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September 13, 2022

Max Trehus
PDC Energy
4000 Burlington Ave.
Evans, CO 80620

Work Order: **HS22081559**

Laboratory Results for: **Volt 23L**

Dear Max Trehus ,

ALS Environmental received 2 sample(s) on Aug 27, 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

Bernadette A. Fini
Project Manager

Client: PDC Energy
Project: Volt 23L
Work Order: HS22081559

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22081559-01	V-23L A	Water		25-Aug-2022 09:30	27-Aug-2022 08:40	<input type="checkbox"/>
HS22081559-02	V-23L B	Water		25-Aug-2022 09:30	27-Aug-2022 08:40	<input type="checkbox"/>

Client: PDC Energy
Project: Volt 23L
Work Order: HS22081559

CASE NARRATIVE

GC Semivolatiles by Method RSK-175**Batch ID: R416366****Sample ID: HS22081267-02MS**

- MS and MSD are for an unrelated sample

GC Semivolatiles by Method SW8015M**Batch ID: 183075****Sample ID: V-23L A (HS22081559-01)**

- The surrogate recoveries could not be determined due to dilution below the calibration range.

GC Volatiles by Method SW8015**Batch ID: R416438****Sample ID: V-23L A (HS22081559-01)**

- Surrogate recovery was below control limits due to foam caused by the sample. This was confirmed by re analysis.

GCMS Volatiles by Method SW8260**Batch ID: R416606****Sample ID: V-23L A (HS22081559-01)**

- Lowest practical dilution due to foamy matrix.

Metals by Method E200.8**Batch ID: 183258****Sample ID: HS22090004-04MS**

- MS and MSD are for an unrelated sample

Batch ID: 183370

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

WetChemistry by Method SM2320B**Batch ID: R416640**

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

WetChemistry by Method E300**Batch ID: R416622**

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

WetChemistry by Method M2540C**Batch ID: R416391**

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

Client: PDC Energy
 Project: Volt 23L
 Sample ID: V-23L A
 Collection Date: 25-Aug-2022 09:30

ANALYTICAL REPORT

WorkOrder:HS22081559
 Lab ID:HS22081559-01
 Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP			
Benzene	U		1000	5000	ug/L	5000	06-Sep-2022 15:33
Ethylbenzene	U		1500	5000	ug/L	5000	06-Sep-2022 15:33
m,p-Xylene	U		2500	10000	ug/L	5000	06-Sep-2022 15:33
o-Xylene	U		1500	5000	ug/L	5000	06-Sep-2022 15:33
Toluene	U		1000	5000	ug/L	5000	06-Sep-2022 15:33
Xylenes, Total	U		1500	5000	ug/L	5000	06-Sep-2022 15:33
Surr: 1,2-Dichloroethane-d4	105			70-126	%REC	5000	06-Sep-2022 15:33
Surr: 4-Bromofluorobenzene	102			77-113	%REC	5000	06-Sep-2022 15:33
Surr: Dibromofluoromethane	103			77-123	%REC	5000	06-Sep-2022 15:33
Surr: Toluene-d8	105			82-127	%REC	5000	06-Sep-2022 15:33
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: FT			
Gasoline Range Organics	50.4		5.00	25.0	mg/L	500	02-Sep-2022 13:28
Surr: 4-Bromofluorobenzene	29.9	S		70-123	%REC	500	02-Sep-2022 13:28
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: PPM			
Ethane	359	J	144	1000	ug/L	1000	01-Sep-2022 13:04
Methane	2,600		107	500	ug/L	1000	01-Sep-2022 13:04
Propane	1,120		1000	1000	ug/L	1000	01-Sep-2022 13:04
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 31-Aug-2022		Analyst: PPM	
DRO (>C10 - C28)	2,300		21	52	mg/L	1000	07-Sep-2022 10:52
Surr: 2-Fluorobiphenyl	0	JS		60-135	%REC	1000	07-Sep-2022 10:52
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 09-Sep-2022		Analyst: YP	
Calcium	1,400		0.180	5.00	mg/L	10	12-Sep-2022 21:41
Magnesium	0.233	J	0.00780	0.500	mg/L	1	13-Sep-2022 13:23
Potassium	314		0.330	5.00	mg/L	10	12-Sep-2022 21:41
Sodium	380		0.210	2.00	mg/L	10	12-Sep-2022 21:41
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH			
Chloride	1,450		10.0	25.0	mg/L	50	06-Sep-2022 17:47
Sulfate	632		10.0	25.0	mg/L	50	06-Sep-2022 17:47
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		Method:M2540C		Analyst: CWG			
Total Dissolved Solids (Residue, Filterable)	24,300		5.00	10.0	mg/L	1	31-Aug-2022 16:36
ALKALINITY BY SM 2320B-2011		Method:SM2320B		Analyst: JAC			
Alkalinity, Bicarbonate (As CaCO3)	203		5.00	5.00	mg/L	1	06-Sep-2022 19:56
Alkalinity, Carbonate (As CaCO3)	150		5.00	5.00	mg/L	1	06-Sep-2022 19:56
Alkalinity, Total (As CaCO3)	352		5.00	5.00	mg/L	1	06-Sep-2022 19:56

