



May 15, 2018

Mr. Kyle Waggoner
Whiting Oil and Gas Corporation
208 Racquette Drive
Fort Collins, Colorado 80524

**RE: Confirmation Sampling
Razor 12H
Weld County, Colorado
Project # 701530.074.03**

Mr. Waggoner:

On May 8 2018 Talon/LPE conducted soil sampling at the Razor 12H tank battery (Site) in Weld County, Colorado. The purpose of the sampling event was to ensure that produced water had not impacted soils located under a lined tank battery and if so, that all produced water impacted soil had been removed to the extent required by the Colorado Oil and Gas Conservation Commission (COGCC).

On May 1, 2018, Talon/LPE arrived on site and visually inspected the liner of the tank battery. A small tear in the liner had been observed. Whiting contractors had opened the liner and performed minor excavation below the tear. One (1) soil sample was collected at a depth of 1.5 feet below ground surface (SS-1) where the liner appeared to be compromised.

The collected sample was analyzed for Total Petroleum Hydrocarbons (TPH) via Gasoline Range Organics (GRO) method EPA8260B and Diesel Range Organics (DRO) method 8015, for Benzene, Toluene, Ethyl-benzene, and Xylenes (BTEX) via method EPA8260B, and for inorganics (Electrical Conductivity (EC), Sodium Adsorption Ratio (SAR), and pH) via method USDA60 at Summit Scientific (Summit) in Golden, Colorado. The sample analytical results were below COGCC Table 910-1 thresholds for TPH, BTEX and inorganic constituents. A soil concentration map is presented in Figure 1, and a breakdown of the soil analytical data is presented in Table 1.

Following the excavations, Whiting contractors transported and disposed the excavated stockpile material at an approved landfill facility. Clean soil was then brought in to the Site to backfill the excavated areas.



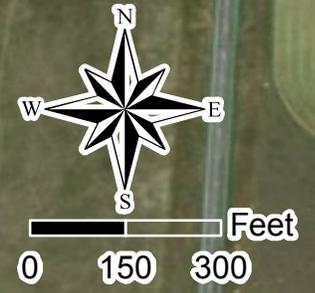
Based upon the collected analytical data, Talon/LPE believes that no further corrective action is necessary and that Whiting can request closure from the COGCC. If you have any questions or comments, please do not hesitate to call me at (970) 818-5330.

Respectfully Submitted,

A handwritten signature in black ink, appearing to read "J. Leverton", is written over a faint, light-colored rectangular stamp or watermark.

Jason Leverton
Environmental Scientist
Talon/LPE

Attachment 1
Figures



Legend
● Soil Sample

SS-1 @ 1.5'

SS-1 @ 1.5',mg/kg
TPH=<50
GRO=0.52
DRO=<50
EC=0.626
SAR=0.626
pH=8.5
B=<0.0020
T=<0.0050
E=<0.0050
X=<0.0050

52

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Drafted: 5/22/2018
1 in = 300 ft
Drafted By: IJM

Whiting Oil and Gas Corporation
Razor 12H
Weld County, CO
Figure 1 - Soil Concentration Map

**Attachment 2
Tables**



Table 1 - Soil Analytical Data

Whiting Oil & Gas Corporation
Razor 12H
Weld County, Colorado

Sample ID	Depth BGS in Feet	Date Sampled	Concentration (mg/kg)					mmhos/cm	Units			
			Benzene	Toluene	Ethylbenzene	Xylenes (Total)	GRO	DRO	TPH	EC	SAR	pH
COGCC Table 910-1 Concentration Levels			0.17	85	100	175	NA	NA	500	<4	<12	6-9
SS-1	1.5	5/8/2018	<0.0020	<0.0050	<0.0050	<0.0050	0.52	<50	<50	0.822	0.626	8.50

mg/kg - milligrams per kilogram
 mmhos/cm - millimhos per centimeter
 < - Analytical result is less than the reporting limit
 COGCC - Colorado Oil and Gas Conservation Commission

GRO - Gasoline Range Organics
 DRO - Diesel Range Organics
 TPH - Total Petroleum Hydrocarbons (Combined GRO/DRO)
 EC - Electrical Conductivity

SAR - Sodium Adsorption Ratio
 NA - Not Analyzed
 BGS - Below Ground Surface

Attachment 3
Analytical Reports

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 15, 2018

Jennifer Galles
Talon/LPE
1811 East Mulberry
Fort Collins, CO 80525
RE: Razor 12H

Enclosed are the results of analyses for samples received by Summit Scientific on 05/08/18 15:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury For Ben Shrewsbury
Laboratory Manager



Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H

Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-1@1.5'	1805084-01	Soil	05/08/18 13:05	05/08/18 15:30

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.

