



March 17, 2022

**Peterson Energy Operating, Inc.**

**Ryan Dornbos**

**2154 W. Eisenhower Blvd.**

**Loveland CO 80537**

**Project Name - Church Pit**

**Project Number - [none]**

Attached are your analytical results for Church Pit received by Origins Laboratory, Inc. February 21, 2022. This project is associated with Origins project number Y202477-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.  
303.433.1322  
o-squad@oelabinc.com



1725 Elk Place, Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Peterson Energy Operating, Inc.  
2154 W. Eisenhower Blvd.  
Loveland CO 80537

Ryan Dornbos  
Project Number: [none]  
Project: Church Pit

## CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Church Pit	Y202477-01	Water	February 21, 2022 14:00	02/21/2022 16:15
Church Pit 909J	Y203031-01	Water	March 1, 2022 15:00	03/01/2022 16:40

### Chain of Custody Modification Request

On 2/28/2022, Ryan Dornbos from Peterson Energy contacted Jennifer Pellegrini via phone call regarding Y202477 requesting that GBTEX+N and DRO/ORO be cancelled on the chain of custody due to a temperature deviation at the lab. The client will recollect and resubmit for these analyses.

Requested modifications to the chain of custody were made by Jennifer Pellegrini on 2/28/2022.

Containers for 8260 and 8015 analysis were recollected to due a lab error. The vial refrigerator went out overnight and the vials got above temp recommendations per the methods. The client resampled for those two analysis. JEP

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

Origins Laboratory F-012207-01-R1  
Effective Date: 01/09/12

**Sample Receipt Checklist**

Origins Work Order: Y202477 Client: Peterson Energy  
 Client Project ID: Church Pit

Checklist Completed by: SG Shipped Via: HD  
 Date/time completed: 2/21/22 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: N/A

Matrix(s) Received: (Check all that apply):  Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 1, 5, 1 °C 1 °C 1 °C (Describe) \_\_\_\_\_ °C

Thermometer ID: T003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" type="checkbox"/>		
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			<u>NO2/NO3</u>
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? if yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO3, HCL, H2SO4) / (pH >10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)	<input checked="" type="checkbox"/>			<u>HCl/HNO3/Not checked</u>
Additional Comments (if any):				

<sup>(1)</sup>If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by: Jm (Project Manager) Date/Time Reviewed: 2-22-22

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

Origins Laboratory

F-012207-01-R1  
Effective Date: 01/09/12

Origins Work Order: Y203031 Sample Receipt Checklist

Client: Peterson Energy  
 Client Project ID: Church Pit

Checklist Completed by: Jm  
 Date/time completed: 3-2-22

Shipped Via: HD  
 (UPS, FedEx, Hand Delivered, Pick-up, etc.)  
 Airbill #: via

Matrix(s) Received: (Check all that apply): Soil/Solid  Water  Other: \_\_\_\_\_

Cooler Number/Temperature: 110.4 °C / \_\_\_\_\_ °C / \_\_\_\_\_ °C (Describe) \_\_\_\_\_ °C

Thermometer ID: 9003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C <sup>(1)</sup> ?		X		same day
Is there ice present (document if blue ice is used)	X			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		X		
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)		X		
Were all samples received intact <sup>(1)</sup> ?	X			
Was adequate sample volume provided <sup>(1)</sup> ?	X			
Are short holding time analytes or samples with HTs due within 48 hours present <sup>(1)</sup> ?	X	X		NOZIN03 Jm
Is a chain-of-custody (COC) present and filled out completely <sup>(1)</sup> ?	X			
Does the COC agree with the number and type of sample bottles received <sup>(1)</sup> ?	X			
Do the sample IDs on the bottle labels match the COC <sup>(1)</sup> ?	X			
Is the COC properly relinquished by the client with date and time recorded <sup>(1)</sup> ?	X			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.		X		
Are samples preserved that require preservation and was it checked <sup>(1)</sup> ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity) (pH < 2 for samples preserved with HNO3, HCL, H2SO4) / (pH > 10 for samples preserved with NaAsO2+NaOH, ZnAc+NaOH)	X			not checked
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) Jm

Date/Time Reviewed 3-3-22

Origins Laboratory, Inc.



