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November 23, 2022

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

Work Order: **HS22101629**

Laboratory Results for: **Volt 18N**

Dear Jenifer Hakkarinen,

ALS Environmental received 2 sample(s) on Oct 28, 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: TYLER.MONROE

Tyler Monroe

Client: PDC Energy
Project: Volt 18N
Work Order: HS22101629

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS22101629-01	V-18N-A	Water		26-Oct-2022 14:00	28-Oct-2022 09:35	<input type="checkbox"/>
HS22101629-02	V-18N-B	Water		26-Oct-2022 14:00	28-Oct-2022 09:35	<input type="checkbox"/>

Client: PDC Energy
Project: Volt 18N
Work Order: HS22101629

CASE NARRATIVE

GC Semivolatiles by Method RSK-175**Batch ID: R421352**

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

GC Semivolatiles by Method SW8015M**Batch ID: 185498****Sample ID: LCSD-185498**

- The RPD between the LCS and LCSD was outside of the control limit.

Sample ID: V-18N-A (HS22101629-01)

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

GC Volatiles by Method SW8015**Batch ID: R420717****Sample ID: V-18N-A (HS22101629-01)**

- One or more surrogate recoveries were above the upper control limits. The sample results may be biased high. This was confirmed by reanalysis.

GCMS Volatiles by Method SW8260**Batch ID: R421282****Sample ID: V-18N-A (HS22101629-01)**

- Lowest practical dilution due to foamy matrix.

Sample ID: HS22110039-01MS

- MS and MSD are for an unrelated sample

Metals by Method E200.8**Batch ID: 186036**

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

Batch ID: 185903**Sample ID: HS22101342-01MS**

- MS and MSD are for an unrelated sample (Calcium,Sodium)

Sample ID: V-18N-B (HS22101629-02)

- Sample ran at 10x due to sample matrix.

WetChemistry by Method E300**Batch ID: R422225****Sample ID: HS22111071-02MS, HS22111112-01MS**

- MS and MSD are for an unrelated sample
-

Client: PDC Energy
Project: Volt 18N
Work Order: HS22101629

CASE NARRATIVE

WetChemistry by Method E300

WetChemistry by Method SM2320B

Batch ID: R421449

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

WetChemistry by Method M2540C

Batch ID: R420959

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

Client: PDC Energy
 Project: Volt 18N
 Sample ID: V-18N-A
 Collection Date: 26-Oct-2022 14:00

ANALYTICAL REPORT

WorkOrder:HS22101629
 Lab ID:HS22101629-01
 Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		Method:SW8260		Analyst: AKP		
Benzene	460		100	ug/L	100	07-Nov-2022 16:28
Ethylbenzene	ND		100	ug/L	100	07-Nov-2022 16:28
m,p-Xylene	740		200	ug/L	100	07-Nov-2022 16:28
o-Xylene	260		100	ug/L	100	07-Nov-2022 16:28
Toluene	790		100	ug/L	100	07-Nov-2022 16:28
Xylenes, Total	1,000		100	ug/L	100	07-Nov-2022 16:28
Surr: 1,2-Dichloroethane-d4	98.7		70-126	%REC	100	07-Nov-2022 16:28
Surr: 4-Bromofluorobenzene	98.6		77-113	%REC	100	07-Nov-2022 16:28
Surr: Dibromofluoromethane	103		77-123	%REC	100	07-Nov-2022 16:28
Surr: Toluene-d8	94.4		82-127	%REC	100	07-Nov-2022 16:28
GASOLINE RANGE ORGANICS BY SW8015C		Method:SW8015		Analyst: FT		
Gasoline Range Organics	175		2.50	mg/L	50	01-Nov-2022 14:04
Surr: 4-Bromofluorobenzene	725	S	70-123	%REC	50	01-Nov-2022 14:04
DISSOLVED GASES BY RSK-175		Method:RSK-175		Analyst: PPM		
Ethane	208		200	ug/L	200	07-Nov-2022 12:42
Methane	536		100	ug/L	200	07-Nov-2022 12:42
Propane	383		200	ug/L	200	07-Nov-2022 12:42
TPH DRO/ORO BY SW8015C		Method:SW8015M		Prep:SW3511 / 31-Oct-2022		Analyst: PPM
TPH (Diesel Range)	1,200		25	mg/L	500	08-Nov-2022 04:55
Surr: 2-Fluorobiphenyl	0	JS	60-135	%REC	500	08-Nov-2022 04:55
TOTAL METALS BY E200.8, REV 5.4, 1994		Method:E200.8		Prep:E200.8 / 10-Nov-2022		Analyst: JHD
Calcium	792		5.00	mg/L	10	10-Nov-2022 17:41
Magnesium	6.88		5.00	mg/L	10	10-Nov-2022 17:41
Potassium	823		5.00	mg/L	10	10-Nov-2022 17:41
Sodium	729		2.00	mg/L	10	10-Nov-2022 17:41
ANIONS BY E300.0, REV 2.1, 1993		Method:E300		Analyst: TH		
Chloride	1,320		25.0	mg/L	50	18-Nov-2022 13:36
Sulfate	1,200		25.0	mg/L	50	18-Nov-2022 13:36
TOTAL DISSOLVED SOLIDS BY SM2540C-2011		Method:M2540C		Analyst: CWG		
Total Dissolved Solids (Residue, Filterable)	15,200		10.0	mg/L	1	02-Nov-2022 18:42
ALKALINITY BY SM 2320B-2011		Method:SM2320B		Analyst: JAC		
Alkalinity, Bicarbonate (As CaCO3)	435		50.0	mg/L	10	09-Nov-2022 00:38
Alkalinity, Carbonate (As CaCO3)	740		50.0	mg/L	10	09-Nov-2022 00:38
Alkalinity, Total (As CaCO3)	1,170		50.0	mg/L	10	09-Nov-2022 00:38