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

Client: PDC Energy
Project: Volt 23L
Sample ID: V-23L B
Collection Date: 25-Aug-2022 09:30

ANALYTICAL REPORT

WorkOrder:HS22081559
Lab ID:HS22081559-02
Matrix:Water

ANALYSES	RESULT	QUAL	MDL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
DISSOLVED METALS BY E200.8, REV 5.4, Method:E200.8 (dissolved) 1994					Prep:E200.8 / 07-Sep-2022		Analyst: YP
Calcium	1,480		0.900	25.0	mg/L	50	13-Sep-2022 15:46
Magnesium	0.170	J	0.0390	2.50	mg/L	5	13-Sep-2022 14:58
Potassium	310		0.165	2.50	mg/L	5	13-Sep-2022 14:58
Sodium	381		0.105	1.00	mg/L	5	13-Sep-2022 14:58

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

Weight / Prep Log

Client: PDC Energy

Project: Volt 23L

WorkOrder: HS22081559

Batch ID: 183003 **Start Date:** 29 Aug 2022 18:30 **End Date:** 29 Aug 2022 19:00**Method:** SAMPLE FILTRATION - 0.45 MICRON FILTER **Prep Code:** FILTRATION

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081559-02		100 (mL)	100 (mL)	1	120 mL Plastic Neat

Batch ID: 183075 **Start Date:** 31 Aug 2022 09:13 **End Date:** 01 Sep 2022 16:00**Method:** SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081559-01		31.74 (mL)	2 (mL)	0.06301	40 mL Amber

Batch ID: 183258 **Start Date:** 07 Sep 2022 14:30 **End Date:** 07 Sep 2022 17:30**Method:** DISSOLVED METALS DIGESTION BY E200.8,REV 5.4,1994 **Prep Code:** 200.8_DISSPR

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22081559-02		10 (mL)	10 (mL)	1	120 mL Plastic Neat

Batch ID: 183370 **Start Date:** 09 Sep 2022 10:00 **End Date:** 09 Sep 2022 19:00**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	
HS22081559-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 183075 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30		31 Aug 2022 09:13	07 Sep 2022 10:52	1000
Batch ID: 183258 (0)		Test Name : DISSOLVED METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22081559-02	V-23L B	25 Aug 2022 09:30		07 Sep 2022 14:30	13 Sep 2022 15:46	50
HS22081559-02	V-23L B	25 Aug 2022 09:30		07 Sep 2022 14:30	13 Sep 2022 14:58	5
Batch ID: 183370 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30		09 Sep 2022 10:00	13 Sep 2022 13:23	1
HS22081559-01	V-23L A	25 Aug 2022 09:30		09 Sep 2022 10:00	12 Sep 2022 21:41	10
Batch ID: R416366 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			01 Sep 2022 13:04	1000
Batch ID: R416391 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			31 Aug 2022 16:36	1
Batch ID: R416438 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			02 Sep 2022 13:28	500
Batch ID: R416606 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			06 Sep 2022 15:33	5000
Batch ID: R416622 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			06 Sep 2022 17:47	50
Batch ID: R416640 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS22081559-01	V-23L A	25 Aug 2022 09:30			06 Sep 2022 19:56	1

