

PDC Energy, Inc.
First Quarter 2021 Groundwater Monitoring Summary

February 15, 2021

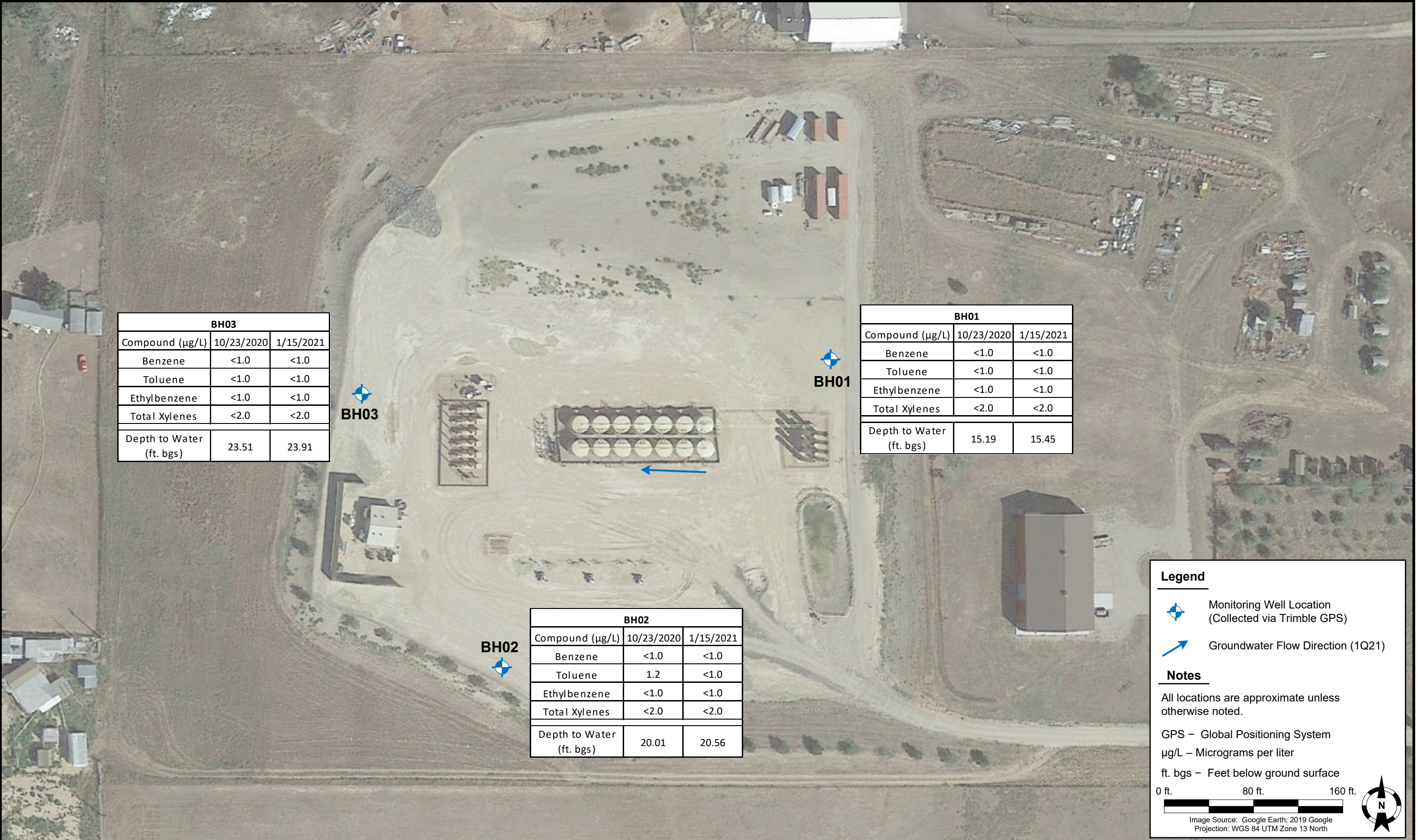
Eberle 13-32 CHZ Facility
NESE Section 32 T1N R66W
Remediation # 15999

This groundwater monitoring summary has been prepared by Tasman Geosciences, Inc. for the Eberle 13-32 CHZ Facility. On January 15, 2021, groundwater monitoring was conducted at all three monitoring wells (BH01 – BH03). Three groundwater samples were submitted to Summit Scientific Laboratory for analysis of benzene, toluene, ethylbenzene, and total xylenes (BTEX) by EPA Method 8260B.