Client:	PDC Energy	ANALYTICAL REPORT
Project:	Volt 18N	WorkOrder:HS22101629
Sample ID:	V-18N-B	Lab ID:HS22101629-02
Collection Date:	26-Oct-2022 14:00	Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
DISSOLVED METALS BY E200.8, REV 5.4, 1994			Method:E200.8 (dissolved)		Prep:E200.8 / 08-Nov-2022	Analyst: JHD
Calcium	755		5.00	mg/L	10	08-Nov-2022 15:14
Magnesium	ND		5.00	mg/L	10	08-Nov-2022 15:14
Potassium	707		5.00	mg/L	10	08-Nov-2022 15:14
Sodium	643		2.00	mg/L	10	08-Nov-2022 15:14

Weight / Prep Log

Client: PDC Energy

Project: Volt 18N

WorkOrder: HS22101629

Batch ID: 185498

Start Date: 31 Oct 2022 08:53

End Date: 31 Oct 2022 11:00

Method: SW3511

Prep Code: 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22101629-01		32.96 (mL)	2 (mL)	0.06068	40 mL Amber

Batch ID: 185532

Start Date: 31 Oct 2022 17:00

End Date: 31 Oct 2022 17:30

Method: SAMPLE FILTRATION - 0.45 MICRON FILTER

Prep Code: FILTRATION

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS22101629-02		100 (mL)	100 (mL)	1	120 mL Plastic Neat

Batch ID: 185903

Start Date: 08 Nov 2022 07:00

End Date: 08 Nov 2022 11:00

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	
HS22101629-02		10 (mL)	10 (mL)	1	120 mL Plastic Neat

Batch ID: 186036

Start Date: 10 Nov 2022 08:00

End Date: 10 Nov 2022 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	
HS22101629-01		10 (mL)	10 (mL)	1	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 185498 (0)		Test Name : TPH DRO/ORO BY SW8015C			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00		31 Oct 2022 09:53	08 Nov 2022 04:55	500
Batch ID: 185903 (0)		Test Name : DISSOLVED METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22101629-02	V-18N-B	26 Oct 2022 14:00		08 Nov 2022 08:00	08 Nov 2022 15:14	10
Batch ID: 186036 (0)		Test Name : TOTAL METALS BY E200.8, REV 5.4, 1994			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00		10 Nov 2022 09:00	10 Nov 2022 17:41	10
Batch ID: R420717 (0)		Test Name : GASOLINE RANGE ORGANICS BY SW8015C			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			01 Nov 2022 14:04	50
Batch ID: R420959 (0)		Test Name : TOTAL DISSOLVED SOLIDS BY SM2540C-2011			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			02 Nov 2022 18:42	1
Batch ID: R421282 (0)		Test Name : LOW LEVEL VOLATILES BY SW8260C			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			07 Nov 2022 16:28	100
Batch ID: R421352 (0)		Test Name : DISSOLVED GASES BY RSK-175			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			07 Nov 2022 12:42	200
Batch ID: R421449 (0)		Test Name : ALKALINITY BY SM 2320B-2011			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			09 Nov 2022 00:38	10
Batch ID: R422225 (0)		Test Name : ANIONS BY E300.0, REV 2.1, 1993			Matrix: Water	
HS22101629-01	V-18N-A	26 Oct 2022 14:00			18 Nov 2022 13:36	50