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183075 (0)		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C						
MBLK	Sample ID: MBLK-183075	Units: mg/L		Analysis Date: 01-Sep-2022 19:30						
Client ID:	Run ID: FID-16_416524		SeqNo: 6834866		PrepDate: 31-Aug-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	U	0.050								
Surr: 2-Fluorobiphenyl	0.03792	0.0050	0.06	0	63.2	60 - 135				
LCS	Sample ID: LCS-183075	Units: mg/L		Analysis Date: 01-Sep-2022 19:59						
Client ID:	Run ID: FID-16_416524		SeqNo: 6834867		PrepDate: 31-Aug-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	0.5229	0.050	0.6	0	87.1	70 - 130				
Surr: 2-Fluorobiphenyl	0.03699	0.0050	0.06	0	61.6	60 - 135				
LCSD	Sample ID: LCSD-183075	Units: mg/L		Analysis Date: 01-Sep-2022 20:29						
Client ID:	Run ID: FID-16_416524		SeqNo: 6834868		PrepDate: 31-Aug-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
DRO (>C10 - C28)	0.4602	0.050	0.6	0	76.7	70 - 130	0.5229	12.7	20	
Surr: 2-Fluorobiphenyl	0.03652	0.0050	0.06	0	60.9	60 - 135	0.03699	1.27	20	
The following samples were analyzed in this batch: HS22081559-01										

Client: PDC Energy
 Project: Volt 23L
 WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416366 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-220901	Units: ug/L		Analysis Date: 01-Sep-2022 09:00					
Client ID:	Run ID: FID-4_416366		SeqNo: 6830915		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	U	1.00							
Methane	U	0.500							
Propane	U	1.00							

LCS	Sample ID: LCS-220901	Units: ug/L		Analysis Date: 01-Sep-2022 09:24					
Client ID:	Run ID: FID-4_416366		SeqNo: 6830916		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	18.83	1.00	18.04	0	104	75 - 125			
Methane	8.649	0.500	9.647	0	89.7	75 - 125			
Propane	30.78	1.00	26.46	0	116	75 - 125			

MS	Sample ID: HS22081267-02MS	Units: ug/L		Analysis Date: 01-Sep-2022 10:43					
Client ID:	Run ID: FID-4_416366		SeqNo: 6830920		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	22.76	1.00	18.04	0	126	75 - 125			S
Methane	1869	0.500	9.647	1838	320	75 - 125			SEO
Propane	28.16	1.00	26.46	0	106	75 - 125			

MSD	Sample ID: HS22081267-02MSD	Units: ug/L		Analysis Date: 01-Sep-2022 10:57					
Client ID:	Run ID: FID-4_416366		SeqNo: 6830921		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	22.41	1.00	18.04	0	124	75 - 125	22.76	1.54	30
Methane	1863	0.500	9.647	1838	258	75 - 125	1869	0.318	30 SEO
Propane	28.22	1.00	26.46	0	107	75 - 125	28.16	0.211	30

The following samples were analyzed in this batch: HS22081559-01

Client: PDC Energy
 Project: Volt 23L
 WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416438 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-2200902	Units: mg/L		Analysis Date: 02-Sep-2022 09:48						
Client ID:	Run ID: FID-20_416438		SeqNo: 6832490		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	U	0.0500								
Surr: 4-Bromofluorobenzene	0.1074	0.00500	0.1	0	107	70 - 121				
LCS	Sample ID: LCS-220902	Units: mg/L		Analysis Date: 02-Sep-2022 09:16						
Client ID:	Run ID: FID-20_416438		SeqNo: 6832488		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8371	0.0500	1	0	83.7	76 - 124				
Surr: 4-Bromofluorobenzene	0.09048	0.00500	0.1	0	90.5	52 - 138				
LCSD	Sample ID: LCSD-220902	Units: mg/L		Analysis Date: 02-Sep-2022 09:32						
Client ID:	Run ID: FID-20_416438		SeqNo: 6832489		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.7874	0.0500	1	0	78.7	76 - 124	0.8371	6.12	20	
Surr: 4-Bromofluorobenzene	0.0808	0.00500	0.1	0	80.8	52 - 138	0.09048	11.3	20	
The following samples were analyzed in this batch: HS22081559-01										

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183258 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MBLK	Sample ID: MBLKF2-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:04					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839804		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	44.6	500							J
Magnesium	36.63	500							J
Potassium	U	500							
Sodium	224.1	200							

