

# Summit Scientific

---

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.374.5933 - fax

June 23, 2015

Shad Martin  
Kinetic Energy  
PO Box 1625  
Loveland, CO 80539  
RE: Frontier 8

Enclosed are the results of analyses for samples received by Summit Scientific on 06/18/15 12:43. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'P. Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury  
President



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Cuttings 8@12794'	1506163-01	Soil	06/18/15 10:00	06/18/15 12:43
Drill Mud 8@12794'	1506163-02	Water	06/18/15 10:00	06/18/15 12:43

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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8

Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

# Summit Scientific

S<sub>2</sub>

1506163

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

Page 1 of 1

Client: Kinetic Energy Services

Project Manager: Chad

Address:

E-Mail:

City/State/Zip:

Phone:

Fax:

Project Name:

Frontier 8

Sampler Name:

Project Number:

Arellano Q 10-9 HN

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested						Special Instructions
					HCl	HNO <sub>3</sub>	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	65154/DO	910 mly	Br, Cl, F, S <sub>2</sub>	Ca, Fe, Mg	Mn, K, Na	
1	Cuttings BQ	6-18	1500	1		X				X			X	X	X			
2	drill mud BQ	6-18	1645	1			X						X	X	X			
3	127941																	
4																		
5																		
6																		
7																		
8																		
9																		
10																		

Relinquished by:	Date/Time: 6/18/15 12:43	Received by:	Date/Time: 6-18-15 1243	Turn Around Time (Check) Same Day <input type="checkbox"/> 72 hours <input type="checkbox"/> 24 hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 hours <input type="checkbox"/> Sample Integrity: Temperature Upon Receipt: 36 Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Notes: Nud by 23rd EOB cred: +
------------------	--------------------------	--------------	-------------------------	---	--------------------------------------

www.s2scientific.com

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

#### Sample Receipt Checklist

S2 Work Order: 1506163

Client: Kinetic Energy Client Project ID: Frontier 8

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

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

Cooler ID					
Temp (°C)	<u>36</u>				

Thermometer ID: \_\_\_\_\_

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C <sup>(1)</sup> ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.				
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? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, etc.				
If samples are acid preserved for metals, is the pH ≤ 2 <sup>(1)</sup> ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
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.				

Melissa Sherman  
Custodian Printed Name

[Signature]  
Signature or Initials of Custodian

6-23-15  
Date/Time



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Cuttings 8@12794'**  
**1506163-01 (Soil)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>84</b>	50	mg/kg	1	1506243	06/18/15	06/19/15	8015M	

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		107 %	30-150		"	"	"	"	

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

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.55</b>	0.20	mg/kg	100	1506246	06/18/15	06/19/15	EPA 8260B	
<b>Toluene</b>	<b>3.0</b>	0.50	"	"	"	"	"	"	
Ethylbenzene	ND	0.50	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>6.3</b>	0.50	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>260</b>	50	"	"	"	"	"	"	

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		98.2 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.6 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		97.9 %	21-167		"	"	"	"	

**Total Metals by EPA Method 6020 - Dry Weight Basis**

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Arsenic</b>	<b>11.6</b>	0.182	mg/kg dry	1	1506248	06/19/15	06/19/15	EPA 6020A	
<b>Barium</b>	<b>1100</b>	0.182	"	"	"	"	"	"	
<b>Boron</b>	<b>14.7</b>	1.82	"	"	"	"	"	"	
<b>Cadmium</b>	<b>0.187</b>	0.182	"	"	"	"	"	"	

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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

**Cuttings 8@12794'**  
**1506163-01 (Soil)**

**Summit Scientific**

**Total Metals by EPA Method 6020 - Dry Weight Basis**

Chromium	25.6	0.912	mg/kg dry	1	1506248	06/19/15	06/19/15	EPA 6020A	
Copper	32.0	0.912	"	"	"	"	"	"	
Lead	24.8	0.182	"	"	"	"	"	"	
Nickel	32.5	0.182	"	"	"	"	"	"	
Selenium	1.67	0.0912	"	"	"	"	"	"	
Silver	0.245	0.182	"	"	"	"	"	"	
Zinc	120	18.2	"	"	"	"	"	"	