QC BATCH REPORT

Batch ID: 185498 (0)		Instrument: FID-16		Method: TPH DRO/ORO BY SW8015C					
MBLK	Sample ID: MBLK-185498	Units: mg/L			Analysis Date: 07-Nov-2022 13:17				
Client ID:	Run ID: FID-16_421293	SeqNo: 6968129		PrepDate: 31-Oct-2022		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							
Surr: 2-Fluorobiphenyl	0.04935	0.0050	0.06	0	82.3	60 - 135			
LCS	Sample ID: LCS-185498	Units: mg/L			Analysis Date: 07-Nov-2022 13:47				
Client ID:	Run ID: FID-16_421293	SeqNo: 6968130		PrepDate: 31-Oct-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	0.5711	0.050	0.6	0	95.2	70 - 130			
Surr: 2-Fluorobiphenyl	0.06694	0.0050	0.06	0	112	60 - 135			
LCSD	Sample ID: LCSD-185498	Units: mg/L			Analysis Date: 07-Nov-2022 14:16				
Client ID:	Run ID: FID-16_421293	SeqNo: 6968131		PrepDate: 31-Oct-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
TPH (Diesel Range)	0.5403	0.050	0.6	0	90.0	70 - 130	0.5711	5.55	20
Surr: 2-Fluorobiphenyl	0.06654	0.0050	0.06	0	111	60 - 135	0.06694	0.595	20
The following samples were analyzed in this batch: HS22101629-01									

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R421352 (0)		Instrument: FID-4		Method: DISSOLVED GASES BY RSK-175					
MBLK	Sample ID: MBLK-221107	Units: ug/L		Analysis Date: 07-Nov-2022 11:34					
Client ID:	Run ID: FID-4_421352		SeqNo: 6969312		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-221107	Units: ug/L		Analysis Date: 07-Nov-2022 11:52					
Client ID:	Run ID: FID-4_421352		SeqNo: 6969313		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	17.51	1.00	18.04	0	97.1	75 - 125			
Methane	7.329	0.500	9.647	0	76.0	75 - 125			
Propane	27.31	1.00	26.46	0	103	75 - 125			

LCSD	Sample ID: LCSD-221107	Units: ug/L		Analysis Date: 07-Nov-2022 12:26					
Client ID:	Run ID: FID-4_421352		SeqNo: 6969314		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Ethane	18.49	1.00	18.04	0	102	75 - 125	17.51	5.44	30
Methane	8.302	0.500	9.647	0	86.1	75 - 125	7.329	12.4	30
Propane	27.6	1.00	26.46	0	104	75 - 125	27.31	1.06	30

The following samples were analyzed in this batch: HS22101629-01

Client: PDC Energy
 Project: Volt 18N
 WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R420717 (0)		Instrument: FID-20		Method: GASOLINE RANGE ORGANICS BY SW8015C						
MBLK	Sample ID: MBLK-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:41						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953467		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	0.1127	0.00500	0.1	0	113	70 - 121				

LCS	Sample ID: LCS-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:10						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953465		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.9667	0.0500	1	0	96.7	76 - 124				
Surr: 4-Bromofluorobenzene	0.0962	0.00500	0.1	0	96.2	52 - 138				

LCSD	Sample ID: LCSD-221101	Units: mg/L		Analysis Date: 01-Nov-2022 10:25						
Client ID:	Run ID: FID-20_420717		SeqNo: 6953466		PrepDate:		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.8654	0.0500	1	0	86.5	76 - 124	0.9667	11.1	20	
Surr: 4-Bromofluorobenzene	0.08468	0.00500	0.1	0	84.7	52 - 138	0.0962	12.7	20	

The following samples were analyzed in this batch: HS22101629-01

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: 185903 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MBLK	Sample ID: MBLKF2-185903	Units: ug/L		Analysis Date: 08-Nov-2022 14:39					
Client ID:	Run ID: ICPMS07_421334	SeqNo: 6969528		PrepDate: 08-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	ND	500							
Magnesium	ND	500							
Potassium	ND	500							
Sodium	ND	200							