MBLK	Sample ID: MBLKF4-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:08					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839806		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	14.62	500							J
Potassium	U	500							
Sodium	46.39	200							J

MBLK	Sample ID: MBLKF5-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:10					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839807		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	55.41	500							J
Magnesium	20.5	500							J
Potassium	U	500							
Sodium	51.08	200							J

MBLK	Sample ID: MBLKF3-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:06					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839805		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	14.62	500							J
Potassium	U	500							
Sodium	49.19	200							J

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183258 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MBLK	Sample ID: MBLKF1-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:02					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839803		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	54.08	500							J
Magnesium	48.08	500							J
Potassium	U	500							
Sodium	329.9	200							

MBLK	Sample ID: MBLK-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:00					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839802		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	U	500							
Potassium	U	500							
Sodium	55.2	200							J

LCS	Sample ID: LCS-183258	Units: ug/L		Analysis Date: 08-Sep-2022 15:12					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839808		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	4862	500	5000	0	97.2	85 - 115			
Magnesium	5298	500	5000	0	106	85 - 115			
Potassium	5175	500	5000	0	103	85 - 115			
Sodium	5123	200	5000	0	102	85 - 115			

MS	Sample ID: HS22090004-04MS	Units: ug/L		Analysis Date: 08-Sep-2022 15:26					
Client ID:	Run ID: ICPMS07_416731	SeqNo: 6839968		PrepDate: 07-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	65050	500	5000	56400	173	85 - 115			SO
Magnesium	34940	500	5000	28630	126	85 - 115			SO
Potassium	14190	500	5000	8550	113	85 - 115			
Sodium	103500	200	5000	95250	165	85 - 115			SO

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183258 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)						
MSD		Sample ID: HS22090004-04MSD		Units: ug/L		Analysis Date: 08-Sep-2022 15:28				
Client ID:		Run ID: ICPMS07_416731		SeqNo: 6839969		PrepDate: 07-Sep-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	63450	500	5000	56400	141	85 - 115	65050	2.5	20	SO
Magnesium	34420	500	5000	28630	116	85 - 115	34940	1.52	20	SO
Potassium	13950	500	5000	8550	108	85 - 115	14190	1.72	20	
Sodium	102500	200	5000	95250	146	85 - 115	103500	0.909	20	SO

The following samples were analyzed in this batch: HS22081559-02

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183370 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
MBLK	Sample ID: MBLK-183370	Units: ug/L		Analysis Date: 12-Sep-2022 21:21					
Client ID:	Run ID: ICPMS07_416918	SeqNo: 6845117		PrepDate: 09-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	U	500							
Magnesium	11.81	500							J
Potassium	U	500							
Sodium	U	200							

LCS	Sample ID: LCS-183370	Units: ug/L		Analysis Date: 12-Sep-2022 21:23					
Client ID:	Run ID: ICPMS07_416918	SeqNo: 6845118		PrepDate: 09-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	5007	500	5000	0	100	85 - 115			
Magnesium	5157	500	5000	0	103	85 - 115			
Potassium	5223	500	5000	0	104	85 - 115			
Sodium	5132	200	5000	0	103	85 - 115			

MS	Sample ID: HS22090215-01MS	Units: ug/L		Analysis Date: 12-Sep-2022 21:32					
Client ID:	Run ID: ICPMS07_416918	SeqNo: 6845123		PrepDate: 09-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	127000	500	5000	121100	118	70 - 130			O
Magnesium	18300	500	5000	13170	103	70 - 130			
Potassium	21390	500	5000	16200	104	70 - 130			
Sodium	160600	200	5000	156200	87.0	70 - 130			O

MS	Sample ID: HS22081624-01MS	Units: ug/L		Analysis Date: 12-Sep-2022 21:27					
Client ID:	Run ID: ICPMS07_416918	SeqNo: 6845120		PrepDate: 09-Sep-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	116600	500	5000	111300	105	70 - 130			O
Magnesium	10950	500	5000	6083	97.3	70 - 130			
Potassium	8850	500	5000	3940	98.2	70 - 130			
Sodium	36870	200	5000	32050	96.2	70 - 130			O

