



ALS Paragon



Metals Case Narrative

Colorado Oil & Gas Conservation Commission

Complaint 200205808

Work Order Number: 0903060

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS Paragon on 03/10/09.
3. The samples were to be analyzed for dissolved metals. The samples were filtered through a 0.45 micron filter and preserved with nitric acid to a pH less than two prior to analysis.
4. The samples were prepared for analysis based on Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures.

Prior to analysis by Trace ICP, an ionization buffer was added to the sample and associated QC to improve the sodium and potassium quantitation.

For analysis by Trace ICP and ICP-MS, the samples were digested following method 200.2 and SOP 806 Rev. 13.

The samples were prepared for ICP-MS analysis of arsenic and selenium by passing the digested sample and associated QC through a cation exchange column. The cation exchange column removes cations from the matrix and eliminates the CaCl⁺ (mass 75) interferences on arsenic.

5. The samples were analyzed following Methods for the Determination of Metals in Environmental Samples – Supplement 1 procedures.

Analysis by Trace ICP followed method 200.7 and SOP 807 Rev. 11.

The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution.

During sample analysis concentrations are computed by the software and the results are printed in mg/L. The instrument software does not provide a printout which gives both intensity and concentration. The validity of the calibration equation is tested by analyzing the following



solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations at two times those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

Analysis by ICP-MS followed method 200.8 and SOP 827 Rev. 6.

The relationship between intensity and concentration for each element is established using at least four standards, one of which is a blank solution. A calibration equation relating instrument response to concentration is developed by the instrument software. The equation is a higher order polynomial. This type of equation is used to improve quantitation accuracy at lower concentrations where the relationship between concentration and instrument response is non-linear.

During sample analysis concentrations are computed by the software and the results are printed in ug/L. The validity of the calibration equation is tested by analyzing the following solutions: a blank, a low level check solution with concentrations near the reporting limit, an Initial Calibration Verification (ICV) standard from a 2nd source standard solution with concentrations near the middle of the analytical range, a Continuing Calibration Verification (CCV) standard with concentrations near the middle of the analytical range but different than those in the ICV, and a readback of the highest calibration standard.

These solutions provide verification that the calibration equations are functioning properly throughout the analytical range of the instrument. During sample analysis dilutions are made for analytes found at concentrations above the highest calibration standard. No results are taken from extrapolations beyond the highest standard.

6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The samples were prepared and analyzed within the established hold times.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.
 - n A filter (method) blank and laboratory control sample were filtered, preserved, and digested at the same time as the samples. There were not more than 20 samples associated with the filtered blank and laboratory control sample.
 - n The filter (method) blank associated with this digestion batch was below the practical quantitation limit for each requested analyte.



- n The laboratory control sample associated with this digestion batch was within the acceptance limits. This indicates complete digestion according to the method.
- n All initial and continuing calibration blanks associated with each analytical batch were below the practical quantitation limits for the requested analytes.
- n All initial and continuing calibration verifications associated with each analytical batch were within the acceptance criteria for the requested analytes. This indicates a valid calibration and stable instrument conditions.
- n The interference check samples associated with Method 200.8 were analyzed, and the high standard readbacks were within acceptance criteria.
- n The interference check samples and high standard readbacks associated with Method 200.7 were within acceptance criteria.

9. Matrix specific quality control procedures.

Sample 0903060-1 was designated as the quality control sample for each analysis.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- n A matrix spike and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for accuracy were met with the following exceptions:

<u>Analyte</u>	<u>Sample ID</u>
Potassium	0903060-1MS & MSD

The native sample result is flagged for matrix spike failure and an analytical post spike was performed. Results of the spike were unacceptable indicating that the matrix may be affecting quantitation of this analyte.

- n Matrix spike recoveries could not be evaluated for the following analytes:

<u>Analyte</u>	<u>Sample ID</u>
Calcium	0903060-1
Sodium	0903060-1

The concentrations of these analytes in the native sample were greater than four times the concentration of matrix spike added during the digestion. When sample concentration is that much greater than the spike added, spike recoveries may not be accurate. The laboratory control sample indicates that the digestion and analysis were in control.

- n A sample duplicate and matrix spike duplicate were digested and analyzed with each batch. All acceptance criteria for precision were met.



- A serial dilution was analyzed with each ICP batch. All acceptance criteria were met with the following exception:

<u>Analyte</u>	<u>Sample ID</u>
Sodium	0903060-1L

The native sample result is flagged for serial dilution failure.

