

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

April 14, 2018

Randy Edelen  
Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver, CO 80237  
RE: Croissant #1

Enclosed are the results of analyses for samples received by Summit Scientific on 04/04/18 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
President / Laboratory Director



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1

Project Number: [none]  
Project Manager: Randy Edelen

**Reported:**  
04/14/18 16:22

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
1-2	1804035-01	Soil	04/04/18 11:40	04/04/18 16:30
1-4	1804035-02	Soil	04/04/18 11:48	04/04/18 16:30
2-3	1804035-03	Soil	04/04/18 13:02	04/04/18 16:30
2-5	1804035-04	Soil	04/04/18 11:59	04/04/18 16:30
3-1	1804035-05	Soil	04/04/18 12:38	04/04/18 16:30
3-3 WH	1804035-06	Soil	04/04/18 12:45	04/04/18 16:30
4-3	1804035-07	Soil	04/04/18 12:21	04/04/18 16:30
5-5	1804035-08	Soil	04/04/18 12:05	04/04/18 16:30

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



**Sample Receipt Checklist**

S2 Work Order: 1804035

Client: Grynberg Petroleum Client Project ID: Croissant #1

Shipped Via: H.D. on ice Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply):  Air  Soil/Solid  Water  Other: \_\_\_\_\_  
(Describe)

Cooler ID					
Temp (°C)	<u>7.7</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C <sup>(1)</sup> ? 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"/>			
Were all samples received intact <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form 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 w/ date and time recorded <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? <b>If yes, contact client and note in narrative.</b>			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ? Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

<sup>(1)</sup> If NO, then contact the client before proceeding with analysis and note in case narrative.

Mur  
Custodian Printed Name

LA 4-4-18  
Signature or Initials of Custodian

16:45  
Date/Time



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**1-2**  
**1804035-01 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.6 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		105 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.7 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	<b>3020</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
Magnesium	<b>981</b>	1.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**1-2**  
**1804035-01 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

<b>Sodium</b>	<b>1370</b>	5.00 mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B
---------------	-------------	----------------	---	---------	----------	----------	-----------

**Calculated Analysis**

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>5.54</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>6.40</b>	0.0100	mmhos/cm	1	1804068	04/13/18	04/13/18	EPA 120.1	
<b>% Solids</b>	<b>86.4</b>		%	"	1804075	04/07/18	04/14/18	Calculation	
<b>pH</b>	<b>6.4</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**1-4**  
**1804035-02 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.7 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		105 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.9 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		99.9 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1660	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
Magnesium	829	1.00	"	"	"	"	"	"	
Sodium	1620	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**1-4**  
**1804035-02 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>8.11</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 11:48**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>4.86</b>	0.0100	mmhos/cm	1	1804068	04/13/18	04/13/18	EPA 120.1	
<b>% Solids</b>	<b>84.3</b>		%	"	1804075	04/07/18	04/14/18	Calculation	
<b>pH</b>	<b>7.7</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

2-3  
1804035-03 (Soil)

Summit Scientific

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: 04/04/18 13:02

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 04/04/18 13:02

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		82.9 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		105 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.2 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: 04/04/18 13:02

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: 04/04/18 13:02

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		106 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: 04/04/18 13:02

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	3220	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
Magnesium	893	1.00	"	"	"	"	"	"	
Sodium	2580	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**2-3**  
**1804035-03 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 13:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>10.4</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 13:02**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>89.7</b>		%	1	1804075	04/07/18	04/14/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>7.60</b>	0.0100	mmhos/cm	"	1804068	04/13/18	04/13/18	EPA 120.1	
<b>pH</b>	<b>7.6</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**2-5**  
**1804035-04 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		85.9 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		104 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.0 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		103 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>886</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
<b>Magnesium</b>	<b>462</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>857</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**2-5**  
**1804035-04 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>5.81</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 11:59**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>91.9</b>		%	1	1804075	04/07/18	04/14/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>2.96</b>	0.0100	mmhos/cm	"	1804068	04/13/18	04/13/18	EPA 120.1	
<b>pH</b>	<b>7.5</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**3-1**  
**1804035-05 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		84.7 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		104 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		83.8 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.0 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>4550</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
<b>Magnesium</b>	<b>693</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>695</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**3-1**  
**1804035-05 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>2.54</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 12:38**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.544</b>	0.0100	mmhos/cm	1	1804068	04/13/18	04/13/18	EPA 120.1	
<b>% Solids</b>	<b>92.7</b>		%	"	1804075	04/07/18	04/14/18	Calculation	
<b>pH</b>	<b>8.0</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**3-3 WH  
 1804035-06 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		83.0 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		105 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		86.6 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1260</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
<b>Magnesium</b>	<b>685</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>2500</b>	5.00	"	"	"	"	"	"	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**3-3 WH**  
**1804035-06 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>14.1</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 12:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>2.62</b>	0.0100	mmhos/cm	1	1804068	04/13/18	04/13/18	EPA 120.1	
<b>% Solids</b>	<b>90.6</b>		%	"	1804075	04/07/18	04/14/18	Calculation	
<b>pH</b>	<b>8.0</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**4-3**  
**1804035-07 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.0 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		104 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.3 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		111 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1690</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
<b>Magnesium</b>	<b>853</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>464</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**4-3**  
**1804035-07 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>2.30</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 12:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Specific Conductance (EC)</b>	<b>0.678</b>	0.0100	mmhos/cm	1	1804068	04/13/18	04/13/18	EPA 120.1	
<b>% Solids</b>	<b>92.9</b>		%	"	1804075	04/07/18	04/14/18	Calculation	
<b>pH</b>	<b>8.6</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