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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Church Pit**

**2/21/2022 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**Y202477-01 (Water)**

**Alkalinity by SM 2320B**

Alkalinity, Total as CaCO <sub>3</sub>	775	4.00	mg/L	1	2235524	RXB5	02/21/2022	03/01/2022	
Bicarbonate alkalinity (CaCO <sub>3</sub> )	735	4.00	"	"	"	RXB5	"	"	
Carbonate alkalinity (CaCO <sub>3</sub> )	40.0	4.00	"	"	"	RXB5	"	"	

**Anions by IC 300.0**

Chloride	196	31.2	mg/L	125	B2B2139	AHK	02/21/2022	02/22/2022	
Fluoride	5.03	0.100	"	1	"	AHK	"	02/22/2022	
Bromide	ND	0.100	"	"	"	AHK	"	"	
Sulfate	243	31.2	"	125	"	AHK	"	02/22/2022	
Nitrate	ND	0.100	"	1	"	AHK	"	02/22/2022	
Nitrite	ND	0.100	"	"	"	AHK	"	"	

**pH in Water by EPA 9040C**

pH	8.62		pH Units	"	B2B2137	AHK	02/21/2022	02/21/2022	
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**Radium 226 by EPA 903.1**

Radium-226	0.458	1.00	pCi/L	1	2233667	LXP1	02/21/2022	03/03/2022	
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**Radium 228 by EPA 904.0**

Radium-228	0.570	3.00	pCi/L	1	2233677	JXC9	"	03/04/2022	U
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**Church Pit**

**2/21/2022 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**GEL Laboratories, LLC**  
**Y202477-01 (Water)**

**Specific Conductance Mod. 9050A**

Specific Conductance (EC)	2.17	0.00500	mmhos/cm	1	B2B2138	AHK	02/21/2022	02/21/2022	
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**Total Dissolved Solids by 2540C**

Total Dissolved Solids	1590	5.00	mg/L	1	B2B2202	SCL	02/22/2022	02/22/2022	
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**Total Metals by EPA 200.8**

Barium	0.0584	0.00400	mg/L	1	2234426	PRB	02/25/2022	03/01/2022	
Boron	1.04	0.300	"	20	"	PRB	"	"	
Calcium	6.47	0.200	"	1	"	PRB	"	"	
Iron	0.707	0.100	"	"	"	PRB	"	"	
Magnesium	1.32	0.0300	"	"	"	PRB	"	"	
Manganese	0.0368	0.00500	"	"	"	PRB	"	"	
Potassium	4.12	0.300	"	"	"	PRB	"	"	
Selenium	ND	0.00500	"	"	"	PRB	"	"	U
Sodium	620	5.00	"	20	"	PRB	"	"	
Strontium	0.110	0.0500	"	5	"	PRB	"	"	

**Total Phosphorus by EPA 365.4**

Phosphorus, Total as P	0.0859	0.0500	mg/L	1	2234314	KLP1	"	03/01/2022	
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**Total Suspended Solids by 2540D**

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Project: Church Pit

**Church Pit**

**2/21/2022 2:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
Y202477-01 (Water)

**Total Suspended Solids by 2540D**

Total Suspended Solids	12.0	5.00	mg/L	1	B2B2203	AHK	02/22/2022	02/22/2022	
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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Church Pit 909J**

**3/1/2022 3:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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**Origins Laboratory, Inc.**  
**Y203031-01 (Water)**

**DRO/ORO by EPA 8015D**

Diesel (C10-C28)	ND	5.00	mg/L	1	B2C0410	ZZZ	03/04/2022	03/09/2022	Ua
Residual Range Organics (C28-C40)	ND	10.0	"	"	"	ZZZ	"	"	Ua

