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September 10, 2024

Jessica Johannsen
PDC Energy
1775 Sherman Street
Suite 3000
Denver, CO 80203

Work Order: **HS24081491**

Laboratory Results for: **PDCE Bradenhead Sampling**

Dear Jessica Johannsen,

ALS Environmental received 1 sample(s) on Aug 23, 2024 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
Anna Kinchen
Project Manager

Client: PDC Energy
Project: PDCE Bradenhead Sampling
Work Order: HS24081491

SAMPLE SUMMARY

Lab Samp ID	Client Sample ID	Matrix	TagNo	Collection Date	Date Received	Hold
HS24081491-01	George 4N API#051235177700	Water		20-Aug-2024 09:00	23-Aug-2024 10:00	☐

Client: PDC Energy **CASE NARRATIVE**
Project: PDCE Bradenhead Sampling
Work Order: HS24081491

Work Order Comments

- Login Notes:
  All vials have headspace >6mm.
  Metals pH >2 (13).
  Preserved with 1ml HNO3 (Lot 325153103).
  8/23/24 @ 15:10. Final pH (13).
  COC has different methods.

GC Semivolatiles by Method RSK-175

Batch ID: R475547

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

GC Semivolatiles by Method SW8015M

Batch ID: 216862

Sample ID: George 4N API#051235177700 (HS24081491-01)

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

GC Volatiles by Method SW8015

Batch ID: R475710

Sample ID: HS24081453-01MS

- MS and MSD are for an unrelated sample

GCMS Volatiles by Method SW8260

Batch ID: R475867

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

Metals by Method E200.8

Batch ID: 217231

Sample ID: HS24081457-01MS

- MS and MSD are for an unrelated sample

WetChemistry by Method E300

Batch ID: R476317

Sample ID: HS24081858-36MS

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

WetChemistry by Method SM2320B

Batch ID: R475729

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

Client: PDC Energy **CASE NARRATIVE**
Project: PDCE Bradenhead Sampling
Work Order: HS24081491

WetChemistry by Method M2540C

Batch ID: R475498

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

Client: PDC Energy
Project: PDCE Bradenhead Sampling
Sample ID: George 4N API#051235177700
Collection Date: 20-Aug-2024 09:00