**Total Mercury by EPA Method 7471**

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Mercury	ND	0.0516	mg/kg dry	1	1506279	06/22/15	06/23/15	EPA 7471	

**Hexavalent Chromium by EPA 7196**

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Chromium, Hexavalent	ND	2.17	mg/kg dry	1	1506273	06/22/15	06/23/15	EPA 7196	

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Trivalent Chromium	25.6	3.09	"	"	[CALC]	"	"	EPA 7196/3060A	

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

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	46.0		%	1	1506252	06/19/15	06/22/15	% calculation	

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Drill Mud 8@12794'**  
**1506163-02 (Water)**

**Summit Scientific**

**Extractable Petroleum Hydrocarbons by 8015**

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>C10-C28 (DRO)</b>	<b>213</b>	10.0	mg/L	1	1506288	06/22/15	06/23/15	8015M	

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		100 %	47.2-150		"	"	"	"	

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

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Benzene</b>	<b>0.12</b>	0.010	mg/L	10	1506245	06/19/15	06/19/15	EPA 8260B	
<b>Toluene</b>	<b>0.87</b>	0.010	"	"	"	"	"	"	
<b>Ethylbenzene</b>	<b>0.17</b>	0.010	"	"	"	"	"	"	
<b>Xylenes (total)</b>	<b>2.4</b>	0.010	"	"	"	"	"	"	
<b>Gasoline Range Hydrocarbons</b>	<b>56</b>	5.0	"	"	"	"	"	"	

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		91.1 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		94.4 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		112 %	45-146		"	"	"	"	

**Total Metals by EPA Method 200.8**

Date Sampled: **06/18/15 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<b>Calcium</b>	<b>6250</b>	0.0500	mg/L	1	1506271	06/22/15	06/22/15	EPA 200.8	

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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

**Drill Mud 8@12794'**  
**1506163-02 (Water)**

**Summit Scientific**

**Total Metals by EPA Method 200.8**

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Iron	627	0.0500	mg/L	1	1506271	06/22/15	06/22/15	EPA 200.8	

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Potassium	48.3	0.0500	"	"	"	"	"	"	

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	59.2	0.0500	"	"	"	"	"	"	

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Manganese	14.4	0.00100	"	"	"	"	"	"	

Date Sampled: 06/18/15 10:00

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium	488	0.0500	"	"	"	"	"	"	

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.





Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

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

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

**Batch 1506243 - EPA 3550A**

<b>Blank (1506243-BLK1)</b>				Prepared & Analyzed: 06/18/15						
C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	14.7		"	12.2		121	30-150			
<b>LCS (1506243-BS1)</b>				Prepared & Analyzed: 06/18/15						
C10-C28 (DRO)	575	50	mg/kg	501		115	73-134			
Surrogate: o-Terphenyl	14.2		"	12.2		117	30-150			
<b>Matrix Spike (1506243-MS1)</b>				<b>Source: 1506158-04</b>		Prepared & Analyzed: 06/18/15				
C10-C28 (DRO)	556	50	mg/kg	460	9.89	119	50-148			
Surrogate: o-Terphenyl	12.5		"	11.2		111	30-150			
<b>Matrix Spike Dup (1506243-MSD1)</b>				<b>Source: 1506158-04</b>		Prepared & Analyzed: 06/18/15				
C10-C28 (DRO)	724	50	mg/kg	467	9.89	153	50-148	26.2	13	QM-07
Surrogate: o-Terphenyl	13.3		"	11.4		117	30-150			

**Batch 1506288 - EPA 3520B**

<b>Blank (1506288-BLK1)</b>				Prepared: 06/22/15 Analyzed: 06/23/15						
C10-C28 (DRO)	ND	5.00	mg/L							
Surrogate: o-Terphenyl	12.2		"	12.2		100	47.2-150			
<b>LCS (1506288-BS1)</b>				Prepared: 06/22/15 Analyzed: 06/23/15						
C10-C28 (DRO)	509	5.00	mg/L	501		102	80-149			
Surrogate: o-Terphenyl	12.4		"	12.2		102	47.2-150			
<b>LCS Dup (1506288-BSD1)</b>				Prepared: 06/22/15 Analyzed: 06/23/15						
C10-C28 (DRO)	527	5.00	mg/L	501		105	80-149	3.37	14	
Surrogate: o-Terphenyl	12.8		"	12.2		105	47.2-150			