First quarter 2021 analytical results indicated that BTEX concentrations were below the applicable COGCC Table 910-1 standards in all three monitoring well locations. Sample locations and corresponding analytical results are illustrated on Figure 1. Groundwater elevation data is illustrated on Figure 2. Groundwater analytical results are summarized in Table 1. The laboratory analytical report is included in Attachment A.

Per the Condition of Approval (COA) issued by the State and City of Brighton, groundwater monitoring will continue on a quarterly basis to assess and confirm the absence of dissolved-phase impacts at the Eberle 13-32 CHZ production facility.

Second quarter 2021 groundwater sampling will be conducted in April 2021.



DATE:	February 15, 2021
DESIGNED BY:	C. Hamlin
DRAWN BY:	J. McCarver



TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Eberle 13-32 CHZ Facility
NESE, Section 32, Township 1 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ANALYTICAL RESULTS
MAP**

**FIGURE
1**



DATE:	February 15, 2021
DESIGNED BY:	B. Nelson
DRAWN BY:	A. Dahl



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GEOSCIENCES

Tasman Geosciences, Inc.
6855 W. 119th Ave.
Broomfield, CO 80020

PDC Energy, Inc. – DJ Basin
Eberle 13-32 CHZ Facility
NESE, Section 32, Township 1 North, Range 66 West
Weld County, Colorado

**GROUNDWATER
ELEVATION CONTOUR
MAP (01/15/2021)**

**FIGURE
2**

TABLE 1
EBERLE 13-32 CHZ FACILITY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (ft.)	Groundwater Elevation (ft. AMSL)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400		
BH01	10/23/2020	<1.0	<1.0	<1.0	<2.0	15.19	5007.90
BH01	1/15/2021	<1.0	<1.0	<1.0	<2.0	15.45	5007.64
BH02	10/23/2020	<1.0	1.2	<1.0	<2.0	20.01	5003.10
BH02	1/15/2021	<1.0	<1.0	<1.0	<2.0	20.56	5002.55
BH03	10/23/2020	<1.0	<1.0	<1.0	<2.0	23.51	4999.27
BH03	1/15/2021	<1.0	<1.0	<1.0	<2.0	23.91	4998.87

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective May 1, 2018.

2. Depth to water measurements were measured from ground surface for excavation samples. Monitoring well measurements were collected from top of casing and adjusted using survey data to reflect depth of water from ground surface.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

(<) = Analytical result is less than the indicated laboratory reporting limit.

ft. = Feet

AMSL = Above Mean Sea Level

ATTACHMENT A

Summit Scientific

4653 Table Mountain Drive, Golden, Colorado 80403

303.277.9310

January 22, 2021

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

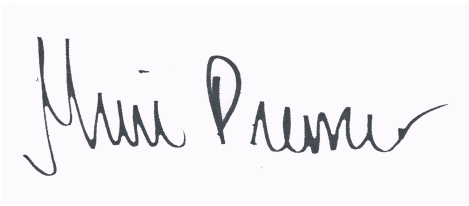
Denver, CO 80203

RE: Eberle 13-32 CHZ Facility

Work Order #2101150

Enclosed are the results of analyses for samples received by Summit Scientific on 01/15/21 18:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, reading "Muri Premier", is displayed on a light purple rectangular background.

Muri Premier For Paul Shrewsbury
President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Eberle 13-32 CHZ Facility

Project Number: [none]

Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH01	2101150-01	Water	01/15/21 14:20	01/15/21 18:00
BH02	2101150-02	Water	01/15/21 14:35	01/15/21 18:00
BH03	2101150-03	Water	01/15/21 14:45	01/15/21 18:00

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Summit Scientific

S₂

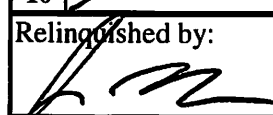
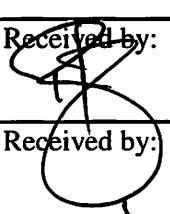
2101150

4653 Table Mountain Drive ♦ Golden, Colorado 80403
303-277-9310

Page 1 of 1

Client:	PDC / Tasman	Project Manager:	Mark Longhurst
Address:	6855 W 119th Ave	E-Mail:	mark.longhurst@PDCE.com
City/State/Zip:	Broomfield/ CO/ 80020		
Phone:	303-487-1228	Project Name:	Eberle B-32 CH ₂ Facility
Sampler Name:		Project Number:	N/A