ANALYTICAL REPORT
WorkOrder:HS24081491
Lab ID:HS24081491-01
Matrix:Water

ANALYSES	RESULT	QUAL	REPORT LIMIT	UNITS	DILUTION FACTOR	DATE ANALYZED
LOW LEVEL VOLATILES BY SW8260C		**Method:SW8260**				Analyst: AKP
Benzene	ND		100	ug/L	100	29-Aug-2024 17:50
Ethylbenzene	ND		100	ug/L	100	29-Aug-2024 17:50
m,p-Xylene	**320**		**200**	**ug/L**	100	29-Aug-2024 17:50
o-Xylene	ND		100	ug/L	100	29-Aug-2024 17:50
Toluene	**160**		**100**	**ug/L**	100	29-Aug-2024 17:50
Xylenes, Total	**420**		**300**	**ug/L**	100	29-Aug-2024 17:50
Surr: 1,2-Dichloroethane-d4	*93.9*		*70-126*	*%REC*	*100*	*29-Aug-2024 17:50*
Surr: 4-Bromofluorobenzene	*99.8*		*77-113*	*%REC*	*100*	*29-Aug-2024 17:50*
Surr: Dibromofluoromethane	*99.7*		*77-123*	*%REC*	*100*	*29-Aug-2024 17:50*
Surr: Toluene-d8	*98.6*		*82-127*	*%REC*	*100*	*29-Aug-2024 17:50*
GASOLINE RANGE ORGANICS BY SW8015C		**Method:SW8015**				Analyst: JL
Gasoline Range Organics	**63.9**		**25.0**	**mg/L**	500	28-Aug-2024 16:53
Surr: 4-Bromofluorobenzene	*104*		*70-123*	*%REC*	*500*	*28-Aug-2024 16:53*
DISSOLVED GASES BY RSK-175		**Method:RSK-175**				Analyst: RG
Ethane	**63.3**		**1.00**	**ug/L**	1	27-Aug-2024 09:00
Methane	**304**		**5.00**	**ug/L**	10	27-Aug-2024 09:44
Propane	**19.7**		**1.00**	**ug/L**	1	27-Aug-2024 09:00
TPH DRO/ORO BY SW8015C		**Method:SW8015M**		Prep:SW3511 / 29-Aug-2024		Analyst: SAM
TPH (Diesel Range)	**1,200**		**50**	**mg/L**	1000	30-Aug-2024 18:16
Surr: 2-Fluorobiphenyl	*0*	*JS*	*60-135*	*%REC*	*1000*	*30-Aug-2024 18:16*
TOTAL METALS BY E200.8, REV 5.4, 1994		**Method:E200.8**		Prep:E200.8 / 07-Sep-2024		Analyst: JC
Calcium	**264**		**25.0**	**mg/L**	5	09-Sep-2024 16:55
Magnesium	ND		5.00	mg/L	1	09-Sep-2024 18:09
Potassium	**1,560**		**25.0**	**mg/L**	5	09-Sep-2024 16:55
Sodium	**1,200**		**10.0**	**mg/L**	5	09-Sep-2024 16:55
ANIONS BY E300.0, REV 2.1, 1993		**Method:E300**				Analyst: TH
Chloride	**123**		**5.00**	**mg/L**	10	04-Sep-2024 11:52
Sulfate	**8.56**		**5.00**	**mg/L**	10	04-Sep-2024 11:52
TOTAL DISSOLVED SOLIDS BY SM2540C -2011		**Method:M2540C**				Analyst: MH
Total Dissolved Solids (Residue, Filterable)	**6,080**		**10.0**	**mg/L**	1	26-Aug-2024 09:30
ALKALINITY BY -2011		**Method:SM2320B**				Analyst: AR
Alkalinity, Bicarbonate (As CaCO3)	ND		100	mg/L	20	28-Aug-2024 14:03
Alkalinity, Carbonate (As CaCO3)	**2,040**		**100**	**mg/L**	20	28-Aug-2024 14:03
Alkalinity, Total (As CaCO3)	**5,980**		**100**	**mg/L**	20	28-Aug-2024 14:03

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

Weight / Prep Log

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

Batch ID: 216862 **Start Date:** 29 Aug 2024 07:00 **End Date:** 29 Aug 2024 07:00
Method: SW3511 **Prep Code:** 3511_DRO

Sample ID	Container	Sample Wt/Vol	Final Volume	Prep Factor	
HS24081491-01		32.72 (mL)	2 (mL)	0.06112	40 mL VOA vial, HCl to pH <2

Batch ID: 217231 **Start Date:** 07 Sep 2024 08:30 **End Date:** 07 Sep 2024 08:30
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	
HS24081491-01		1 (mL)	10 (mL)	10	250 mL plastic, HNO3 to pH <2

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

DATES REPORT

Sample ID	Client Samp ID	Collection Date	Leachate Date	Prep Date	Analysis Date	DF
Batch ID: 216862 (0)	**Test Name :** TPH DRO/ORO BY SW8015C				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00		29 Aug 2024 07:00	30 Aug 2024 18:16	1000
Batch ID: 217231 (0)	**Test Name :** TOTAL METALS BY E200.8, REV 5.4, 1994				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00		07 Sep 2024 08:30	09 Sep 2024 18:09	1
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00		07 Sep 2024 08:30	09 Sep 2024 16:55	5
Batch ID: R475498 (0)	**Test Name :** TOTAL DISSOLVED SOLIDS BY SM2540C-2011				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			26 Aug 2024 09:30	1
Batch ID: R475547 (0)	**Test Name :** DISSOLVED GASES BY RSK-175				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			27 Aug 2024 09:44	10
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			27 Aug 2024 09:00	1
Batch ID: R475710 (0)	**Test Name :** GASOLINE RANGE ORGANICS BY SW8015C				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			28 Aug 2024 16:53	500
Batch ID: R475729 (0)	**Test Name :** ALKALINITY BY -2011				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			28 Aug 2024 14:03	20
Batch ID: R475867 (0)	**Test Name :** LOW LEVEL VOLATILES BY SW8260C				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			29 Aug 2024 17:50	100
Batch ID: R476317 (0)	**Test Name :** ANIONS BY E300.0, REV 2.1, 1993				**Matrix:** Water	
HS24081491-01	George 4N API#051235177700	20 Aug 2024 09:00			04 Sep 2024 11:52	10