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

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

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

**Batch 1506245 - EPA 5030 Water MS**

**Blank (1506245-BLK1)**

Prepared & Analyzed: 06/19/15

Benzene	ND	0.0010	mg/L							
Toluene	ND	0.0010	"							
Ethylbenzene	ND	0.0010	"							
Xylenes (total)	ND	0.0010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0138		"	0.0132		104	37-154			
Surrogate: Toluene-d8	0.0132		"	0.0133		99.0	45-149			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.4	45-146			

**LCS (1506245-BS1)**

Prepared & Analyzed: 06/19/15

Benzene	0.0439	0.0010	mg/L	0.0500		87.9	51-132			
Toluene	0.0438	0.0010	"	0.0500		87.6	51-138			
Ethylbenzene	0.0442	0.0010	"	0.0500		88.4	58-146			
m,p-Xylene	0.0867	0.0020	"	0.100		86.7	57-144			
o-Xylene	0.0441	0.0010	"	0.0500		88.2	53-146			
Surrogate: 1,2-Dichloroethane-d4	0.0134		"	0.0132		102	37-154			
Surrogate: Toluene-d8	0.0135		"	0.0133		101	45-149			
Surrogate: 4-Bromofluorobenzene	0.0132		"	0.0133		99.4	45-146			

**Matrix Spike (1506245-MS1)**

Source: 1506151-01

Prepared & Analyzed: 06/19/15

Benzene	0.0458	0.0010	mg/L	0.0500	ND	91.6	34-141			
Toluene	0.0456	0.0010	"	0.0500	ND	91.2	27-151			
Ethylbenzene	0.0457	0.0010	"	0.0500	ND	91.4	29-160			
m,p-Xylene	0.0911	0.0020	"	0.100	ND	91.1	20-166			
o-Xylene	0.0460	0.0010	"	0.0500	ND	92.0	33-159			
Surrogate: 1,2-Dichloroethane-d4	0.0137		"	0.0132		104	37-154			
Surrogate: Toluene-d8	0.0136		"	0.0133		102	45-149			
Surrogate: 4-Bromofluorobenzene	0.0130		"	0.0133		97.3	45-146			

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

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

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

**Batch 1506245 - EPA 5030 Water MS**

Matrix Spike Dup (1506245-MSD1)			Source: 1506151-01		Prepared & Analyzed: 06/19/15					
Benzene	0.0427	0.0010	mg/L	0.0500	ND	85.3	34-141	7.14	32	
Toluene	0.0426	0.0010	"	0.0500	ND	85.2	27-151	6.89	25	
Ethylbenzene	0.0435	0.0010	"	0.0500	ND	86.9	29-160	5.02	50	
m,p-Xylene	0.0855	0.0020	"	0.100	ND	85.5	20-166	6.31	36	
o-Xylene	0.0431	0.0010	"	0.0500	ND	86.3	33-159	6.46	26	
Surrogate: 1,2-Dichloroethane-d4	0.0134		"	0.0132		101	37-154			
Surrogate: Toluene-d8	0.0133		"	0.0133		99.9	45-149			
Surrogate: 4-Bromofluorobenzene	0.0133		"	0.0133		99.9	45-146			

**Batch 1506246 - EPA 5030 Soil MS**

Blank (1506246-BLK1)			Prepared & Analyzed: 06/18/15							
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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0387		"	0.0396		97.7	23-173			
Surrogate: Toluene-d8	0.0386		"	0.0400		96.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0393		"	0.0400		98.2	21-167			
LCS (1506246-BS1)			Prepared & Analyzed: 06/18/15							
Benzene	0.113	0.0020	mg/kg	0.100		113	58-130			
Toluene	0.102	0.0050	"	0.100		102	61-134			
Ethylbenzene	0.107	0.0050	"	0.0992		108	74-139			
m,p-Xylene	0.215	0.010	"	0.200		108	73-137			
o-Xylene	0.109	0.0050	"	0.0984		111	73-141			
Surrogate: 1,2-Dichloroethane-d4	0.0390		"	0.0396		98.6	23-173			
Surrogate: Toluene-d8	0.0384		"	0.0400		95.9	20-170			
Surrogate: 4-Bromofluorobenzene	0.0390		"	0.0400		97.4	21-167			