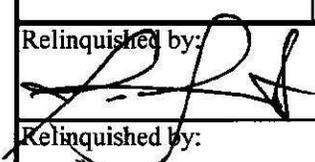
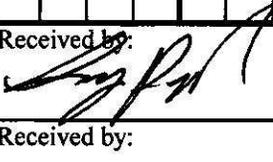
Summit Scientific

1805084

741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: Talon/LPE - Bill to Whiting
 Address: 1811 East Mulberry
 City/State/Zip: Fort Collins, CO 80524
 Phone: 970-818-5330 Fax: _____
 Sampler Name: Jason Leverton

Project Manager: Jennifer Galles
 E-Mail: jgalles@talonlpe.com and jleverton@talonlpe.com
 Project Name: Razor 12H
 Project Number: 701530.074.03

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:						Special Instructions							
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX	TPH	EC	SAR	pH									
SS-1@1.5'	5/8/2018	13:05	1		x			x					x	x	x	x	x								
Relinquished by: 	Date/Time: <u>5.8.18</u> <u>15:30</u>	Received by: 	Date/Time: <u>5/8/18</u> <u>1:20</u>	Turn Around Time (Check)																					
Relinquished by: _____	Date/Time: _____	Received by: _____	Date/Time: _____	Same Day	<input type="checkbox"/>	72 Hours	<input type="checkbox"/>	24 Hours	<input type="checkbox"/>	Standard	<input checked="" type="checkbox"/>	48 Hours	<input type="checkbox"/>												
Relinquished by: _____	Date/Time: _____	Received in Lab by: _____	Date/Time: _____	Sample Integrity:																					
				Temperature Upon Receipt: <u>18.5</u>																					
				Intact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																					

1805084

Sample Receipt Checklist

S2 Work Order: _____

Client: Taylor LPE Client Project ID: Razon 12H

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

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

Cooler ID					
Temp (°C)	18.5				

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.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			✓	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			✓	
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

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

LP
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

5/8/18 1628
Date/Time



Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

SS-1@1.5'
1805084-01 (Soil)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0020	mg/kg	1	1805093	05/09/18	05/10/18	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.52	0.50	"	"	"	"	"	"	

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		123 %	70-130		"	"	"	"	
Surrogate: Toluene-d8		96.6 %	70-130		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	70-130		"	"	"	"	

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1805091	05/09/18	05/11/18	EPA 8015M	

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.3 %	30-150		"	"	"	"	

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

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1800	11.5	mg/kg dry	1	1805122	05/10/18	05/10/18	EPA 6020B	
Magnesium	278	5.76	"	"	"	"	"	"	

Summit Scientific

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Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

SS-1@1.5'
1805084-01 (Soil)

Summit Scientific

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

Sodium	108	5.76 mg/kg dry	1	1805122	05/10/18	05/10/18	EPA 6020B
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Calculated Analysis

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.626	0.100	units	1	1805157	05/14/18	05/14/18	Calculation	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	86.8		%	1	1805113	05/10/18	05/11/18	Calculation	
pH	8.5		pH Units	"	1805123	05/10/18	05/11/18	EPA 9045D	

Specific Conductance by EPA Method 120.1

Date Sampled: **05/08/18 13:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.822	0.0100	mmhos/cm	1	1805124	05/10/18	05/11/18	EPA 120.1	

Summit Scientific

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1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

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 1805093 - EPA 5030 Soil MS

Blank (1805093-BLK1)

Prepared: 05/09/18 Analyzed: 05/10/18

Benzene	ND	0.0020	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0455</i>		<i>"</i>	<i>0.0396</i>		<i>115</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>70-130</i>			

LCS (1805093-BS1)

Prepared: 05/09/18 Analyzed: 05/10/18

Benzene	0.0892	0.0020	mg/kg	0.100		89.2	70-130			
Toluene	0.0938	0.0050	"	0.100		93.8	70-130			
Ethylbenzene	0.114	0.0050	"	0.100		114	70-130			
m,p-Xylene	0.217	0.010	"	0.200		108	70-130			
o-Xylene	0.101	0.0050	"	0.100		101	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0446</i>		<i>"</i>	<i>0.0396</i>		<i>113</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0388</i>		<i>"</i>	<i>0.0400</i>		<i>97.1</i>	<i>70-130</i>			

Matrix Spike (1805093-MS1)

Source: 1805083-01

Prepared: 05/09/18 Analyzed: 05/10/18

Benzene	0.0892	0.0020	mg/kg	0.100	ND	89.2	70-130			
Toluene	0.0918	0.0050	"	0.100	ND	91.8	70-130			
Ethylbenzene	0.116	0.0050	"	0.100	ND	116	70-130			
m,p-Xylene	0.220	0.010	"	0.200	ND	110	70-130			
o-Xylene	0.104	0.0050	"	0.100	ND	104	70-130			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0469</i>		<i>"</i>	<i>0.0396</i>		<i>118</i>	<i>70-130</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>70-130</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.5</i>	<i>70-130</i>			

Summit Scientific

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Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