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: 216862 (0) **Instrument: FID-16** **Method: TPH DRO/ORO BY SW8015C**

MBLK Sample ID: **MBLK-216862** Units: **mg/L** Analysis Date: **29-Aug-2024 10:03**
Client ID: Run ID: **FID-16_476182** SeqNo: **8225954** PrepDate: **29-Aug-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	ND	0.050								
Surr: 2-Fluorobiphenyl	*0.06782*	*0.0050*	*0.06*	*0*	*113*	*60 - 135*				

LCS Sample ID: **LCS-216862** Units: **mg/L** Analysis Date: **29-Aug-2024 09:30**
Client ID: Run ID: **FID-16_476182** SeqNo: **8225953** PrepDate: **29-Aug-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.5319	0.050	0.6	0	88.6	70 - 130				
Surr: 2-Fluorobiphenyl	*0.05227*	*0.0050*	*0.06*	*0*	*87.1*	*60 - 135*				

MS Sample ID: **HS24081453-01MS** Units: **mg/L** Analysis Date: **29-Aug-2024 11:02**
Client ID: Run ID: **FID-16_476182** SeqNo: **8225956** PrepDate: **29-Aug-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.8502	0.051	0.6149	0.1053	121	70 - 130				
Surr: 2-Fluorobiphenyl	*0.07437*	*0.0051*	*0.06149*	*0*	*121*	*60 - 135*				

MSD Sample ID: **HS24081453-01MSD** Units: **mg/L** Analysis Date: **29-Aug-2024 11:31**
Client ID: Run ID: **FID-16_476182** SeqNo: **8225957** PrepDate: **29-Aug-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
TPH (Diesel Range)	0.8875	0.053	0.633	0.1053	124	70 - 130	0.8502	4.29	20	
Surr: 2-Fluorobiphenyl	*0.07891*	*0.0053*	*0.0633*	*0*	*125*	*60 - 135*	*0.07437*	*5.92*	*20*	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475547 (0) **Instrument:** FID-4 **Method:** DISSOLVED GASES BY RSK-175

MBLK Sample ID: **MBLK-240827** Units: **ug/L** Analysis Date: **27-Aug-2024 08:16**
Client ID: Run ID: **FID-4_475547** SeqNo: **8213872** 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	1.50								

LCS Sample ID: **LCS-240827** Units: **ug/L** Analysis Date: **27-Aug-2024 08:31**
Client ID: Run ID: **FID-4_475547** SeqNo: **8213932** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	16.98	1.00	18.04	0	94.1	75 - 125				
Methane	10.4	0.500	9.647	0	108	75 - 125				
Propane	22.32	1.50	26.46	0	84.3	75 - 125				

LCSD Sample ID: **LCSD-240827** Units: **ug/L** Analysis Date: **27-Aug-2024 08:45**
Client ID: Run ID: **FID-4_475547** SeqNo: **8213961** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Ethane	15.67	1.00	18.04	0	86.9	75 - 125	16.98	8	30	
Methane	9.263	0.500	9.647	0	96.0	75 - 125	10.4	11.5	30	
Propane	22.32	1.50	26.46	0	84.4	75 - 125	22.32	0.0145	30	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475710 (0) **Instrument:** FID-20 **Method:** GASOLINE RANGE ORGANICS BY SW8015C

MBLK Sample ID: **MBLK-240828** Units: **mg/L** Analysis Date: **28-Aug-2024 10:47**
Client ID: Run ID: **FID-20_475710** SeqNo: **8217013** 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	*0.1008*	*0.00500*	*0.1*	*0*	*101*	*70 - 121*				