Surrogate: *o*-Terphenyl 77.3 % 50-150 " " "

**GBTEX + Naphthalene by EPA 8260D**

Benzene	ND	2.00	ug/L	1	B2C1524	ZZZ	03/15/2022	03/15/2022	Ua
Ethylbenzene	ND	2.00	"	"	"	ZZZ	"	"	Ua
Toluene	ND	2.00	"	"	"	ZZZ	"	"	Ua
Naphthalene	ND	10.0	"	"	"	ZZZ	"	"	Ua
Gasoline Range Hydrocarbons	ND	200	"	"	"	ZZZ	"	"	Ua
Xylenes, total	ND	2.00	"	"	"	ZZZ	"	"	Ua

Surrogate: 1,2-Dichloroethane-d4 94.4 % 70-130 " " "  
 Surrogate: Toluene-d8 101 % 70-130 " " "  
 Surrogate: 4-Bromofluorobenzene 99.7 % 70-130 " " "

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2C0410 - EPA 3511 Mod.</b>										
<b>Blank (B2C0410-BLK1)</b>										
					Prepared: 03/04/2022 Analyzed: 03/09/2022					
Diesel (C10-C28)	ND	5.00	mg/L							Ua
Residual Range Organics (C28-C40)	ND	10.0	"							Ua
Surrogate: o-Terphenyl	4.5		"	4.98		89.6	50-150			

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C0410 - EPA 3511 Mod.**

**LCS (B2C0410-BS1)**

Prepared: 03/04/2022 Analyzed: 03/09/2022

Diesel (C10-C28)	111	5.00	mg/L	100		111	70-130			
Residual Range Organics (C28-C40)	106	10.0	"	100		106	70-130			
Surrogate: o-Terphenyl	4.2		"	4.98		85.1	50-150			

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C0410 - EPA 3511 Mod.**

<b>Matrix Spike (B2C0410-MS1)</b>	<b>Source: Y203032-01</b>			<b>Prepared: 03/04/2022 Analyzed: 03/09/2022</b>						
Diesel (C10-C28)	116	5.00	mg/L	100	ND	116	70-130			
Residual Range Organics (C28-C40)	108	10.0	"	100	ND	108	70-130			
Surrogate: o-Terphenyl	4.7		"	4.98		94.1	50-150			

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C0410 - EPA 3511 Mod.**

<b>Matrix Spike Dup (B2C0410-MSD1)</b>	<b>Source: Y203032-01</b>			<b>Prepared: 03/04/2022 Analyzed: 03/09/2022</b>						
Diesel (C10-C28)	108	5.00	mg/L	100	ND	108	70-130	7.42	20	
Residual Range Organics (C28-C40)	98.5	10.0	"	100	ND	98.5	70-130	8.96	20	
Surrogate: o-Terphenyl	4.3		"	4.98		86.1	50-150			

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 Project Number: [none]  
 Project: Church Pit

**Extractable Petroleum Hydrocarbons by 8015D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C1524 - EPA 5030B (Water)**

**Blank (B2C1524-BLK1)**

Prepared: 03/15/2022 Analyzed: 03/15/2022

Benzene	ND	2.00	ug/L							Ua
Ethylbenzene	ND	2.00	"							Ua
Toluene	ND	2.00	"							Ua
Naphthalene	ND	10.0	"							Ua
1,2-Dichloroethane	ND	1.00	"							Ua
1-Methylnaphthalene	ND	5.00	"							Ua
2-Methylnaphthalene	ND	5.00	"							Ua
Methyl tert-Butyl Ether	ND	1.00	"							Ua
Import Verification	0.00		"							Ua
Gasoline Range Hydrocarbons	ND	200	"							Ua
Xylenes, total	ND	2.00	"							Ua
Surrogate: 1,2-Dichloroethane-d4	59		"	62.5		94.9	70-130			
Surrogate: Toluene-d8	64		"	62.5		103	70-130			
Surrogate: 4-Bromofluorobenzene	60		"	62.5		96.0	70-130			