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: 183370 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994						
MSD		Sample ID: HS22090215-01MSD		Units: ug/L		Analysis Date: 12-Sep-2022 21:34				
Client ID:		Run ID: ICPMS07_416918		SeqNo: 6845124		PrepDate: 09-Sep-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	125900	500	5000	121100	96.6	70 - 130	127000	0.851	20	O
Magnesium	18370	500	5000	13170	104	70 - 130	18300	0.398	20	
Potassium	21330	500	5000	16200	102	70 - 130	21390	0.279	20	
Sodium	160800	200	5000	156200	91.1	70 - 130	160600	0.125	20	O

MSD		Sample ID: HS22081624-01MSD		Units: ug/L		Analysis Date: 12-Sep-2022 21:28				
Client ID:		Run ID: ICPMS07_416918		SeqNo: 6845121		PrepDate: 09-Sep-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	115800	500	5000	111300	89.0	70 - 130	116600	0.7	20	O
Magnesium	10990	500	5000	6083	98.2	70 - 130	10950	0.424	20	
Potassium	8855	500	5000	3940	98.3	70 - 130	8850	0.0549	20	
Sodium	36970	200	5000	32050	98.3	70 - 130	36870	0.28	20	O

The following samples were analyzed in this batch: HS22081559-01

Client: PDC Energy
 Project: Volt 23L
 WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416606 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK	Sample ID: VBLKW-220906	Units: ug/L		Analysis Date: 06-Sep-2022 09:57					
Client ID:	Run ID: VOA7_416606	SeqNo: 6836571		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	U	1.0							
Ethylbenzene	U	1.0							
m,p-Xylene	U	2.0							
o-Xylene	U	1.0							
Toluene	U	1.0							
Xylenes, Total	U	1.0							
Surr: 1,2-Dichloroethane-d4	53.06	1.0	50	0	106	70 - 123			
Surr: 4-Bromofluorobenzene	51.21	1.0	50	0	102	77 - 113			
Surr: Dibromofluoromethane	51.73	1.0	50	0	103	73 - 126			
Surr: Toluene-d8	52.16	1.0	50	0	104	81 - 120			

LCS	Sample ID: VLCSW-220906	Units: ug/L		Analysis Date: 06-Sep-2022 09:17					
Client ID:	Run ID: VOA7_416606	SeqNo: 6836594		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	20.87	1.0	20	0	104	74 - 120			
Ethylbenzene	19.17	1.0	20	0	95.9	77 - 117			
m,p-Xylene	39.35	2.0	40	0	98.4	77 - 122			
o-Xylene	19.86	1.0	20	0	99.3	75 - 119			
Toluene	19.7	1.0	20	0	98.5	77 - 118			
Xylenes, Total	59.21	1.0	60	0	98.7	75 - 122			
Surr: 1,2-Dichloroethane-d4	53.75	1.0	50	0	107	70 - 123			
Surr: 4-Bromofluorobenzene	47.77	1.0	50	0	95.5	77 - 113			
Surr: Dibromofluoromethane	51.23	1.0	50	0	102	73 - 126			
Surr: Toluene-d8	48	1.0	50	0	96.0	81 - 120			

Client: PDC Energy
 Project: Volt 23L
 WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416606 (0)		Instrument: VOA7		Method: LOW LEVEL VOLATILES BY SW8260C					
MS		Sample ID: HS22090166-01MS	Units: ug/L		Analysis Date: 06-Sep-2022 16:59				
Client ID:		Run ID: VOA7_416606		SeqNo: 6836592		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.9	1.0	20	0.2029	98.5	70 - 127			
Ethylbenzene	20.16	1.0	20	0	101	70 - 124			
m,p-Xylene	41.46	2.0	40	0	104	70 - 130			
o-Xylene	20.27	1.0	20	0	101	70 - 124			
Toluene	20.32	1.0	20	0	102	70 - 123			
Xylenes, Total	61.73	1.0	60	0	103	70 - 130			
Surr: 1,2-Dichloroethane-d4	53.03	1.0	50	0	106	70 - 126			
Surr: 4-Bromofluorobenzene	51.35	1.0	50	0	103	77 - 113			
Surr: Dibromofluoromethane	51	1.0	50	0	102	77 - 123			
Surr: Toluene-d8	52.49	1.0	50	0	105	82 - 127			