MBLK	Sample ID: MBLKF1-185903	Units: ug/L		Analysis Date: 08-Nov-2022 14:37					
Client ID:	Run ID: ICPMS07_421334	SeqNo: 6969527		PrepDate: 08-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	ND	500							
Magnesium	ND	500							
Potassium	ND	500							
Sodium	ND	200							

MBLK	Sample ID: MBLK-185903	Units: ug/L		Analysis Date: 08-Nov-2022 14:35					
Client ID:	Run ID: ICPMS07_421334	SeqNo: 6969526		PrepDate: 08-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	ND	500							
Magnesium	ND	500							
Potassium	ND	500							
Sodium	ND	200							

LCS	Sample ID: LCS-185903	Units: ug/L		Analysis Date: 08-Nov-2022 14:41					
Client ID:	Run ID: ICPMS07_421334	SeqNo: 6969529		PrepDate: 08-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit Qual
Calcium	5003	500	5000	0	100	85 - 115			
Magnesium	5179	500	5000	0	104	85 - 115			
Potassium	5274	500	5000	0	105	85 - 115			
Sodium	4888	200	5000	0	97.8	85 - 115			

Client:

Project:

WorkOrder:

PDC Energy

Volt 18N

HS22101629

QC BATCH REPORT

Batch ID: 185903 (0)		Instrument: ICPMS07		Method: DISSOLVED METALS BY E200.8, REV 5.4, 1994 (DISSOLVED)					
MS	Sample ID: HS22101342-01MS	Units: ug/L		Analysis Date: 08-Nov-2022 14:45					
Client ID:	Run ID: ICPMS07_421334		SeqNo: 6969531		PrepDate: 08-Nov-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	1790000	500	5000	1831000	-837	85 - 115			SEO
Magnesium	5615	500	5000	229.9	108	85 - 115			
Potassium	9879	500	5000	4650	105	85 - 115			
Sodium	1076000	200	5000	1097000	-420	85 - 115			SEO

MSD	Sample ID: HS22101342-01MSD	Units: ug/L		Analysis Date: 08-Nov-2022 14:46					
Client ID:	Run ID: ICPMS07_421334		SeqNo: 6969532		PrepDate: 08-Nov-2022		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	1744000	500	5000	1831000	-1760	85 - 115	1790000	2.61	20 SEO
Magnesium	5553	500	5000	229.9	106	85 - 115	5615	1.11	20
Potassium	9625	500	5000	4650	99.5	85 - 115	9879	2.6	20
Sodium	1060000	200	5000	1097000	-740	85 - 115	1076000	1.5	20 SEO

The following samples were analyzed in this batch: HS22101629-02

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: 186036 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994					
MBLK	Sample ID: MBLK-186036	Units: ug/L		Analysis Date: 10-Nov-2022 17:01					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975414		PrepDate: 10-Nov-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-186036	Units: ug/L		Analysis Date: 10-Nov-2022 17:03					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975415		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	4745	500	5000	0	94.9	85 - 115			
Magnesium	4997	500	5000	0	99.9	85 - 115			
Potassium	5040	500	5000	0	101	85 - 115			
Sodium	4873	200	5000	0	97.5	85 - 115			

MS	Sample ID: HS22101632-04MS	Units: ug/L		Analysis Date: 10-Nov-2022 17:26					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975510		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	48070	500	5000	43890	83.7	70 - 130			O
Magnesium	6293	500	5000	907.3	108	70 - 130			
Potassium	6912	500	5000	1597	106	70 - 130			
Sodium	8944	200	5000	3689	105	70 - 130			

MS	Sample ID: HS22101632-02MS	Units: ug/L		Analysis Date: 10-Nov-2022 17:16					
Client ID:	Run ID: ICPMS07_421549	SeqNo: 6975505		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Calcium	11250	500	5000	6693	91.2	70 - 130			
Magnesium	5638	500	5000	415.2	104	70 - 130			
Potassium	5785	500	5000	925	97.2	70 - 130			
Sodium	6727	200	5000	1897	96.6	70 - 130			