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

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

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

**Batch 1506246 - EPA 5030 Soil MS**

Matrix Spike (1506246-MS1)		Source: 1506159-01			Prepared & Analyzed: 06/18/15					
Benzene	0.112	0.0020	mg/kg	0.0975	ND	115	30-131			
Toluene	0.0989	0.0050	"	0.0975	ND	101	30-134			
Ethylbenzene	0.106	0.0050	"	0.0967	ND	110	22-153			
m,p-Xylene	0.213	0.010	"	0.195	ND	109	10-159			
o-Xylene	0.109	0.0050	"	0.0959	ND	114	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0389		"	0.0386		101	23-173			
Surrogate: Toluene-d8	0.0379		"	0.0390		97.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0387		"	0.0390		99.2	21-167			

Matrix Spike Dup (1506246-MSD1)		Source: 1506159-01			Prepared & Analyzed: 06/18/15					
Benzene	0.106	0.0020	mg/kg	0.0936	ND	113	30-131	5.98	34	
Toluene	0.0951	0.0050	"	0.0936	ND	102	30-134	3.98	30	
Ethylbenzene	0.0991	0.0050	"	0.0929	ND	107	22-153	6.78	24	
m,p-Xylene	0.199	0.010	"	0.187	ND	106	10-159	6.69	68	
o-Xylene	0.101	0.0050	"	0.0921	ND	110	31-151	8.04	38	
Surrogate: 1,2-Dichloroethane-d4	0.0379		"	0.0371		102	23-173			
Surrogate: Toluene-d8	0.0362		"	0.0375		96.7	20-170			
Surrogate: 4-Bromofluorobenzene	0.0360		"	0.0375		96.2	21-167			

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1506248 - EPA 3050B**

**Blank (1506248-BLK1)**

Prepared & Analyzed: 06/19/15

Arsenic	ND	0.100	mg/kg wet
Barium	ND	0.100	"
Boron	ND	1.00	"
Cadmium	ND	0.100	"
Chromium	ND	0.500	"
Copper	ND	0.500	"
Lead	ND	0.100	"
Nickel	ND	0.100	"
Selenium	ND	0.0500	"
Silver	ND	0.100	"
Zinc	ND	10.0	"

**LCS (1506248-BS1)**

Prepared & Analyzed: 06/19/15

Arsenic	109	0.250	mg/kg wet	99.6	110	78.4-140
Barium	302	0.250	"	310	97.5	83.2-117
Boron	172	2.50	"	144	119	73.6-126
Cadmium	178	0.250	"	182	97.9	81.9-118
Chromium	135	1.25	"	136	99.1	80.1-121
Copper	99.8	1.25	"	102	97.8	81.1-119
Lead	112	0.250	"	115	97.6	81.8-119
Nickel	156	0.250	"	153	102	82.4-118
Selenium	164	0.125	"	150	110	77.3-123
Silver	37.0	0.250	"	40.4	91.5	75-125
Zinc	156	25.0	"	133	117	80.7-132

**Duplicate (1506248-DUP1)**

Source: 1506171-01

Prepared & Analyzed: 06/19/15

Arsenic	9.66	0.122	mg/kg dry	6.89	33.5	20	QR-03
Barium	769	0.122	"	2960	117	20	QR-03
Boron	8.56	1.22	"	8.89	3.78	20	
Cadmium	1.60	0.122	"	4.75	99.1	20	QR-03
Chromium	17.1	0.609	"	6.47	89.9	20	QR-03
Copper	23.7	0.609	"	18.8	23.3	20	QR-03
Lead	11.4	0.122	"	3.27	111	20	QR-03
Nickel	24.5	0.122	"	24.5	0.126	20	
Selenium	2.98	0.0609	"	6.52	74.5	20	QR-03
Silver	0.140	0.122	"	0.151	7.85	20	
Zinc	81.2	12.2	"	81.1	0.102	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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Total Metals by EPA Method 6020 - Dry Weight Basis - Quality Control**  
**Summit Scientific**