MSD		Sample ID: HS22090166-01MSD	Units: ug/L		Analysis Date: 06-Sep-2022 17:19				
Client ID:		Run ID: VOA7_416606		SeqNo: 6836593		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	19.28	1.0	20	0.2029	95.4	70 - 127	19.9	3.15	20
Ethylbenzene	19.51	1.0	20	0	97.5	70 - 124	20.16	3.29	20
m,p-Xylene	39.96	2.0	40	0	99.9	70 - 130	41.46	3.69	20
o-Xylene	20	1.0	20	0	100	70 - 124	20.27	1.34	20
Toluene	19.54	1.0	20	0	97.7	70 - 123	20.32	3.91	20
Xylenes, Total	59.96	1.0	60	0	99.9	70 - 130	61.73	2.91	20
Surr: 1,2-Dichloroethane-d4	51.42	1.0	50	0	103	70 - 126	53.03	3.09	20
Surr: 4-Bromofluorobenzene	51.14	1.0	50	0	102	77 - 113	51.35	0.409	20
Surr: Dibromofluoromethane	51.51	1.0	50	0	103	77 - 123	51	0.977	20
Surr: Toluene-d8	52.21	1.0	50	0	104	82 - 127	52.49	0.526	20

The following samples were analyzed in this batch: HS22081559-01

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416391 (0)		Instrument: Balance1		Method: TOTAL DISSOLVED SOLIDS BY SM2540C-2011						
MBLK	Sample ID: WBLK-083122	Units: mg/L		Analysis Date: 31-Aug-2022 16:36						
Client ID:	Run ID: Balance1_416391	SeqNo: 6831408		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)		U	10.0							
LCS	Sample ID: WLCS-083122	Units: mg/L		Analysis Date: 31-Aug-2022 16:36						
Client ID:	Run ID: Balance1_416391	SeqNo: 6831409		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)		1070	10.0	1000	0	107	85 - 115			
DUP	Sample ID: HS22081439-03DUP	Units: mg/L		Analysis Date: 31-Aug-2022 16:36						
Client ID:	Run ID: Balance1_416391	SeqNo: 6831402		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)		1512	10.0				1508	0.265	5	
DUP	Sample ID: HS22081394-01DUP	Units: mg/L		Analysis Date: 31-Aug-2022 16:36						
Client ID:	Run ID: Balance1_416391	SeqNo: 6831397		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)		794	10.0				798	0.503	5	
The following samples were analyzed in this batch: HS22081559-01										

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416622 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 06-Sep-2022 15:14					
Client ID:	Run ID: ICS-Integrion_416622		SeqNo: 6837017		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	U	0.500							
Sulfate	U	0.500							

LCS	Sample ID: LCS	Units: mg/L		Analysis Date: 06-Sep-2022 15:20					
Client ID:	Run ID: ICS-Integrion_416622		SeqNo: 6837018		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	20.01	0.500	20	0	100	90 - 110			
Sulfate	20.32	0.500	20	0	102	90 - 110			

MS	Sample ID: HS22090164-01MS	Units: mg/L		Analysis Date: 06-Sep-2022 15:57					
Client ID:	Run ID: ICS-Integrion_416622		SeqNo: 6837025		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	18.81	0.500	10	8.999	98.1	80 - 120			
Sulfate	39.79	0.500	10	30.17	96.2	80 - 120			

MS	Sample ID: HS22081522-02MS	Units: mg/L		Analysis Date: 06-Sep-2022 15:41					
Client ID:	Run ID: ICS-Integrion_416622		SeqNo: 6837022		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	15.33	0.500	10	5.649	96.8	80 - 120			
Sulfate	14.33	0.500	10	4.37	99.6	80 - 120			

MSD	Sample ID: HS22090164-01MSD	Units: mg/L		Analysis Date: 06-Sep-2022 16:02					
Client ID:	Run ID: ICS-Integrion_416622		SeqNo: 6837026		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	18.82	0.500	10	8.999	98.2	80 - 120	18.81	0.0372	20
Sulfate	39.79	0.500	10	30.17	96.2	80 - 120	39.79	0.00628	20

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416622 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MSD		Sample ID: HS22081522-02MSD		Units: mg/L		Analysis Date: 06-Sep-2022 15:46			
Client ID:		Run ID: ICS-Integrion_416622		SeqNo: 6837023		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Chloride	15.24	0.500	10	5.649	95.9	80 - 120	15.33	0.582	20
Sulfate	14.29	0.500	10	4.37	99.2	80 - 120	14.33	0.274	20