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix				Analysis Requested						Special Instructions	
					HCl	HNO ₃	None	Other	Water	Soil	Air-Canister #	Other	8260 BTEX	8260B GBTEXN	8015 DRO	pH / EC				
1	BH01	1/15/21	1420	3	X				X					X						
2	BH02	1/15/21	1435	3	X				X					X						
3	BH03	1/15/21	1445	3	X				X					X						
4																				
5																				
6																				
7																				
8																				
9																				
10																				

Relinquished by:	Date/Time:	Received by:	Date/Time:	Turn Around Time	(Check)	Notes:
	1/15/21 1550	Tasman's Lock Box	1/15/21 1550	Same Day	72 hours	
Relinquished by:	Date/Time:	Received by:	Date/Time:	24 hours	Standard	
Tasman's Lock Box	01/15/2021 1800		01/15/2021 1800	48 hours		
Relinquished by:	Date/Time:	Received by:	Date/Time:	Sample Integrity:		
				Temperature Upon Receipt: 4.8		
				Samples Intact: Yes No		

Sample Receipt Checklist

S2 Work Order 2101150

Client: POC ITASMAN

Client Project ID: Chesle 13-32 CHZ Facility

Shipped Via: H.D./P.U./FedEx/UPS/USPS/Other _____ Airbill #: _____

☐ ☒ ☐ ☐ ☐

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____ (Describe)

Temp (°C) 4.8

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ? NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples with holding times due within 48 hours sample due within 48 hours present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Custodian Printed Name or Initials PS

Signature of Custodian [Signature]

Date/Time 01/15/2021



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

BH01
2101150-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/15/21 14:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Benzene	ND	1.0	ug/l	1	BEA0170	01/18/21	01/19/21	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/15/21 14:20**

Analyte	Result	Reporting		Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit	Units						
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

BH02
2101150-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/15/21 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEA0170	01/18/21	01/19/21	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/15/21 14:35**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		106 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

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Denver CO, 80203

Project: Eberle 13-32 CHZ Facility
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

BH03
2101150-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/15/21 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Benzene	ND	1.0	ug/l	1	BEA0170	01/18/21	01/19/21	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **01/15/21 14:45**

Analyte	Result	Reporting	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit							
Surrogate: 1,2-Dichloroethane-d4		108 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		108 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		100 %	21-167		"	"	"	"	

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Denver CO, 80203

Project: Eberle 13-32 CHZ Facility

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control

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Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BEA0170 - EPA 5030 Water MS

Blank (BEA0170-BLK1)

Prepared: 01/18/21 Analyzed: 01/19/21

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.5		"	13.3		101	23-173			
Surrogate: Toluene-d8	13.1		"	13.3		98.4	20-170			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		99.4	21-167			

LCS (BEA0170-BS1)

Prepared: 01/18/21 Analyzed: 01/19/21

Benzene	26.1	1.0	ug/l	33.3		78.4	51-132			
Toluene	31.5	1.0	"	33.3		94.4	51-138			
Ethylbenzene	35.5	1.0	"	33.3		106	58-146			
m,p-Xylene	70.3	2.0	"	66.7		105	57-144			
o-Xylene	36.0	1.0	"	33.3		108	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		98.8	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

Matrix Spike (BEA0170-MS1)

Source: 2101147-01

Prepared: 01/18/21 Analyzed: 01/19/21

Benzene	26.8	1.0	ug/l	33.3	ND	80.3	34-141			
Toluene	31.8	1.0	"	33.3	ND	95.5	27-151			
Ethylbenzene	35.7	1.0	"	33.3	ND	107	29-160			
m,p-Xylene	70.3	2.0	"	66.7	ND	106	20-166			
o-Xylene	36.0	1.0	"	33.3	ND	108	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		103	23-173			
Surrogate: Toluene-d8	13.5		"	13.3		101	20-170			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.0	21-167			

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Denver CO, 80203

Project: Eberle 13-32 CHZ Facility

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/22/21 16:22

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source		%REC		RPD	
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes

Batch BEA0170 - EPA 5030 Water MS

Matrix Spike Dup (BEA0170-MSD1)	Source: 2101147-01			Prepared: 01/18/21 Analyzed: 01/19/21						
Benzene	26.4	1.0	ug/l	33.3	ND	79.1	34-141	1.54	30	
Toluene	31.3	1.0	"	33.3	ND	93.8	27-151	1.74	30	
Ethylbenzene	35.3	1.0	"	33.3	ND	106	29-160	1.01	30	
m,p-Xylene	70.2	2.0	"	66.7	ND	105	20-166	0.128	30	
o-Xylene	35.8	1.0	"	33.3	ND	108	33-159	0.501	30	
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		101	23-173			
Surrogate: Toluene-d8	13.4		"	13.3		100	20-170			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	21-167			

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