-59.5	70 - 127				SEO
Ethylbenzene	508	25	500	84.1	84.8	70 - 124				
m,p-Xylene	1196	50	1000	333.8	86.2	70 - 130				
o-Xylene	512.6	25	500	75.5	87.4	70 - 124				
Toluene	1419	25	500	1035	76.8	70 - 123				
Xylenes, Total	1709	25	1500	409.3	86.6	70 - 130				
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1197</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>95.7</i>	<i>70 - 126</i>				
<i>Surr: 4-Bromofluorobenzene</i>	<i>1222</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>97.8</i>	<i>77 - 113</i>				
<i>Surr: Dibromofluoromethane</i>	<i>1207</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>96.6</i>	<i>77 - 123</i>				
<i>Surr: Toluene-d8</i>	<i>1291</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>103</i>	<i>82 - 127</i>				

MSD	Sample ID: HS23030708-05MSD	Units: ug/L			Analysis Date: 18-Mar-2023 09:44					
Client ID:	Run ID: VOA11_430407	SeqNo: 7181792		PrepDate:			DF: 25			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	10020	25	500	10170	-30.7	70 - 127	9877	1.45	20	SEO
Ethylbenzene	507	25	500	84.1	84.6	70 - 124	508	0.195	20	
m,p-Xylene	1196	50	1000	333.8	86.2	70 - 130	1196	0.0329	20	
o-Xylene	513.6	25	500	75.5	87.6	70 - 124	512.6	0.2	20	
Toluene	1403	25	500	1035	73.5	70 - 123	1419	1.16	20	
Xylenes, Total	1710	25	1500	409.3	86.7	70 - 130	1709	0.0371	20	
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>1186</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>94.9</i>	<i>70 - 126</i>	<i>1197</i>	<i>0.912</i>	<i>20</i>	
<i>Surr: 4-Bromofluorobenzene</i>	<i>1242</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>99.4</i>	<i>77 - 113</i>	<i>1222</i>	<i>1.65</i>	<i>20</i>	
<i>Surr: Dibromofluoromethane</i>	<i>1217</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>97.3</i>	<i>77 - 123</i>	<i>1207</i>	<i>0.759</i>	<i>20</i>	
<i>Surr: Toluene-d8</i>	<i>1269</i>	<i>25</i>	<i>1250</i>	<i>0</i>	<i>101</i>	<i>82 - 127</i>	<i>1291</i>	<i>1.78</i>	<i>20</i>	

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430463 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK	Sample ID: WBLK-03172023	Units: mg/L			Analysis Date: 17-Mar-2023 14:00				
Client ID:	Run ID: Balance1_430463	SeqNo: 7182874		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: LCS-031723	Units: mg/L			Analysis Date: 17-Mar-2023 14:00				
Client ID:	Run ID: Balance1_430463	SeqNo: 7182873		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) 1080 10.0 1000 0 108 85 - 115

DUP	Sample ID: HS23030933-04DUP	Units: mg/L			Analysis Date: 17-Mar-2023 14:00				
Client ID:	Run ID: Balance1_430463	SeqNo: 7182867		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) 284 10.0 282 0.707 20

DUP	Sample ID: HS23030852-16DUP	Units: mg/L			Analysis Date: 17-Mar-2023 14:00				
Client ID:	Run ID: Balance1_430463	SeqNo: 7182862		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) 10740 10.0 10760 0.186 20

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430647 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993						
MBLK	Sample ID: MBLK	Units: mg/L			Analysis Date: 21-Mar-2023 16:10					
Client ID:		Run ID: ICS-Integrion_430647		SeqNo: 7187331		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-Mar-2023 16:15					
Client ID:		Run ID: ICS-Integrion_430647		SeqNo: 7187332		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	19.98	0.500	20	0	99.9	90 - 110				
Sulfate	20.4	0.500	20	0	102	90 - 110				
MS	Sample ID: HS23031053-01MS	Units: mg/L			Analysis Date: 21-Mar-2023 16:33					
Client ID:		Run ID: ICS-Integrion_430647		SeqNo: 7187334		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	25.22	0.500	10	14.96	103	80 - 120				
Sulfate	16.15	0.500	10	5.819	103	80 - 120				
MS	Sample ID: HS23030847-05MS	Units: mg/L			Analysis Date: 21-Mar-2023 19:38					
Client ID:		Run ID: ICS-Integrion_430647		SeqNo: 7187357		PrepDate:		DF: 10		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	373.7	5.00	100	295.9	77.8	80 - 120			S	
Sulfate	100.5	5.00	100	3.071	97.5	80 - 120				
MSD	Sample ID: HS23031053-01MSD	Units: mg/L			Analysis Date: 21-Mar-2023 16:39					
Client ID:		Run ID: ICS-Integrion_430647		SeqNo: 7187335		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual	
Chloride	25.18	0.500	10	14.96	102	80 - 120	25.22	0.135	20	
Sulfate	16.14	0.500	10	5.819	103	80 - 120	16.15	0.0657	20	