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

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

Batch 1805093 - EPA 5030 Soil MS

Matrix Spike Dup (1805093-MSD1)	Source: 1805083-01			Prepared: 05/09/18	Analyzed: 05/10/18					
Benzene	0.0902	0.0020	mg/kg	0.100	ND	90.2	70-130	1.14	30	
Toluene	0.0976	0.0050	"	0.100	ND	97.6	70-130	6.15	30	
Ethylbenzene	0.114	0.0050	"	0.100	ND	114	70-130	1.90	30	
m,p-Xylene	0.214	0.010	"	0.200	ND	107	70-130	2.73	30	
o-Xylene	0.103	0.0050	"	0.100	ND	103	70-130	1.48	30	
Surrogate: 1,2-Dichloroethane-d4	0.0462		"	0.0396		117	70-130			
Surrogate: Toluene-d8	0.0392		"	0.0400		98.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.0392		"	0.0400		98.0	70-130			

Summit Scientific

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Talon/LPE
 1811 East Mulberry
 Fort Collins CO, 80525

Project: Razor 12H
 Project Number: 701530.074.03
 Project Manager: Jennifer Galles

Reported:
 05/15/18 11:20

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 1805091 - EPA 3550A

Blank (1805091-BLK1)		Prepared: 05/09/18 Analyzed: 05/10/18									
C10-C28 (DRO)	ND	50	mg/kg								
LCS (1805091-BS1)		Prepared: 05/09/18 Analyzed: 05/10/18									
C10-C28 (DRO)	421	50	mg/kg	500	84.1	81.4-129					
Matrix Spike (1805091-MS1)		Source: 1805066-01		Prepared: 05/09/18 Analyzed: 05/10/18							
C10-C28 (DRO)	413	50	mg/kg	500	22.0	78.2	77.8-133				
Matrix Spike Dup (1805091-MSD1)		Source: 1805066-01		Prepared: 05/09/18 Analyzed: 05/10/18							
C10-C28 (DRO)	430	50	mg/kg	500	22.0	81.5	77.8-133	3.91	8.48		

Summit Scientific

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Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

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	

Batch 1805122 - General Preparation

Blank (1805122-BLK1)

Prepared & Analyzed: 05/10/18

Calcium	ND	10.0	mg/kg wet					
Magnesium	ND	5.00	"					
Sodium	ND	5.00	"					

LCS (1805122-BS1)

Prepared & Analyzed: 05/10/18

Calcium	456	10.0	mg/kg wet	500	91.2	70-130		
Magnesium	455	5.00	"	500	91.1	70-130		
Sodium	474	5.00	"	500	94.8	70-130		

Duplicate (1805122-DUP1)

Source: 1805043-01

Prepared & Analyzed: 05/10/18

Calcium	133	11.1	mg/kg dry	137			2.69	20
Magnesium	111	5.53	"	122			9.42	20
Sodium	776	5.53	"	782			0.869	20

Matrix Spike (1805122-MS1)

Source: 1805043-01

Prepared & Analyzed: 05/10/18

Calcium	613	11.1	mg/kg dry	553	137	86.1	70-130	
Magnesium	719	5.53	"	553	122	108	70-130	
Sodium	1300	5.53	"	553	782	93.5	70-130	

Matrix Spike Dup (1805122-MSD1)

Source: 1805043-01

Prepared & Analyzed: 05/10/18

Calcium	584	11.1	mg/kg dry	553	137	80.9	70-130	4.86	25
Magnesium	698	5.53	"	553	122	104	70-130	3.01	25
Sodium	1270	5.53	"	553	782	88.1	70-130	2.33	25

Summit Scientific

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Talon/LPE
 1811 East Mulberry
 Fort Collins CO, 80525

Project: Razor 12H

Project Number: 701530.074.03
 Project Manager: Jennifer Galles

Reported:
 05/15/18 11:20

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

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

Batch 1805123 - General Preparation

Duplicate (1805123-DUP1)	Source: 1805043-01			Prepared: 05/07/18	Analyzed: 05/08/18					
pH	8.5		pH Units	8.5			0.471		20	

Summit Scientific

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Talon/LPE
 1811 East Mulberry
 Fort Collins CO, 80525

Project: Razor 12H
 Project Number: 701530.074.03
 Project Manager: Jennifer Galles

Reported:
 05/15/18 11:20

Specific Conductance by EPA Method 120.1 - Quality Control
Summit Scientific

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

Batch 1805124 - General Preparation

Duplicate (1805124-DUP1)	Source: 1805043-01		Prepared: 05/10/18	Analyzed: 05/11/18
Specific Conductance (EC)	0.927	0.0100 mmhos/cm	0.914	1.41 20

Summit Scientific

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Talon/LPE
1811 East Mulberry
Fort Collins CO, 80525

Project: Razor 12H
Project Number: 701530.074.03
Project Manager: Jennifer Galles

Reported:
05/15/18 11:20

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