LCS Sample ID: **LCS-240828** Units: **mg/L** Analysis Date: **28-Aug-2024 10:20**
Client ID: Run ID: **FID-20_475710** SeqNo: **8217011** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.7784	0.0500	1	0	77.8	76 - 124				
Surr: 4-Bromofluorobenzene	*0.08602*	*0.00500*	*0.1*	*0*	*86.0*	*52 - 138*				

LCSD Sample ID: **LCSD-240828** Units: **mg/L** Analysis Date: **28-Aug-2024 10:34**
Client ID: Run ID: **FID-20_475710** SeqNo: **8217012** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.7937	0.0500	1	0	79.4	76 - 124	0.7784	1.94	20	
Surr: 4-Bromofluorobenzene	*0.0893*	*0.00500*	*0.1*	*0*	*89.3*	*52 - 138*	*0.08602*	*3.73*	*20*	

MS Sample ID: **HS24081453-01MS** Units: **mg/L** Analysis Date: **28-Aug-2024 13:44**
Client ID: Run ID: **FID-20_475710** SeqNo: **8218424** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.3022	0.0500	1	0	30.2	70 - 130				S
Surr: 4-Bromofluorobenzene	*0.03166*	*0.00500*	*0.1*	*0*	*31.7*	*70 - 123*				S

MSD Sample ID: **HS24081453-01MSD** Units: **mg/L** Analysis Date: **28-Aug-2024 13:58**
Client ID: Run ID: **FID-20_475710** SeqNo: **8218425** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Gasoline Range Organics	0.3455	0.0500	1	0	34.5	70 - 130	0.3022	13.4	20	S
Surr: 4-Bromofluorobenzene	*0.03418*	*0.00500*	*0.1*	*0*	*34.2*	*70 - 123*	*0.03166*	*7.65*	*20*	S

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: 217231 (0) **Instrument: ICPMS06** **Method: TOTAL METALS BY E200.8, REV 5.4, 1994**

MBLK Sample ID: **MBLK-217231** Units: **ug/L** Analysis Date: **09-Sep-2024 16:29**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239731** PrepDate: **07-Sep-2024** 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-217231** Units: **ug/L** Analysis Date: **09-Sep-2024 16:31**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239732** PrepDate: **07-Sep-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	5113	500	5000	0	102	85 - 115				
Magnesium	5120	500	5000	0	102	85 - 115				
Potassium	4894	500	5000	0	97.9	85 - 115				
Sodium	5260	200	5000	0	105	85 - 115				

MS Sample ID: **HS24081879-01MS** Units: **ug/L** Analysis Date: **09-Sep-2024 16:45**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239738** PrepDate: **07-Sep-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	22040	500	5000	17680	87.3	70 - 130				
Magnesium	6253	500	5000	1464	95.8	70 - 130				
Potassium	6514	500	5000	1821	93.8	70 - 130				
Sodium	12960	200	5000	8379	91.7	70 - 130				

MS Sample ID: **HS24081457-01MS** Units: **ug/L** Analysis Date: **09-Sep-2024 16:36**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239734** PrepDate: **07-Sep-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	146300	500	5000	162400	-323	70 - 130				SO
Magnesium	25690	500	5000	24140	30.9	70 - 130				SO
Potassium	25370	500	5000	24070	26.0	70 - 130				SO
Sodium	503600	200	5000	570900	-1350	70 - 130				SEO

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: 217231 (0) **Instrument: ICPMS06** **Method: TOTAL METALS BY E200.8, REV 5.4, 1994**

MSD Sample ID: **HS24081879-01MSD** Units: **ug/L** Analysis Date: **09-Sep-2024 16:47**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239739** PrepDate: **07-Sep-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	22180	500	5000	17680	90.1	70 - 130	22040	0.647	20	
Magnesium	6305	500	5000	1464	96.8	70 - 130	6253	0.817	20	
Potassium	6415	500	5000	1821	91.9	70 - 130	6514	1.52	20	
Sodium	13140	200	5000	8379	95.2	70 - 130	12960	1.37	20	