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: 186036 (0)		Instrument: ICPMS07		Method: TOTAL METALS BY E200.8, REV 5.4, 1994							
MSD		Sample ID: HS22101632-04MSD		Units: ug/L		Analysis Date: 10-Nov-2022 17:28					
Client ID:		Run ID: ICPMS07_421549		SeqNo: 6975511		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Calcium	47750	500	5000	43890	77.3	70 - 130	48070	0.668	20	O	
Magnesium	6433	500	5000	907.3	111	70 - 130	6293	2.21	20		
Potassium	6935	500	5000	1597	107	70 - 130	6912	0.328	20		
Sodium	8962	200	5000	3689	105	70 - 130	8944	0.201	20		

MSD		Sample ID: HS22101632-02MSD		Units: ug/L		Analysis Date: 10-Nov-2022 17:18					
Client ID:		Run ID: ICPMS07_421549		SeqNo: 6975506		PrepDate: 10-Nov-2022		DF: 1			
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual	
Calcium	11450	500	5000	6693	95.1	70 - 130	11250	1.73	20		
Magnesium	5752	500	5000	415.2	107	70 - 130	5638	2.01	20		
Potassium	5870	500	5000	925	98.9	70 - 130	5785	1.46	20		
Sodium	6861	200	5000	1897	99.3	70 - 130	6727	1.97	20		

The following samples were analyzed in this batch: HS22101629-01

Client: PDC Energy
 Project: Volt 18N
 WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R421282 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C					
MBLK		Sample ID: VBLKW-221107		Units: ug/L		Analysis Date: 07-Nov-2022 11:15			
Client ID:		Run ID: VOA4_421282		SeqNo: 6967904		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>52.57</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>47.62</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>95.2</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>54.77</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>110</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>48.61</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.2</i>	<i>81 - 120</i>			

LCS		Sample ID: VLCSW-221107		Units: ug/L		Analysis Date: 07-Nov-2022 10:33			
Client ID:		Run ID: VOA4_421282		SeqNo: 6968931		PrepDate:		DF: 1	
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual
Benzene	23.91	1.0	20	0	120	74 - 120			
Ethylbenzene	22.24	1.0	20	0	111	77 - 117			
m,p-Xylene	40.53	2.0	40	0	101	77 - 122			
o-Xylene	22.2	1.0	20	0	111	75 - 119			
Toluene	21.9	1.0	20	0	110	77 - 118			
Xylenes, Total	62.73	1.0	60	0	105	75 - 122			
<i>Surr: 1,2-Dichloroethane-d4</i>	<i>52.39</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>105</i>	<i>70 - 123</i>			
<i>Surr: 4-Bromofluorobenzene</i>	<i>50.34</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>101</i>	<i>77 - 113</i>			
<i>Surr: Dibromofluoromethane</i>	<i>54.61</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>109</i>	<i>73 - 126</i>			
<i>Surr: Toluene-d8</i>	<i>48.73</i>	<i>1.0</i>	<i>50</i>	<i>0</i>	<i>97.5</i>	<i>81 - 120</i>			

Client: PDC Energy
 Project: Volt 18N
 WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R421282 (0)		Instrument: VOA4		Method: LOW LEVEL VOLATILES BY SW8260C						
MS		Sample ID: HS22110039-01MS		Units: ug/L		Analysis Date: 07-Nov-2022 17:10				
Client ID:		Run ID: VOA4_421282		SeqNo: 6968932		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	28.03	1.0	20	0	140	70 - 127				S
Ethylbenzene	24.16	1.0	20	0	121	70 - 124				
m,p-Xylene	44.14	2.0	40	0	110	70 - 130				
o-Xylene	23.49	1.0	20	0	117	70 - 124				
Toluene	26.15	1.0	20	0	131	70 - 123				S
Xylenes, Total	67.63	1.0	60	0	113	70 - 130				
Surr: 1,2-Dichloroethane-d4	47.31	1.0	50	0	94.6	70 - 126				
Surr: 4-Bromofluorobenzene	48.36	1.0	50	0	96.7	77 - 113				
Surr: Dibromofluoromethane	50.46	1.0	50	0	101	77 - 123				
Surr: Toluene-d8	48.42	1.0	50	0	96.8	82 - 127				