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2C1524 - EPA 5030B (Water)

**LCS (B2C1524-BS1)**

Prepared: 03/15/2022 Analyzed: 03/15/2022

Benzene	46.9	2.00	ug/L	50.0		93.8	70-130			
Ethylbenzene	50.4	2.00	"	50.0		101	70-130			
m,p-Xylene	99.2	4.00	"	100		99.2	70-130			
o-Xylene	50.5	2.00	"	50.0		101	70-130			
Toluene	48.3	2.00	"	50.0		96.6	70-130			
Naphthalene	47.7	10.0	"	50.0		95.5	70-130			
1,2-Dibromoethane (EDB)	44.7	1.00	"	50.0		89.4	70-130			
1,2-Dichloroethane	42.7	1.00	"	50.0		85.3	70-130			
1-Methylnaphthalene	48.3	5.00	"	50.0		96.6	70-130			
2-Methylnaphthalene	51.1	5.00	"	50.0		102	70-130			
Methyl tert-Butyl Ether	39.4	1.00	"	50.0		78.8	70-130			
Surrogate: 1,2-Dichloroethane-d4	58		"	62.5		92.3	70-130			
Surrogate: Toluene-d8	64		"	62.5		102	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B2C1524 - EPA 5030B (Water)

Matrix Spike (B2C1524-MS1)	Source: Y203031-01			Prepared: 03/15/2022 Analyzed: 03/16/2022						
Benzene	50.6	2.00	ug/L	50.0	ND	101	70-130			
Ethylbenzene	50.2	2.00	"	50.0	ND	100	70-130			
m,p-Xylene	97.8	4.00	"	100	ND	97.8	70-130			
o-Xylene	50.1	2.00	"	50.0	ND	100	70-130			
Toluene	46.8	2.00	"	50.0	ND	93.5	70-130			
Naphthalene	48.9	10.0	"	50.0	ND	97.8	70-130			
1,2-Dibromoethane (EDB)	48.1	1.00	"	50.0	ND	96.1	70-130			
1,2-Dichloroethane	50.4	1.00	"	50.0	ND	101	70-130			
1-Methylnaphthalene	49.3	5.00	"	50.0	ND	98.6	70-130			
2-Methylnaphthalene	51.7	5.00	"	50.0	ND	103	70-130			
Methyl tert-Butyl Ether	43.7	1.00	"	50.0	ND	87.4	70-130			
Surrogate: 1,2-Dichloroethane-d4	65		"	62.5		104	70-130			
Surrogate: Toluene-d8	59		"	62.5		95.2	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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Ryan Dornbos  
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 Project: Church Pit

**Volatile Organic Compounds by GC/MS SW846 8260D - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2C1524 - EPA 5030B (Water)**

Matrix Spike Dup (B2C1524-MSD1)	Source: Y203031-01			Prepared: 03/15/2022 Analyzed: 03/16/2022						
Benzene	48.7	2.00	ug/L	50.0	ND	97.4	70-130	3.91	20	
Ethylbenzene	52.4	2.00	"	50.0	ND	105	70-130	4.38	20	
m,p-Xylene	101	4.00	"	100	ND	101	70-130	3.60	20	
o-Xylene	52.0	2.00	"	50.0	ND	104	70-130	3.84	20	
Toluene	47.4	2.00	"	50.0	ND	94.9	70-130	1.44	20	
Naphthalene	47.4	10.0	"	50.0	ND	94.8	70-130	3.07	20	
1,2-Dibromoethane (EDB)	47.2	1.00	"	50.0	ND	94.4	70-130	1.76	20	
1,2-Dichloroethane	48.2	1.00	"	50.0	ND	96.4	70-130	4.46	20	
1-Methylnaphthalene	46.7	5.00	"	50.0	ND	93.4	70-130	5.35	20	
2-Methylnaphthalene	49.5	5.00	"	50.0	ND	99.0	70-130	4.43	20	
Methyl tert-Butyl Ether	40.6	1.00	"	50.0	ND	81.1	70-130	7.41	20	
Surrogate: 1,2-Dichloroethane-d4	62		"	62.5		99.7	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.3	70-130			
Surrogate: 4-Bromofluorobenzene	66		"	62.5		105	70-130			