MSD Sample ID: **HS24081457-01MSD** Units: **ug/L** Analysis Date: **09-Sep-2024 16:38**
Client ID: Run ID: **ICPMS06_476608** SeqNo: **8239735** PrepDate: **07-Sep-2024** DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Calcium	165700	500	5000	162400	65.9	70 - 130	146300	12.5	20	SO
Magnesium	28710	500	5000	24140	91.3	70 - 130	25690	11.1	20	O
Potassium	28610	500	5000	24070	90.8	70 - 130	25370	12	20	O
Sodium	565300	200	5000	570900	-113	70 - 130	503600	11.5	20	SEO

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475867 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MBLK Sample ID: **VBLKW-240828** Units: **ug/L** Analysis Date: **29-Aug-2024 11:39**
Client ID: Run ID: **VOA7_475867** SeqNo: **8219753** 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	3.0								
Surr: 1,2-Dichloroethane-d4	*42.69*	*1.0*	*50*	*0*	*85.4*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*45.24*	*1.0*	*50*	*0*	*90.5*	*77 - 113*				
Surr: Dibromofluoromethane	*47.86*	*1.0*	*50*	*0*	*95.7*	*73 - 126*				
Surr: Toluene-d8	*49.9*	*1.0*	*50*	*0*	*99.8*	*81 - 120*				

LCS Sample ID: **VLCSW-240828** Units: **ug/L** Analysis Date: **29-Aug-2024 10:30**
Client ID: Run ID: **VOA7_475867** SeqNo: **8219751** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	18.48	1.0	20	0	92.4	74 - 120				
Ethylbenzene	19.3	1.0	20	0	96.5	77 - 117				
m,p-Xylene	37.54	2.0	40	0	93.8	77 - 122				
o-Xylene	18.49	1.0	20	0	92.5	75 - 119				
Toluene	18.33	1.0	20	0	91.6	77 - 118				
Xylenes, Total	56.03	3.0	60	0	93.4	75 - 122				
Surr: 1,2-Dichloroethane-d4	*45.58*	*1.0*	*50*	*0*	*91.2*	*70 - 123*				
Surr: 4-Bromofluorobenzene	*47.08*	*1.0*	*50*	*0*	*94.2*	*77 - 113*				
Surr: Dibromofluoromethane	*50.17*	*1.0*	*50*	*0*	*100*	*73 - 126*				
Surr: Toluene-d8	*48.09*	*1.0*	*50*	*0*	*96.2*	*81 - 120*				

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475867 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

LCSD Sample ID: **VLCSDW-240828** Units: **ug/L** Analysis Date: **29-Aug-2024 10:53**
Client ID: Run ID: **VOA7_475867** SeqNo: **8219752** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	17.63	1.0	20	0	88.1	74 - 120	18.48	4.73	20	
Ethylbenzene	19	1.0	20	0	95.0	77 - 117	19.3	1.58	20	
m,p-Xylene	37.48	2.0	40	0	93.7	77 - 122	37.54	0.147	20	
o-Xylene	18.33	1.0	20	0	91.6	75 - 119	18.49	0.905	20	
Toluene	18.01	1.0	20	0	90.0	77 - 118	18.33	1.76	20	
Xylenes, Total	55.81	3.0	60	0	93.0	75 - 122	56.03	0.397	20	
Surr: 1,2-Dichloroethane-d4	*45.24*	*1.0*	*50*	*0*	*90.5*	*70 - 123*	*45.58*	*0.738*	*20*	
Surr: 4-Bromofluorobenzene	*48.96*	*1.0*	*50*	*0*	*97.9*	*77 - 113*	*47.08*	*3.91*	*20*	
Surr: Dibromofluoromethane	*49.43*	*1.0*	*50*	*0*	*98.9*	*73 - 126*	*50.17*	*1.49*	*20*	
Surr: Toluene-d8	*48.75*	*1.0*	*50*	*0*	*97.5*	*81 - 120*	*48.09*	*1.36*	*20*	