MSD		Sample ID: HS22110039-01MSD		Units: ug/L		Analysis Date: 07-Nov-2022 17:31				
Client ID:		Run ID: VOA4_421282		SeqNo: 6968933		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	29.2	1.0	20	0	146	70 - 127	28.03	4.11	20	S
Ethylbenzene	25.67	1.0	20	0	128	70 - 124	24.16	6.05	20	S
m,p-Xylene	47.21	2.0	40	0	118	70 - 130	44.14	6.71	20	
o-Xylene	25.8	1.0	20	0	129	70 - 124	23.49	9.38	20	S
Toluene	27.13	1.0	20	0	136	70 - 123	26.15	3.67	20	S
Xylenes, Total	73.01	1.0	60	0	122	70 - 130	67.63	7.65	20	
Surr: 1,2-Dichloroethane-d4	46.11	1.0	50	0	92.2	70 - 126	47.31	2.56	20	
Surr: 4-Bromofluorobenzene	49.18	1.0	50	0	98.4	77 - 113	48.36	1.67	20	
Surr: Dibromofluoromethane	49.85	1.0	50	0	99.7	77 - 123	50.46	1.23	20	
Surr: Toluene-d8	47.89	1.0	50	0	95.8	82 - 127	48.42	1.08	20	

The following samples were analyzed in this batch: HS22101629-01

QC BATCH REPORT

The following samples were analyzed in this batch:	HS22101629-01
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Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R421449 (0)		Instrument: ManTech01		Method: ALKALINITY BY SM 2320B-2011					
MBLK	Sample ID: WBLKW2-110822	Units: mg/L		Analysis Date: 09-Nov-2022 00:01					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971895		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, Hydroxide (As CaCO3)	ND	5.00							
Alkalinity, Total (As CaCO3)	ND	5.00							

LCS	Sample ID: LCS1-110822	Units: mg/L		Analysis Date: 08-Nov-2022 23:31					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971891		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)	1016	5.00	1000	0	102	85 - 115			
Alkalinity, Total (As CaCO3)	1033	5.00	1000	0	103	85 - 115			

LCSD	Sample ID: LCSD1-110822	Units: mg/L		Analysis Date: 08-Nov-2022 23:40					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971892		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)	1021	5.00	1000	0	102	85 - 115	1016	0.562	20
Alkalinity, Total (As CaCO3)	1023	5.00	1000	0	102	85 - 115	1033	0.933	20

DUP	Sample ID: HS22110148-02DUP	Units: mg/L		Analysis Date: 09-Nov-2022 00:15					
Client ID:	Run ID: ManTech01_421449	SeqNo: 6971897		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)	78.92	5.00					79.38	0.581	20
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0.89	0	20
Alkalinity, Hydroxide (As CaCO3)	ND	5.00					0	0	20
Alkalinity, Total (As CaCO3)	80.42	5.00					80.27	0.187	20

The following samples were analyzed in this batch: HS22101629-01

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

QC BATCH REPORT

Batch ID: R422225 (0)		Instrument: ICS-Integrion		Method: ANIONS BY E300.0, REV 2.1, 1993					
MBLK	Sample ID: MBLK	Units: mg/L		Analysis Date: 18-Nov-2022 08:13					
Client ID:	Run ID: ICS-Integrion_422225		SeqNo: 6991318		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: 18-Nov-2022 08:24					
Client ID:	Run ID: ICS-Integrion_422225		SeqNo: 6991319		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Chloride 19.47 0.500 20 0 97.4 90 - 110

Sulfate 19.97 0.500 20 0 99.9 90 - 110

MS	Sample ID: HS22111112-01MS	Units: mg/L		Analysis Date: 18-Nov-2022 13:15					
Client ID:	Run ID: ICS-Integrion_422225		SeqNo: 6991340		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Chloride 87.46 0.500 10 78.61 88.5 80 - 120 O

Sulfate 40.27 0.500 10 31.05 92.2 80 - 120

MS	Sample ID: HS22111071-02MS	Units: mg/L		Analysis Date: 18-Nov-2022 10:06					
Client ID:	Run ID: ICS-Integrion_422225		SeqNo: 6991322		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Chloride 24.06 0.500 10 14.63 94.3 80 - 120

Sulfate 508.1 0.500 10 516.4 -83.2 80 - 120 SEO

MSD	Sample ID: HS22111112-01MSD	Units: mg/L		Analysis Date: 18-Nov-2022 13:21					
Client ID:	Run ID: ICS-Integrion_422225		SeqNo: 6991341		PrepDate:		DF: 1		
Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit Qual