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

**Batch 1506248 - EPA 3050B**

Matrix Spike (1506248-MS1)			Source: 1506171-01		Prepared & Analyzed: 06/19/15					
Arsenic	73.3	0.131	mg/kg dry	52.3	6.89	127	75-125			QM-07
Barium	1760	0.131	"	52.3	2960	NR	75-125			QM-07
Boron	12.1	1.31	"	52.3	8.89	6.13	75-125			QM-07
Cadmium	6.05	0.131	"	2.61	4.75	49.9	75-125			QM-07
Chromium	77.1	0.654	"	52.3	6.47	135	75-125			QM-07
Copper	88.5	0.654	"	52.3	18.8	133	75-125			QM-07
Lead	36.3	0.131	"	26.1	3.27	127	75-125			QM-07
Nickel	89.6	0.131	"	52.3	24.5	124	75-125			
Selenium	12.0	0.0654	"	5.23	6.52	104	75-125			
Silver	3.20	0.131	"	2.61	0.151	117	75-125			
Zinc	160	13.1	"	52.3	81.1	151	75-125			QM-07

Matrix Spike Dup (1506248-MSD1)			Source: 1506171-01		Prepared & Analyzed: 06/19/15					
Arsenic	71.5	0.144	mg/kg dry	52.7	6.89	123	75-125	2.46	25	
Barium	1880	0.144	"	52.7	2960	NR	75-125	6.21	25	QM-07
Boron	12.3	1.44	"	52.7	8.89	6.41	75-125	1.39	25	QM-07
Cadmium	5.34	0.144	"	2.63	4.75	22.7	75-125	12.4	25	QM-07
Chromium	77.7	0.722	"	52.7	6.47	135	75-125	0.825	25	QM-07
Copper	88.1	0.722	"	52.7	18.8	132	75-125	0.384	25	QM-07
Lead	35.4	0.144	"	26.3	3.27	122	75-125	2.63	25	
Nickel	87.1	0.144	"	52.7	24.5	119	75-125	2.80	25	
Selenium	11.2	0.0722	"	5.27	6.52	89.3	75-125	6.42	25	
Silver	3.08	0.144	"	2.63	0.151	111	75-125	3.85	25	
Zinc	158	14.4	"	52.7	81.1	147	75-125	1.11	25	QM-07

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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

**Total Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 1506271 - EPA 200.8**

**Blank (1506271-BLK1)**

Prepared & Analyzed: 06/22/15

Calcium	ND	0.0500	mg/L
Iron	ND	0.0500	"
Magnesium	ND	0.0500	"
Manganese	ND	0.00100	"
Potassium	ND	0.0500	"
Sodium	ND	0.0500	"

**LCS (1506271-BS1)**

Prepared & Analyzed: 06/22/15

Calcium	5.35	0.0500	mg/L	5.00	107	85-115
Iron	5.27	0.0500	"	5.00	105	85-115
Magnesium	5.36	0.0500	"	5.00	107	85-115
Manganese	0.531	0.00100	"	0.500	106	85-115
Potassium	5.24	0.0500	"	5.00	105	85-115
Sodium	5.52	0.0500	"	5.00	110	85-115

**Duplicate (1506271-DUP1)**

Source: 1506164-01

Prepared & Analyzed: 06/22/15

Calcium	61.8	0.0500	mg/L	68.7	10.5	20
Iron	5.22	0.0500	"	5.66	8.01	20
Magnesium	19.4	0.0500	"	18.4	5.70	20
Manganese	0.694	0.00100	"	0.746	7.14	20
Potassium	8.45	0.0500	"	8.35	1.16	20
Sodium	214	0.0500	"	207	3.47	20

**Matrix Spike (1506271-MS1)**

Source: 1506164-01

Prepared & Analyzed: 06/22/15

Calcium	66.8	0.0500	mg/L	5.00	68.7	NR	75-125	QM-07
Iron	10.0	0.0500	"	5.00	5.66	87.6	75-125	
Magnesium	23.5	0.0500	"	5.00	18.4	103	75-125	
Manganese	1.19	0.00100	"	0.500	0.746	88.6	75-125	
Potassium	12.3	0.0500	"	5.00	8.35	79.7	75-125	
Sodium	203	0.0500	"	5.00	207	NR	75-125	QM-07