**5-5**  
**1804035-08 (Soil)**

**Summit Scientific**

**Volatile Organic Compounds by EPA Method 8260B**

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1804035	04/05/18	04/05/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		81.3 %	75-125		"	"	"	"	
Surrogate: Toluene-d8		104 %	81-119		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		84.8 %	57-173		"	"	"	"	

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1804036	04/04/18	04/06/18	EPA 8015M	

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	80-124		"	"	"	"	

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>1220</b>	2.50	mg/kg dry	1	1804058	04/05/18	04/05/18	EPA 6020B	
<b>Magnesium</b>	<b>455</b>	1.00	"	"	"	"	"	"	
<b>Sodium</b>	<b>198</b>	5.00	"	"	"	"	"	"	

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**5-5**  
**1804035-08 (Soil)**

**Summit Scientific**

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis**

**Calculated Analysis**

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Sodium Adsorption Ratio</b>	<b>1.23</b>	0.100	units	1	1804077	04/14/18	04/14/18	Calculation	

**Physical Parameters by APHA/ASTM/EPA Methods**

Date Sampled: **04/04/18 12:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>% Solids</b>	<b>94.3</b>		%	1	1804075	04/07/18	04/14/18	Calculation	
<b>Specific Conductance (EC)</b>	<b>0.139</b>	0.0100	mmhos/cm	"	1804068	04/13/18	04/13/18	EPA 120.1	
<b>pH</b>	<b>8.3</b>		pH Units	"	1804076	04/06/18	04/14/18	EPA 9045D	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Gryberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1  
Project Number: [none]  
Project Manager: Randy Edelen

Reported:  
04/14/18 16:22

### Volatile Organic Compounds by EPA Method 8260B - Quality Control

#### Summit Scientific

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

#### Batch 1804035 - EPA 5030 Soil MS

##### Blank (1804035-BLK1)

Prepared: 04/02/18 Analyzed: 04/05/18

Benzene	ND	0.0020	mg/kg								
Toluene	ND	0.0050	"								
Ethylbenzene	ND	0.0050	"								
m,p-Xylene	ND	0.010	"								
o-Xylene	ND	0.0050	"								
Xylenes (total)	ND	0.010	"								
Gasoline Range Hydrocarbons	ND	0.50	"								
Surrogate: 1,2-Dichloroethane-d4	0.0338		"	0.0396		85.5	75-125				
Surrogate: Toluene-d8	0.0418		"	0.0400		105	81-119				
Surrogate: 4-Bromofluorobenzene	0.0337		"	0.0400		84.2	57-173				

##### LCS (1804035-BS1)

Prepared: 04/02/18 Analyzed: 04/05/18

Benzene	0.0734	0.0020	mg/kg	0.100		73.4	86-121				
Toluene	0.0764	0.0050	"	0.100		76.4	76-137				
Ethylbenzene	0.0859	0.0050	"	0.100		85.9	76-137				
m,p-Xylene	0.168	0.010	"	0.200		84.2	76-137				
o-Xylene	0.0840	0.0050	"	0.100		84.0	76-137				
Xylenes (total)	ND	0.010	"				76-137				
Gasoline Range Hydrocarbons	ND	0.50	"				0-200				
Surrogate: 1,2-Dichloroethane-d4	0.0312		"	0.0396		78.8	75-125				
Surrogate: Toluene-d8	0.0420		"	0.0400		105	81-119				
Surrogate: 4-Bromofluorobenzene	0.0326		"	0.0400		81.5	57-173				

##### Matrix Spike (1804035-MS1)

Source: 1804035-01

Prepared: 04/02/18 Analyzed: 04/05/18

Benzene	0.0808	0.0020	mg/kg	0.100	ND	80.8	86-121				
Toluene	0.0824	0.0050	"	0.100	ND	82.4	76-137				
Ethylbenzene	0.0869	0.0050	"	0.100	ND	86.9	76-137				
m,p-Xylene	0.170	0.010	"	0.200	ND	84.9	76-137				
o-Xylene	0.0858	0.0050	"	0.100	ND	85.8	76-137				
Xylenes (total)	ND	0.010	"		ND		76-137				
Gasoline Range Hydrocarbons	ND	0.50	"		ND		76-76				
Surrogate: 1,2-Dichloroethane-d4	0.0341		"	0.0396		86.1	75-125				
Surrogate: Toluene-d8	0.0423		"	0.0400		106	81-119				
Surrogate: 4-Bromofluorobenzene	0.0323		"	0.0400		80.8	57-173				