MS Sample ID: **HS24081360-08MS** Units: **ug/L** Analysis Date: **29-Aug-2024 20:33**
Client ID: Run ID: **VOA7_475867** SeqNo: **8221915** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Benzene	434.6	25	500	9.846	85.0	70 - 127				
Ethylbenzene	450.7	25	500	0	90.1	70 - 124				
m,p-Xylene	884.5	50	1000	0	88.4	70 - 130				
o-Xylene	417.5	25	500	0	83.5	70 - 124				
Toluene	430.5	25	500	0	86.1	70 - 123				
Xylenes, Total	1302	75	1500	0	86.8	70 - 130				
Surr: 1,2-Dichloroethane-d4	*1187*	*25*	*1250*	*0*	*95.0*	*70 - 126*				
Surr: 4-Bromofluorobenzene	*1248*	*25*	*1250*	*0*	*99.8*	*77 - 113*				
Surr: Dibromofluoromethane	*1252*	*25*	*1250*	*0*	*100*	*77 - 123*				
Surr: Toluene-d8	*1211*	*25*	*1250*	*0*	*96.9*	*82 - 127*				

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475867 (0) **Instrument: VOA7** **Method: LOW LEVEL VOLATILES BY SW8260C**

MSD Sample ID: **HS24081360-08MSD** Units: **ug/L** Analysis Date: **29-Aug-2024 20:56**
Client ID: Run ID: **VOA7_475867** SeqNo: **8221916** PrepDate: DF: **25**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	RPD %RPD	RPD Limit	Qual
Benzene	423.6	25	500	9.846	82.8	70 - 127	434.6	2.57	20	
Ethylbenzene	443.2	25	500	0	88.6	70 - 124	450.7	1.68	20	
m,p-Xylene	829.4	50	1000	0	82.9	70 - 130	884.5	6.42	20	
o-Xylene	420.5	25	500	0	84.1	70 - 124	417.5	0.705	20	
Toluene	411.9	25	500	0	82.4	70 - 123	430.5	4.4	20	
Xylenes, Total	1250	75	1500	0	83.3	70 - 130	1302	4.08	20	
Surr: 1,2-Dichloroethane-d4	*1165*	*25*	*1250*	*0*	*93.2*	*70 - 126*	*1187*	*1.89*	*20*	
Surr: 4-Bromofluorobenzene	*1243*	*25*	*1250*	*0*	*99.4*	*77 - 113*	*1248*	*0.4*	*20*	
Surr: Dibromofluoromethane	*1283*	*25*	*1250*	*0*	*103*	*77 - 123*	*1252*	*2.44*	*20*	
Surr: Toluene-d8	*1200*	*25*	*1250*	*0*	*96.0*	*82 - 127*	*1211*	*0.95*	*20*	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475498 (0) **Instrument:** Balance1 **Method:** TOTAL DISSOLVED SOLIDS BY SM2540C-2011

MBLK Sample ID: **WMBLK-08262024** Units: **mg/L** Analysis Date: **26-Aug-2024 09:30**
Client ID: Run ID: **Balance1_475498** SeqNo: **8212863** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Total Dissolved Solids (Residue, Filterable)	ND	10.0								

LCS Sample ID: **WLCS-08262024** Units: **mg/L** Analysis Date: **26-Aug-2024 09:30**
Client ID: Run ID: **Balance1_475498** SeqNo: **8212862** 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)	970	10.0	1000	0	97.0	85 - 115				

DUP Sample ID: **HS24081499-04 DUP** Units: **mg/L** Analysis Date: **26-Aug-2024 09:30**
Client ID: Run ID: **Balance1_475498** SeqNo: **8212857** 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)	8500	10.0					8600	1.17	20	

DUP Sample ID: **HS24081491-01 DUP** Units: **mg/L** Analysis Date: **26-Aug-2024 09:30**
Client ID: **George 4N API#051235177700** Run ID: **Balance1_475498** SeqNo: **8212851** 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)	6100	10.0					6080	0.328	20	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R475729 (0) **Instrument: Skalar 03** **Method: ALKALINITY BY -2011**