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Total Metals by EPA Method 200.8 - Quality Control**  
**Summit Scientific**

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

**Batch 1506271 - EPA 200.8**

Matrix Spike Dup (1506271-MSD1)			Source: 1506164-01		Prepared & Analyzed: 06/22/15						
Calcium	67.4	0.0500	mg/L	5.00	68.7	NR	75-125	0.854	25		QM-07
Iron	10.7	0.0500	"	5.00	5.66	102	75-125	6.83	25		
Magnesium	24.8	0.0500	"	5.00	18.4	128	75-125	5.16	25		QM-07
Manganese	1.26	0.00100	"	0.500	0.746	103	75-125	5.90	25		
Potassium	13.1	0.0500	"	5.00	8.35	94.3	75-125	5.72	25		
Sodium	217	0.0500	"	5.00	207	197	75-125	6.76	25		QM-07

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.*





Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

**Total Mercury by EPA Method 7471 - Quality Control**  
**Summit Scientific**

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

**Batch 1506279 - EPA 7471A**

<b>Blank (1506279-BLK1)</b>					Prepared: 06/22/15 Analyzed: 06/23/15					
Mercury	ND	0.0500	mg/kg wet							
<b>LCS (1506279-BS1)</b>					Prepared: 06/22/15 Analyzed: 06/23/15					
Mercury	0.464	0.0500	mg/kg wet	0.500		92.9	80-120			
<b>Duplicate (1506279-DUP1)</b>					Source: 1506171-01 Prepared: 06/22/15 Analyzed: 06/23/15					
Mercury	0.0396	0.0722	mg/kg dry		0.0469			16.7	20	
<b>Matrix Spike (1506279-MS1)</b>					Source: 1506171-01 Prepared: 06/22/15 Analyzed: 06/23/15					
Mercury	0.612	0.0655	mg/kg dry	0.655	0.0469	86.2	80-120			
<b>Matrix Spike Dup (1506279-MSD1)</b>					Source: 1506171-01 Prepared: 06/22/15 Analyzed: 06/23/15					
Mercury	0.692	0.0722	mg/kg dry	0.714	0.0469	90.3	80-120	12.4	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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

Reported:  
06/23/15 17:34

Hexavalent Chromium by EPA 7196 - Quality Control  
Summit Scientific

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

Batch 1506273 - 3060A\_Mod

Blank (1506273-BLK1)

Prepared: 06/22/15 Analyzed: 06/23/15

Chromium, Hexavalent ND 1.00 mg/kg wet

LCS (1506273-BS1)

Prepared: 06/22/15 Analyzed: 06/23/15

Chromium, Hexavalent 21.6 1.00 mg/kg wet 19.9 108 80-120

Duplicate (1506273-DUP1)

Source: 1506162-01

Prepared: 06/22/15 Analyzed: 06/23/15

Chromium, Hexavalent ND 1.37 mg/kg dry ND 20

Matrix Spike (1506273-MS1)

Source: 1506162-01

Prepared: 06/22/15 Analyzed: 06/23/15

Chromium, Hexavalent 92.1 1.37 mg/kg dry 101 ND 91.3 80-120

Matrix Spike (1506273-MS2)

Source: 1506194-01

Prepared: 06/22/15 Analyzed: 06/23/15

Chromium, Hexavalent 65.2 1.19 mg/kg dry 94.6 0.537 68.3 80-120 QM-07

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.



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

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

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

**Batch 1506252 - General Preparation**

Duplicate (1506252-DUP1)		Source: 1506171-01		Prepared: 06/19/15 Analyzed: 06/22/15	
% Solids	70.4		%	69.3	1.57 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.*



Kinetic Energy  
PO Box 1625  
Loveland CO, 80539

Project: Frontier 8  
Project Number: Arellano Q 10-9HN  
Project Manager: Shad Martin

**Reported:**  
06/23/15 17:34

### Notes and Definitions

QR-03 The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

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

---

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.*