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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B2B2139 - Filter .45um non acidified**

**Matrix Spike (B2B2139-MS1)**

Source: Y202476-01

Prepared: 02/21/2022 Analyzed: 02/22/2022

Fluoride	491		mg/L	500	6.00	97.0	80-120			
Bromide	488		"	500	1.16	97.3	80-120			
Sulfate	717		"	500	218	99.7	80-120			
Nitrate	487		"	500	0.00	97.5	80-120			
Nitrite	487		"	500	0.00	97.3	80-120			

**Matrix Spike Dup (B2B2139-MSD1)**

Source: Y202476-01

Prepared: 02/21/2022 Analyzed: 02/22/2022

Chloride	712		mg/L	500	212	99.9	80-120	0.849	20	
Fluoride	494		"	500	6.00	97.6	80-120	0.634	20	
Bromide	491		"	500	1.16	97.9	80-120	0.611	20	
Sulfate	721		"	500	218	100	80-120	0.520	20	
Nitrate	510		"	500	0.00	102	80-120	4.45	20	
Nitrite	492		"	500	0.00	98.3	80-120	1.03	20	

**Batch B2B2202 - NO PREP**

**Blank (B2B2202-BLK1)**

Prepared: 02/22/2022 Analyzed: 02/22/2022

Total Dissolved Solids	ND	5.00	mg/L							
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**LCS (B2B2202-BS1)**

Prepared: 02/22/2022 Analyzed: 02/22/2022

Total Dissolved Solids	993	5.00	mg/L	1000		99.3	90-110			
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**Duplicate (B2B2202-DUP1)**

Source: Y202471-01

Prepared: 02/22/2022 Analyzed: 02/22/2022

Total Dissolved Solids	1150	5.00	mg/L		1150			0.0868	10	
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**Batch B2B2203 - NO PREP**

**Blank (B2B2203-BLK1)**

Prepared: 02/22/2022 Analyzed: 02/22/2022

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Peterson Energy Operating, Inc.  
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 Loveland CO 80537

Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Classical Chemistry Parameters - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2B2203 - NO PREP</b>										
<b>Blank (B2B2203-BLK1)</b>					Prepared: 02/22/2022 Analyzed: 02/22/2022					
Total Suspended Solids	ND	5.00	mg/L							
<b>LCS (B2B2203-BS1)</b>					Prepared: 02/22/2022 Analyzed: 02/22/2022					
Total Suspended Solids	108	5.00	mg/L	100		108	75-110			
<b>Duplicate (B2B2203-DUP1)</b>					Source: Y202470-01 Prepared: 02/22/2022 Analyzed: 02/22/2022					
Total Suspended Solids	2.00	5.00	mg/L		ND				20	

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 Project: Church Pit

**Saturated Paste - Quality Control**  
**Origins Laboratory, Inc.**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B2B2138 - NO PREP</b>										
<b>Blank (B2B2138-BLK1)</b>					Prepared: 02/21/2022 Analyzed: 02/21/2022					
Specific Conductance (EC)	0.00230	0.00500	mmhos/cm							
<b>Duplicate (B2B2138-DUP1)</b>		<b>Source: Y202476-01</b>			Prepared: 02/21/2022 Analyzed: 02/21/2022					
Specific Conductance (EC)	2.51	0.00500	mmhos/cm		2.50			0.531	25	

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 Project Number: [none]  
 Project: Church Pit