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R430647 (0) **Instrument:** ICS-Integrion **Method:** ANIONS BY E300.0, REV 2.1, 1993

MSD Sample ID: **HS23030847-05MSD** Units: **mg/L** Analysis Date: **21-Mar-2023 19:44**
 Client ID: Run ID: **ICS-Integrion_430647** SeqNo: **7187358** PrepDate: DF: **10**
 Analyte Result PQL SPK Val SPK Ref Value %REC Control Limit RPD Ref Value %RPD RPD Limit Qual

Chloride	375.2	5.00	100	295.9	79.4	80 - 120	373.7	0.414	20	S
Sulfate	101.1	5.00	100	3.071	98.0	80 - 120	100.5	0.537	20	

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

QC BATCH REPORT

Batch ID: R431070 (0)		Instrument: Skalar 03		Method: ALKALINITY BY SM 2320B-2011						
MBLK	Sample ID: MBLK-R431070	Units: mg/L		Analysis Date: 27-Mar-2023 11:43						
Client ID:	Run ID: Skalar 03_431070	SeqNo: 7197722		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: LCS-R431070	Units: mg/L		Analysis Date: 27-Mar-2023 11:43						
Client ID:	Run ID: Skalar 03_431070	SeqNo: 7197721		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)	935.2	5.00	1000	0	93.5	85 - 115				
Alkalinity, Total (As CaCO3)	958.2	5.00	1000	0	95.8	85 - 115				
LCSD	Sample ID: LCSD-R431070	Units: mg/L		Analysis Date: 27-Mar-2023 11:43						
Client ID:	Run ID: Skalar 03_431070	SeqNo: 7197720		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)	926.2	5.00	1000	0	92.6	85 - 115	935.2	0.967	20	
Alkalinity, Total (As CaCO3)	950.3	5.00	1000	0	95.0	85 - 115	958.2	0.828	20	
DUP	Sample ID: HS23030852-16DUP	Units: mg/L		Analysis Date: 27-Mar-2023 11:43						
Client ID:	Run ID: Skalar 03_431070	SeqNo: 7197723		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)	332.6	5.00					402.1	18.9	20	
Alkalinity, Carbonate (As CaCO3)	17.4	5.00					24.4	33.5	20	R
Alkalinity, Total (As CaCO3)	350	5.00					426.5	19.7	20	

The following samples were analyzed in this batch: HS23030820-01

Client: PDC Energy
Project: Postle IC 11-159HC
WorkOrder: HS23030820

**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
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	624-2023	31-Dec-2023
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: HS23030820

Date/Time Received: 15-Mar-2023 09:45

Client Name: PDC Energy 80203

Received by: Corey Grandits

Completed By: /S/ Corey Grandits 15-Mar-2023 12:01 Reviewed by: /S/ Tyler Monroe 16-Mar-2023 09:55
eSignature Date/Time eSignature Date/Time

Matrices: W

Carrier name: FedEx

- Shipping container/cooler in good condition? Yes [checked] No [] Not Present []
Custody seals intact on shipping container/cooler? Yes [checked] No [] Not Present []
Custody seals intact on sample bottles? Yes [] No [] Not Present [checked]
VOA/TX1005/TX1006 Solids in hermetically sealed vials? Yes [] No [] Not Present [checked]
Chain of custody present? Yes [checked] No []
Chain of custody signed when relinquished and received? Yes [checked] No []
Samplers name present on COC? Yes [checked] No []
Chain of custody agrees with sample labels? Yes [checked] No []
Samples in proper container/bottle? Yes [checked] No []
Sample containers intact? Yes [checked] No []
Sufficient sample volume for indicated test? Yes [checked] No []
All samples received within holding time? Yes [checked] No []
Container/Temp Blank temperature in compliance? Yes [checked] No []