Chloride 87.86 0.500 10 78.61 92.6 80 - 120 87.46 0.463 20 O

Sulfate 40.48 0.500 10 31.05 94.3 80 - 120 40.27 0.514 20

QC BATCH REPORT

The following samples were analyzed in this batch: HS22101629-01

The following samples were analyzed in this batch: HS22101629-01

Client: PDC Energy
Project: Volt 18N
WorkOrder: HS22101629

**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: HS22101629

Date/Time Received: **28-Oct-2022 09:35**

Client Name: PDC Energy 80203

Received by: **Paresh M. Giga**Completed By: /S/ Paresh M. Giga

29-Oct-2022 07:25

Reviewed by: /S/ Tyler Monroe

31-Oct-2022 11:41

eSignature

Date/Time

eSignature

Date/Time

Matrices: **Water**Carrier name: **FedEx Priority Overnight**

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:none

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):

2.0C/1.8C U/c

IR31

Cooler(s)/Kit(s):

Blue

Date/Time sample(s) sent to storage:

10/28/22 19:00

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:



Chain of Custody Form

Page _____ of _____

HS22101629

PDC Energy
Volt 18N



ALS Project Manager:

Customer Information		Project Information			
Purchase Order		Project Name	Volt 18N	A	Dissolved Gases (Methane, Ethane, Propane)
Work Order		Project Number		B	BTEX 8260
Company Name	PDC Energy	Bill To Company	PDC Energy	C	DRO 8015
Send Report To	Max Trehus	Invoice Attn.	Max Trehus	D	GRO 8015
Address	4000 Burlington Ave	Address	1775 Sherman St #3000	E	Anions (Cl, SO4), Alk (T, CO3, HCO3), TDS
				F	Dissolved Ca, Mg, K, Na - need to lab filter
City/State/Zip	Evans, CO 80620	City/State/Zip	Denver, CO 80203	G	Total Ca, Mg, K, Na
Phone	720-762-3569	Phone	303-860-5800	H	
Fax		Fax		I	
e-Mail Address	max.trehus@pdce.com Jennifer.Hakkarinen@pdce.com jessica.johannsen@pdce.com	e-Mail Address		J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	V-18N A	10/26/22	14:00	W	8	3	X										
2	V-18N A			W	1	3		X									
3	V-18N A			W	1	3			X								
4	V-18N A			W	1	3				X							
5	V-18N A			W	8	1					X						
6	V-18N B			W	8	1						X					
7	V-18N A			W	2	1							X				
8																	
9																	
10																	

Sampler(s): Please Print & Sign Max Trehus		Shipment Method:		Required Turnaround Time: <input checked="" type="checkbox"/> STD 10 Wk Days <input type="checkbox"/> 5 Wk Days <input type="checkbox"/> 2 Wk Days <input type="checkbox"/> 24 Hour		Results Due Date:	
Relinquished by:	Date: 10/27/22	Time: 10:20	Received by:	Notes: Facility ID: 466566			
Relinquished by:	Date: 10/27/22	Time: 1530	Received by (Laboratory):	QC Package: (Check Box Below)			
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory):	Cooler Temp.	X	Level II: Standard QC	TRRP-Checklist
						Level III: Std QC + Raw Data	TRRP Level IV
						Level IV: SW846 CLP-Like	
Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035				Other:			

Note: Any changes must be made in writing once samples and COC Form have been submitted to ALS Environmental.

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Blue

OCT 28 2022

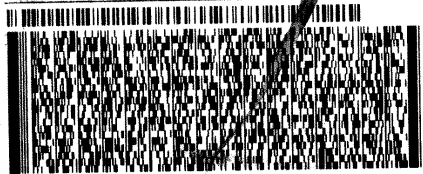
ORIGIN ID: FTCA (970) 490-1511
SAMPLE CONTROL
ALS HOUSTON
225 COMMERCE DRIVE
FORT COLLINS, CO 80524
UNITED STATES US

SHIP DATE: 27OCT22
ACTWGT: 21.60 LB
CAD: 0730254/CAPE3616
DIMS: 15x12x10 IN
BILL THIRD PARTY

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

(281) 530-5666

REF: 6710-ENV-FC-LB-00



FedEx
Express



J272022020214

TRK# 5066 7517 6699
0201

FRI - 28 OCT 10:30A
PRIORITY OVERNIGHT

XA SGRA

77099
TX-US IAH



Part # 16707-434 W.A. CAP 0822