**Alkalinity by SM 2320B - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2235524 -</b>										
<b>DUP (1205026171 D)</b>			<b>Source: 571067001</b>			Prepared: Analyzed: 03/01/2022				
Carbonate alkalinity (CaCO3)	ND	4.00	mg/L		<1.45		0-20	0	20	U
Alkalinity, Total as CaCO3	239	4.00	"		231		0-20	3.4	20	
Bicarbonate alkalinity (CaCO3)	239	4.00	"		231		0-20	3.4	20	
<b>MS (1205026173 S)</b>			<b>Source: 571067001</b>			Prepared: Analyzed: 03/01/2022				
Alkalinity, Total as CaCO3	349	4.00	mg/L	100	231	118	80-120			
<b>LCS (1205031110-BKS)</b>						Prepared: Analyzed: 03/01/2022				
Alkalinity, Total as CaCO3	104	4.00	mg/L	100		104	90-110			

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Radium 226 by EPA 903.1 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2233667 -</b>										
<b>BLANK (1205027579-BLK)</b>					Prepared: Analyzed: 03/03/2022					
Radium-226	0.690	1.00	pCi/L				-			
<b>DUP (1205027580 D)</b>		<b>Source: 570956001</b>			Prepared: Analyzed: 03/03/2022					
Radium-226	0.315	1.00	pCi/L		0.435		0-20	32.1	20	
<b>MS (1205027581 S)</b>		<b>Source: 570956001</b>			Prepared: Analyzed: 03/03/2022					
Radium-226	113	1.00	pCi/L	132	0.435	85.5	75-125			
<b>LCS (1205027582-BKS)</b>		Prepared: Analyzed: 03/03/2022								
Radium-226	20.8	1.00	pCi/L	26.4		78.7	75-125			
<b>LCSD (1205027583-BKSD)</b>		Prepared: Analyzed: 03/03/2022								
Radium-226	25.0	1.00	pCi/L	26.4		94.7	75-125	18.4	20	

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Radium 228 by EPA 904.0 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2233677 -</b>										
<b>BLANK (1205027604-BLK)</b>					Prepared: Analyzed: 03/04/2022					
Radium-228	0.650	3.00	pCi/L				-			
<b>DUP (1205027605 D)</b>		<b>Source: 571108001</b>			Prepared: Analyzed: 03/04/2022					
Radium-228	1.27	1.00	pCi/L		1.02		0-20	22.1	20	
<b>LCS (1205027606-BKS)</b>					Prepared: Analyzed: 03/04/2022					
Radium-228	13.2	3.00	pCi/L	16.1		81.7	75-125			
<b>LCSD (1205027607-BKSD)</b>					Prepared: Analyzed: 03/04/2022					
Radium-228	14.5	3.00	pCi/L	16.1		89.9	75-125	9.5	20	

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Total Phosphorus by EPA 365.4 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch 2234314 - EPA 365.4 Prep</b>										
<b>BLANK (1205028707-BLK)</b>					Prepared: 02/25/2022 Analyzed: 03/01/2022					
Phosphorus, Total as P	ND	0.0500	mg/L				-			U
<b>LCS (1205028708-BKS)</b>					Prepared: 02/25/2022 Analyzed: 03/01/2022					
Phosphorus, Total as P	1.09	0.0500	mg/L	1.00		109	80-123			
<b>DUP (1205028713 D)</b>					Prepared: 02/25/2022 Analyzed: 03/01/2022					
Phosphorus, Total as P	6.36	0.200	mg/L		6.68		0-36	4.91	36	
<b>MS (1205028714 S)</b>					Prepared: 02/25/2022 Analyzed: 03/01/2022					
Phosphorus, Total as P	10.8	0.200	mg/L	4.00	6.68	103	66-140			

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Total Metals by EPA 200.8 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2234426 - EPA 200.2**