1 Page(s)

Temperature(s)/Thermometer(s): 2.9UC/2.4C IR31
Cooler(s)/Kit(s): 47787
Date/Time sample(s) sent to storage: 3/15/23
Water - VOA vials have zero headspace? Yes [checked] No [] No VOA vials submitted []
Water - pH acceptable upon receipt? Yes [checked] No [] N/A []
pH adjusted? Yes [] No [checked] N/A []

Login Notes:

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments: []

Corrective Action: []



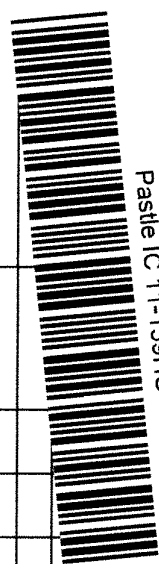
ALS Environmental
 965 E 11th St
 Loveland, CO 80537
 PH: 970-305-1648

Chain-of-Custody

WORKORDER #
 PAGE 1 of 1

SAMPLER	Jeff Braden	DATE	3/14/23	DISPOSAL	By Lab or Return to Client
PROJECT NAME	Pastle IC 11-159HC	FACILITY ID	123-39322	TURNAROUND	Standard
PROJECT No.	09C2073360	EDD FORMAT	COGCC EDD, LTE		
	PDCE Bradenhead Sampling	PURCHASE ORDER	N/A		
COMPANY NAME	PDCE Energy	BILL TO COMPANY	PDCE Energy		
SEND REPORT TO	Jenifer Hakkarinen	INVOICE ATTN TO	Jenifer Hakkarinen		
ADDRESS	1775 Sherman ST, Suite 3000	ADDRESS	1775 Sherman Street, Suite 3000		
CITY / STATE / ZIP	Denver, CO 80203	CITY / STATE / ZIP	Denver, Colorado		
PHONE	303-860-5815	PHONE	303.860.5815		
FAX		FAX			
E-MAIL	jenifer.hakkarinen@pdce.com jessica.johannsen@pdce.com jbraden@ensolum.com	E-MAIL	jenifer.hakkarinen@pdce.com		

Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC	RSK 175	SW8260_25	SW8016M	SM2320B	EPA200.7/208	EPA 300.0	SM2540C	Dissolved Methane, Ethane, Propane	BTEX & TPH GRO	TPH DRO	Alkalinity, Carbonate, Bicarbonate, Total	Total Cations - see comments	Total Anions - see comments	Total Dissolved Solids	
	Pastle IC 11-159HC	W	3/14/23	1220	11	1,2		X	X	X	X	X	X	X								



HS23030820
 PDCE Energy
 Pastle IC 11-159HC

*Time Zone: MST 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)
		LEVEL II (Standard QC)
Calcium, Chloride, Magnesium, Potassium, Sodium, Sulfate		LEVEL III (Std QC + forms)
Samples analyzed per COGCC Bradenhead Sampling Program	47787 2.9	LEVEL IV (Std QC + forms + raw data)
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
	<i>[Signature]</i>	Jeff Braden	3/14/23	1330
RECEIVED BY	<i>[Signature]</i>	Holly Tignac	3/14/23	1333
RELINQUISHED BY	<i>[Signature]</i>	Holly Tignac	3/14/23	1530
RECEIVED BY	<i>[Signature]</i>	CA	3-14-23	0945
RELINQUISHED BY	<i>[Signature]</i>			
RECEIVED BY	<i>[Signature]</i>			

ALS
10450 Stanc Wf Rd., Suite 210
Houston, Texas 77000
Tel: +1 281 530 5856
Fax: +1 281 530 5887

Date:
Name:
Company:

CUSTODY SEAL

Signature: *[Handwritten Signature]*
Date: *[Handwritten Date]*

TRK# 6182 5243 6389
0201

XA SGRA

WED 10:30A
PRIDN 10:30A

199
AH

Post # 187077-43A MTM EXP 0622