MBLK Sample ID: **MBLK-08282024** Units: **mg/L** Analysis Date: **28-Aug-2024 13:25**
Client ID: Run ID: **Skalar 03_475729** SeqNo: **8217282** 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-08282024** Units: **mg/L** Analysis Date: **28-Aug-2024 13:31**
Client ID: Run ID: **Skalar 03_475729** SeqNo: **8217283** 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)	952.8	5.00	1000	0	95.3	85 - 115				
Alkalinity, Total (As CaCO3)	958.4	5.00	1000	0	95.8	85 - 115				

LCSD Sample ID: **LCSD-08282024** Units: **mg/L** Analysis Date: **28-Aug-2024 13:36**
Client ID: Run ID: **Skalar 03_475729** SeqNo: **8217284** 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)	955.6	5.00	1000	0	95.6	85 - 115	952.8	0.293	20	
Alkalinity, Total (As CaCO3)	958.9	5.00	1000	0	95.9	85 - 115	958.4	0.0522	20	

DUP Sample ID: **HS24081450-04DUP** Units: **mg/L** Analysis Date: **28-Aug-2024 13:47**
Client ID: Run ID: **Skalar 03_475729** SeqNo: **8217286** 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)	74.2	5.00					76.3	2.79	20	
Alkalinity, Carbonate (As CaCO3)	ND	5.00					0	0	20	
Alkalinity, Total (As CaCO3)	74.2	5.00					76.3	2.79	20	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R476317 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0, REV 2.1, 1993**

MBLK Sample ID: **MBLK** Units: **mg/L** Analysis Date: **04-Sep-2024 08:17**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228724** 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: **04-Sep-2024 08:29**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228725** PrepDate: DF: **1**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	21.24	0.500	20	0	106	90 - 110				
Sulfate	21.56	0.500	20	0	108	90 - 110				

MS Sample ID: **HS24081858-36MS** Units: **mg/L** Analysis Date: **04-Sep-2024 10:37**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228744** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	332.2	5.00	100	236.7	95.6	80 - 120				
Sulfate	469.6	5.00	100	389.9	79.7	80 - 120				S

MS Sample ID: **HS24081511-01MS** Units: **mg/L** Analysis Date: **04-Sep-2024 11:29**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228749** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23270	250	5000	19250	80.4	80 - 120				
Sulfate	4932	250	5000	615.2	86.3	80 - 120				

MSD Sample ID: **HS24081858-36MSD** Units: **mg/L** Analysis Date: **04-Sep-2024 10:43**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228745** PrepDate: DF: **10**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	331.5	5.00	100	236.7	94.8	80 - 120	332.2	0.229	20	
Sulfate	467.5	5.00	100	389.9	77.5	80 - 120	469.6	0.45	20	S

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: HS24081491

QC BATCH REPORT

Batch ID: R476317 (0) **Instrument: ICS-Integrion** **Method: ANIONS BY E300.0, REV 2.1, 1993**

MSD Sample ID: **HS24081511-01MSD** Units: **mg/L** Analysis Date: **04-Sep-2024 11:35**
Client ID: Run ID: **ICS-Integrion_476317** SeqNo: **8228750** PrepDate: DF: **500**

Analyte	Result	PQL	SPK Val	SPK Ref Value	%REC	Control Limit	RPD Ref Value	%RPD	RPD Limit	Qual
Chloride	23250	250	5000	19250	80.1	80 - 120	23270	0.0645	20	
Sulfate	4893	250	5000	615.2	85.6	80 - 120	4932	0.803	20	