The following samples were analyzed in this batch: HS22081559-01

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

QC BATCH REPORT

Batch ID: R416640 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW1-220906	Units: mg/L		Analysis Date: 06-Sep-2022 18:28					
Client ID:	Run ID: ManTech01_416640		SeqNo: 6837385		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)	U	5.00							
Alkalinity, Carbonate (As CaCO3)	U	5.00							
Alkalinity, Total (As CaCO3)	U	5.00							

LCS	Sample ID: LCS1-220906	Units: mg/L		Analysis Date: 06-Sep-2022 18:36					
Client ID:	Run ID: ManTech01_416640		SeqNo: 6837386		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)	961.1	5.00	1000	0	96.1	85 - 115			
Alkalinity, Total (As CaCO3)	985.6	5.00	1000	0	98.6	85 - 115			

LCSD	Sample ID: LCSD1-220906	Units: mg/L		Analysis Date: 06-Sep-2022 18:45					
Client ID:	Run ID: ManTech01_416640		SeqNo: 6837387		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)	958.4	5.00	1000	0	95.8	85 - 115	961.1	0.28	20
Alkalinity, Total (As CaCO3)	983	5.00	1000	0	98.3	85 - 115	985.6	0.263	20

DUP	Sample ID: HS22081221-01DUP	Units: mg/L		Analysis Date: 06-Sep-2022 19:07					
Client ID:	Run ID: ManTech01_416640		SeqNo: 6837390		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)	389.8	5.00					390	0.0436	20
Alkalinity, Carbonate (As CaCO3)	15.2	5.00					14.01	8.15	20
Alkalinity, Total (As CaCO3)	405	5.00					404	0.255	20

The following samples were analyzed in this batch: HS22081559-01

Client: PDC Energy
Project: Volt 23L
WorkOrder: HS22081559

**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
Date	
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: HS22081559

Date/Time Received: 27-Aug-2022 08:40

Client Name: PDC Energy 80620

Received by: Paresh M. Giga

Completed By: /S/ Niles D. Ranchod

29-Aug-2022 15:54

Reviewed by: /S/ Kori Bagsby

30-Aug-2022 10:24

eSignature

Date/Time

eSignature

Date/Time

Matrices: WCarrier 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 ☐

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):

4.2uc/4.0c

IR31

Cooler(s)/Kit(s):

Blue

Date/Time sample(s) sent to storage:

8/27/2022 13:00

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:

Login Notes:

Client Contacted:

Date Contacted:

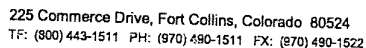
Person Contacted:

Contacted By:

Regarding:

Comments:

Corrective Action:





Form 202r8

HS22081559
PDC Energy
Volt 23C

*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.

	SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY		Max Trehms	8/26/22	10:55
RECEIVED BY	Karen Craven	Karen Craven	8-26-22	1055
RELINQUISHED BY	Karen Craven	Karen Craven	8-26-22	1530
RECEIVED BY		P. G. C. A.	8/27/22	08:40
RELINQUISHED BY				
RECEIVED BY				

Buil

AUG 2 2009

17

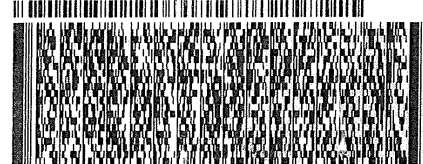
ORIGIN ID: FTCA (970) 490-1511
SAMPLE CONTROL
ALS LABORATORY GROUP
225 COMMERCE DRIVE
FORT COLLINS, CO 80524
UNITED STATES US

SHIP DATE: 26AUG22
ACTWGT: 25.39 LB
CAD: 0730254/CAFE3511
DIMS: 17x14x13 IN
BILL THIRD PARTY

TO **SAMPLE RECEIVING**
ALS ENVIRONMENTAL
10450 STANCLIFF RD.
SUITE 210
HOUSTON TX 77099

Buil

(281) 690-6868
REF: 6710-ENV-FC-LB-00



SATURDAY 12:00P
PRIORITY OVERNIGHT

TRK# 5066 7517 4620
0201

XO SGRA

77099
TX-US IAH

Per # 167077-434 MTW EXP 03/22