Summit Scientific

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

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

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

**Batch 1804035 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1804035-MSD1)</b>	<b>Source: 1804035-01</b>			Prepared: 04/02/18	Analyzed: 04/05/18					
Benzene	0.0713	0.0020	mg/kg	0.100	ND	71.3	86-121	12.5	20	
Toluene	0.0722	0.0050	"	0.100	ND	72.2	76-137	13.2	20	
Ethylbenzene	0.0766	0.0050	"	0.100	ND	76.6	76-137	12.7	20	
m,p-Xylene	0.149	0.010	"	0.200	ND	74.4	76-137	13.2	20	
o-Xylene	0.0760	0.0050	"	0.100	ND	76.0	76-137	12.0	20	
Xylenes (total)	ND	0.010	"		ND		76-137		20	
Gasoline Range Hydrocarbons	ND	0.50	"		ND		76-76		20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0328</i>		<i>"</i>	<i>0.0396</i>		<i>82.7</i>	<i>75-125</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0420</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>81-119</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0329</i>		<i>"</i>	<i>0.0400</i>		<i>82.2</i>	<i>57-173</i>			

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1

Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**Extractable Petroleum Hydrocarbons by 8015 - Quality Control**  
**Summit Scientific**

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

**Batch 1804036 - EPA 3550A**

**Blank (1804036-BLK1)**

Prepared & Analyzed: 04/04/18

C10-C28 (DRO)      ND      50    mg/kg

**LCS (1804036-BS1)**

Prepared & Analyzed: 04/04/18

C10-C28 (DRO)      479      50    mg/kg      500      95.9    81.4-129

**Matrix Spike (1804036-MS1)**

**Source: 1804035-01**

Prepared & Analyzed: 04/04/18

C10-C28 (DRO)      441      50    mg/kg      500      ND      88.3    77.8-133

**Matrix Spike Dup (1804036-MSD1)**

**Source: 1804035-01**

Prepared & Analyzed: 04/04/18

C10-C28 (DRO)      459      50    mg/kg      500      ND      91.8    77.8-133    3.91    8.48

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**Soluble Nutrients by EPA 6020/USDA60 6(2, 3A) - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1804058 - General Preparation**

**Blank (1804058-BLK1)**

Prepared & Analyzed: 04/05/18

Calcium	ND	2.50	mg/kg wet						
Magnesium	ND	1.00	"						
Sodium	ND	5.00	"						

**LCS (1804058-BS1)**

Prepared & Analyzed: 04/05/18

Calcium	980	2.50	mg/kg wet	1000		98.0	70-130		
Magnesium	1080	1.00	"	1000		108	70-130		
Sodium	1140	5.00	"	1000		114	70-130		

**Duplicate (1804058-DUP1)**

Source: 1804035-01

Prepared & Analyzed: 04/05/18

Calcium	4590	2.50	mg/kg dry		3020			41.2	200
Magnesium	1360	1.00	"		981			32.7	200
Sodium	1820	5.00	"		1370			28.1	200

**Matrix Spike (1804058-MS1)**

Source: 1804035-01

Prepared & Analyzed: 04/05/18

Calcium	4320	2.50	mg/kg dry	1160	3020	113	70-130		
Magnesium	2190	1.00	"	1160	981	104	70-130		
Sodium	2510	5.00	"	1160	1370	98.5	70-130		

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
 3600 S Yosemite Suite 900  
 Denver CO, 80237

Project: Croissant #1  
 Project Number: [none]  
 Project Manager: Randy Edelen

**Reported:**  
 04/14/18 16:22

**Physical Parameters by APHA/ASTM/EPA Methods - Quality Control**  
**Summit Scientific**

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

**Batch 1804068 - General Preparation**

<b>Blank (1804068-BLK1)</b>			Prepared & Analyzed: 04/13/18						
Specific Conductance (EC)	ND	0.0100	mmhos/cm						
<b>LCS (1804068-BS1)</b>			Prepared & Analyzed: 04/13/18						
Specific Conductance (EC)	0.786	0.0100	mmhos/cm			80-120			
<b>Duplicate (1804068-DUP1)</b>			<b>Source: 1804004-02</b>		Prepared & Analyzed: 04/13/18				
Specific Conductance (EC)	0.446	0.0100	mmhos/cm		0.410		8.33	20	

**Batch 1804075 - General Preparation**

<b>Duplicate (1804075-DUP1)</b>			<b>Source: 1804004-02</b>		Prepared: 04/07/18 Analyzed: 04/14/18				
% Solids	89.2		%		89.8		0.670	20	

**Batch 1804076 - General Preparation**

<b>Duplicate (1804076-DUP1)</b>			<b>Source: 1804004-02</b>		Prepared: 04/06/18 Analyzed: 04/14/18				
pH	8.3		pH Units		8.2		0.484	20	

Summit Scientific

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.*



Grynberg Petroleum Company  
3600 S Yosemite Suite 900  
Denver CO, 80237

Project: Croissant #1

Project Number: [none]  
Project Manager: Randy Edelen

**Reported:**  
04/14/18 16:22

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
RPD Relative Percent Difference