

# Summit Scientific

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December 29, 2017

Alyssa Beard  
Foundation Energy, LLC  
15 E 15th St  
Tulsa, OK 74103  
RE: Hoffman South Pit

Enclosed are the results of analyses for samples received by Summit Scientific on 12/21/17 05:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury  
Laboratory Manager



Foundation Energy, LLC  
15 E 15th St  
Tulsa OK, 74103

Project: Hoffman South Pit

Project Number: [none]  
Project Manager: Alyssa Beard

**Reported:**  
12/29/17 15:50

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Base@6'	1712268-01	Soil	12/20/17 13:00	12/21/17 05:15

Summit Scientific

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1712268

Sample Receipt Checklist

S2 Work Order: \_\_\_\_\_

Client: Foundation Client Project ID: Hoffman South P.I.

Shipped Via: 2/u Airbill #: \_\_\_\_\_  
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

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

Cooler ID				
Temp (°C)	2.6			

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"/>			ON ICE
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.

[Signature]  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

12-21-17 530  
Date/Time  
[Signature]



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 Tulsa OK, 74103

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**Reported:**  
 12/29/17 15:50

**Base@6'**  
**1712268-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **12/20/17 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>6500</b>	50	mg/kg	1	1712299	12/27/17	12/28/17	8015M	

Date Sampled: **12/20/17 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		153 %	30-150		"	"	"	"	S-02

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

Date Sampled: **12/20/17 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>1.6</b>	0.20	mg/kg	100	1712286	12/26/17	12/26/17	EPA 8260B	
<b>Toluene</b>	<b>0.024</b>	0.0050	"	1	"	"	"	"	
<b>Ethylbenzene</b>	<b>5.0</b>	0.50	"	100	"	"	"	"	
<b>Xylenes (total)</b>	<b>45</b>	0.50	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>1500</b>	50	"	"	"	"	"	"	

Date Sampled: **12/20/17 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		133 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		165 %	21-167		"	"	"	"	

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**Reported:**  
 12/29/17 15:50

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

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

**Batch 1712299 - EPA 3550A**

<b>Blank (1712299-BLK1)</b>			Prepared & Analyzed: 12/27/17								
C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.2		"	12.5		97.6	30-150				
<b>LCS (1712299-BS1)</b>			Prepared & Analyzed: 12/27/17								
C10-C28 (DRO)	553	50	mg/kg	499		111	73-134				
<i>Surrogate: o-Terphenyl</i>	14.0		"	12.5		112	30-150				
<b>Matrix Spike (1712299-MS1)</b>			<b>Source: 1712222-01</b>		Prepared & Analyzed: 12/27/17						
C10-C28 (DRO)	557	50	mg/kg	499	8.24	110	50-148				
<i>Surrogate: o-Terphenyl</i>	15.0		"	12.5		120	30-150				
<b>Matrix Spike Dup (1712299-MSD1)</b>			<b>Source: 1712222-01</b>		Prepared & Analyzed: 12/27/17						
C10-C28 (DRO)	533	50	mg/kg	499	8.24	105	50-148	4.33		20	
<i>Surrogate: o-Terphenyl</i>	15.2		"	12.5		122	30-150				

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**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 1712286 - EPA 5030 Soil MS**

**Blank (1712286-BLK1)**

Prepared & Analyzed: 12/26/17

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0465</i>		<i>"</i>	<i>0.0400</i>		<i>116</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.1</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

**LCS (1712286-BS1)**

Prepared & Analyzed: 12/26/17

Benzene	0.0890	0.0020	mg/kg	0.100		89.0	58-130			
Toluene	0.0844	0.0050	"	0.100		84.4	61-134			
Ethylbenzene	0.0923	0.0050	"	0.0992		93.1	74-139			
m,p-Xylene	0.187	0.010	"	0.200		93.8	73-137			
o-Xylene	0.0854	0.0050	"	0.0980		87.2	73-141			
Xylenes (total)	0.273	0.0050	"				30-150			
Gasoline Range Hydrocarbons	ND	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0447</i>		<i>"</i>	<i>0.0400</i>		<i>112</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0394</i>		<i>"</i>	<i>0.0400</i>		<i>98.5</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

**Matrix Spike (1712286-MS1)**

Source: 1712215-01

Prepared & Analyzed: 12/26/17

Benzene	0.0770	0.0020	mg/kg	0.100	ND	77.0	30-131			
Toluene	0.0811	0.0050	"	0.100	ND	81.1	30-134			
Ethylbenzene	0.0990	0.0050	"	0.0992	ND	99.8	22-153			
m,p-Xylene	0.110	0.010	"	0.200	ND	54.9	10-159			
o-Xylene	0.0817	0.0050	"	0.0980	ND	83.4	31-151			
Xylenes (total)	0.191	0.0050	"		ND		30-150			
Gasoline Range Hydrocarbons	2.05	0.50	"		1.42		30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0459</i>		<i>"</i>	<i>0.0400</i>		<i>115</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0396</i>		<i>"</i>	<i>0.0400</i>		<i>98.9</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0407</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

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**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 1712286 - EPA 5030 Soil MS**

<b>Matrix Spike Dup (1712286-MSD1)</b>	<b>Source: 1712215-01</b>			<b>Prepared &amp; Analyzed: 12/26/17</b>						
Benzene	0.0871	0.0020	mg/kg	0.100	ND	87.1	30-131	12.2	34	
Toluene	0.0731	0.0050	"	0.100	ND	73.1	30-134	10.4	30	
Ethylbenzene	0.0954	0.0050	"	0.0992	ND	96.2	22-153	3.67	24	
m,p-Xylene	0.0990	0.010	"	0.200	ND	49.6	10-159	10.2	68	
o-Xylene	0.0830	0.0050	"	0.0980	ND	84.6	31-151	1.53	38	
Xylenes (total)	0.173	0.0050	"		ND		30-150	10.1	20	
Gasoline Range Hydrocarbons	2.18	0.50	"		1.42		30-150	5.81	20	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0468</i>		<i>"</i>	<i>0.0400</i>		<i>117</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

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### Notes and Definitions

- S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
- 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