The following samples were analyzed in this batch: HS24081491-01

Client: PDC Energy
Project: PDCE Bradenhead Sampling
WorkOrder: **HS24081491**

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 Quantitaion 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
Arizona	AZ0793	27-May-2025
Arkansas	88-00356_2024	27-Mar-2025
California	2919; 2025	30-Apr-2025
Dept of Defense	L22-90-R2	30-Apr-2026
Florida	E87611-38	30-Jun-2025
Illinois	2000322023-11	31-Jul-2025
Kansas	E-10352 2023-2024	31-Jul-2025
Kentucky	123043	30-Apr-2025
Louisiana	03087 2023-2024	30-Jun-2025
Maine	2024017	23-Jun-2026
Michigan	9971	30-Apr-2025
Nebraska	NE-OS-25-13	30-Apr-2025
New Jersey	TX008	30-Jun-2025
North Carolina	624 - 2024	31-Dec-2024
North Dakota	R-193 2023-2024	30-Sep-2024
Pennsylvania	018	30-Jun-2025
Tennessee	04016	30-Apr-2025
Texas	T104704231 TX-C24-00130	30-Apr-2025
Utah	TX026932023-14	31-Jul-2025

Sample Receipt Checklist

Work Order ID: HS24081491 **Date/Time Received:** **23-Aug-2024 10:00**

Client Name: PDC Energy 80203 **Received by:** **Paresh M. Giga**

Completed By:	/S/ Paresh M. Giga	23-Aug-2024 17:12	**Reviewed by:**	/S/ Anna Kinchen	26-Aug-2024 12:03
	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):	1.0C/1.0C U/C	IR35	
Cooler(s)/Kit(s):	49438		
Date/Time sample(s) sent to storage:	8/23/24 17:25		
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:	Paresh M. Giga		

Login Notes:
All vials have headspace >6mm.
Metals pH >2 (13).
Preserved with 1ml HNO3 (Lot 325153103).
8/23/24 @ 15:10. Final pH (13).
COC has different methods.

Client Contacted: Date Contacted: Person Contacted:

Contacted By: Regarding:

Comments:

Corrective Action:

ALS Environmental

Chain of Custody Form

Page _____ of _____

HS24081491

PDC Energy

PDCE Bradenhead Sampling

ALS Project Manager:

Customer Information		Project Information		Parameter/Method Request for Analysis	
PO Number	100004134	Project Name	PDCE Bradenhead Sampling	A	RSK 175
Work Order	George 4N	Project Number	05123517700	B	SW8260_25
Company Name	PDC Energy	Bill To Company	PDC Energy	C	SW8016M
Send Report To	Jessica Johannsen, Cassie Gonzalez	Invoice Attn.	Christopher Schelich	D	SM2320B
Address	1099 18th Street, Suite 1500	Address	1099 18th Street, Suite 1500	E	EPA200.7/208
				F	EPA 300.0
City/State/Zip	Denver Colorado 80202	City/State/Zip	Denver Colorado 80202	G	SM240C
Phone	303-860-5800	Phone	970-415-1881	H	
Fax		Fax		I	Require COGCC EDD, LTE
e-Mail Address	jessica.johannsen@pdce.com cassie.g	e-Mail Address	Christopher.Schelich@pdce.com	J	

No.	Sample Description	Date	Time	Matrix	Pres.	# Bottles	A	B	C	D	E	F	G	H	I	J	Hold
1	George 4N API# 05123517700	8/20/24	9:00	W	1,2	11	X	X	X	X	X	X	X				
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Sampler(s): Please Print & Sign: Christopher Schelich

Shipment Method:

Required Turnaround Time: ☑ STD 10 Wk Days ☐ 5 Wk Days ☐ 2 Wk Days ☐ 24 Hour ☐ Other _____

Results Due Date:

Relinquished by:	Date: 8/20/24	Time: 9:00	Received by: Jenny Morgan	8.22.24 9:55	Notes:
Relinquished by: Jenny Morgan	Date: 8.22.24	Time: ~~9~~ 16:00	Received by (Laboratory):	8/23/24 10:00	Cooler Temp. 0.2°C
Logged by (Laboratory):	Date:	Time:	Checked by (Laboratory): 49438.		1.0°C +3.3

Preservative Key: 1-HCL 2-HNO3 3-H2SO4 4-NaOH 5-Na2S2O3 6-NaHSO4 7-Other 8-4 degrees C 9-5035 also

QC Package: (Check Box Below)

X	Level II: Standard QC		TRRP-Checklist
	Level III: Std QC + Raw Data		TRRP Level IV
	Level IV: SW846 CLP-Like		
	Other: _____		

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