**BLANK (1205028876-BLK)**

Prepared: 02/25/2022 Analyzed: 03/01/2022

Strontium	ND	0.0100	mg/L				-			U
Sodium	0.0957	0.250	"				-			J
Selenium	ND	0.00500	"				-			U
Potassium	ND	0.300	"				-			U
Manganese	ND	0.00500	"				-			U
Magnesium	ND	0.0300	"				-			U
Iron	ND	0.100	"				-			U
Calcium	ND	0.200	"				-			U
Boron	ND	0.0150	"				-			U
Barium	ND	0.00400	"				-			U

**LCS (1205028877-BKS)**

Prepared: 02/25/2022 Analyzed: 03/01/2022

Magnesium	2.10	0.0300	mg/L	2.00		105	85-115			
Barium	0.0533	0.00400	"	0.0500		107	85-115			
Boron	0.108	0.0150	"	0.100		108	85-115			
Manganese	0.0508	0.00500	"	0.0500		102	85-115			
Potassium	1.91	0.300	"	2.00		95.4	85-115			
Selenium	0.0501	0.00500	"	0.0500		100	85-115			
Sodium	1.91	0.250	"	2.00		95.5	85-115			
Strontium	0.0522	0.0100	"	0.0500		104	85-115			
Calcium	2.25	0.200	"	2.00		113	85-115			
Iron	2.08	0.100	"	2.00		104	85-115			

**MS (1205028961 S)**

Source: 571534001

Prepared: 02/25/2022 Analyzed: 03/01/2022

Iron	1080	0.100	mg/L	2.00	562	0	75-125			
Strontium	12.9	0.0100	"	0.0500	9.38	0	75-125			
Sodium	1340	0.250	"	2.00	1330	0	75-125			

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Ryan Dornbos  
 Project Number: [none]  
 Project: Church Pit

**Total Metals by EPA 200.8 - Quality Control**  
**GEL Laboratories, LLC**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 2234426 - EPA 200.2**

<b>MS (1205028961 S)</b>		<b>Source: 571534001</b>			<b>Prepared: 02/25/2022 Analyzed: 03/01/2022</b>					
Selenium	0.0341	0.0250	mg/L	0.0500	0.0165	35.3	75-125			
Potassium	28.9	0.300	"	2.00	23.5	0	75-125			
Magnesium	91.5	0.0300	"	2.00	69.3	0	75-125			
Calcium	915	0.200	"	2.00	674	0	75-125			
Boron	0.498	0.0150	"	0.100	0.349	149	75-125			
Barium	9.31	0.00400	"	0.0500	11.7	0	75-125			
Manganese	15.2	0.00500	"	0.0500	8.49	0	75-125			
<b>MSD (1205028962 SD)</b>		<b>Source: 571534001</b>			<b>Prepared: 02/25/2022 Analyzed: 03/01/2022</b>					
Potassium	28.8	0.300	mg/L	2.00	23.5	0	75-125	0.233	20	
Strontium	13.5	0.0100	"	0.0500	9.38	0	75-125	4.68	20	
Barium	7.39	0.00400	"	0.0500	11.7	0	75-125	23	20	
Boron	0.505	0.0150	"	0.100	0.349	156	75-125	1.23	20	
Calcium	965	0.200	"	2.00	674	0	75-125	5.32	20	
Iron	1280	0.100	"	2.00	562	0	75-125	17.1	20	
Magnesium	96.5	0.0300	"	2.00	69.3	0	75-125	5.3	20	
Manganese	17.6	0.00500	"	0.0500	8.49	0	75-125	14.6	20	
Sodium	1320	0.250	"	2.00	1330	0	75-125	1.41	20	
Selenium	0.0371	0.0250	"	0.0500	0.0165	41.2	75-125	8.34	20	

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Loveland CO 80537

Ryan Dornbos  
Project Number: [none]  
Project: Church Pit

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**Notes and Definitions**

- Ua Sample is Non-Detect.
- U Result not detected above the detection limit
- J Greater than the detection limit but less than the reporting limit
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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Jen Pellegrini For Noelle Doyle Mathis, President