10. Sample 0903060-1 required a dilution to bring sodium into the analytical range of the Trace ICP.

It is a standard ALS Paragon practice that samples for ICP-MS are analyzed at a dilution.

11. Sodium Adsorption Ration (SAR) was determined by calculation based on a reference from the client. Calcium, magnesium, and sodium concentrations were determined by ICP, Method 200.7.

$$\text{SAR} = \text{Na} / (((\text{Ca} + \text{Mg}) / 2)^{1/2})$$

The analyte results are the me/L concentrations based on conversions from their mg/L concentrations. Please note that the SAR value is unitless.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS Paragon certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Megan Johnson
Megan Johnson
Inorganics Primary Data Reviewer

3/17/09
Date

Ron E. Miller
Inorganics Final Data Reviewer

3/17/09
Date



Inorganic Data Reporting Qualifiers

The following qualifiers are used by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- If the analyte was analyzed for but not detected a “U” is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
 - M - Duplicate injection precision was not met.
 - N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
 - Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
 - * - Duplicate analysis (relative percent difference) not within control limits.
 - S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.

ALS Paragon

Sample Number(s) Cross-Reference Table

Paragon OrderNum: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name: Complaint 200205808

Client Project Number:

Client PO Number: OE PHA 09000000004

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Angely WW 1	0903060-1		WATER	09-Mar-09	9:56
Angely WW 2	0903060-2		WATER	09-Mar-09	10:30
Trip Blank	0903060-3		WATER	09-Mar-09	

CONDITION OF SAMPLE UPON RECEIPT FORM

Paragon Analytics

Client: COCG

Workorder No: 0903060

Project Manager: AW

Initials: AW Date: 3-10-09

1. Does this project require any special handling in addition to standard Paragon procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO
3. Are Custody seals on sample containers intact?	<input checked="" type="radio"/> NONE	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible ?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<input checked="" type="radio"/> YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<input checked="" type="radio"/> YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ___ < green pea <input checked="" type="checkbox"/> > green pea	N/A	YES	<input checked="" type="radio"/> NO
15. Do perchlorate LCMS-MS samples have headspace? (at least 1/3 of container required)	<input checked="" type="radio"/> N/A	YES	NO
16. Were samples checked for and free from the presence of residual chlorine? (Applicable when PM has indicated samples are from a chlorinated water source; note if field preservation with sodium thiosulfate was not observed.)	<input checked="" type="radio"/> N/A	YES	NO
17. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
18. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: <input checked="" type="radio"/> #2 <input type="radio"/> #4		RAD ONLY	<input checked="" type="radio"/> YES <input type="radio"/> NO
Cooler #: <u>1</u>			
Temperature (°C): <u>2.8</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>12</u>			
Background µR/hr reading: <u>11</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / NA (If no. see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

3 vials for VL = Headspace <green pea #4 #5 #6
3 vials for methan - #7 #8 #9 #7 huge Bubble 809 small bubbles

If applicable, was the client contacted: YES / NO / NA Contact: Peter Gintantas Date/Time: 3/10/09

Project Manager Signature / Date: [Signature] 3/10/09

*IR Gun #2: Oakton, SN 29922500201-0066

*IR Gun #4: Oakton, SN 2372220101-0002

Dissolved Metals by 200.7

Method EPA200.7 Revision 4.4

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID:	Angely WW 1
Lab ID:	0903060-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-1

Run ID: it090313-2a4

Cleanup: NONE

Basis: As Received

File Name: 090313A.

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.002	0.002	U	
7440-42-8	BORON	1	0.1	0.1	U	
7440-70-2	CALCIUM	1	190	1		
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.1	0.1	U	
7439-93-2	LITHIUM	1	0.026	0.01		
7439-95-4	MAGNESIUM	1	2.6	1		
7439-96-5	MANGANESE	1	0.19	0.01		
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	2	1		N
7440-23-5	SODIUM	5	280	5		E
	SODIUM ADSORPTION RATIO	1	5.6	0.17		
7440-24-6	STRONTIUM	1	3.9	0.01		
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: it0903060-1

Dissolved Metals by 200.7

Method EPA200.7 Revision 4.4

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID:	Angely WW 2
Lab ID:	0903060-2

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QC Batch ID: IP090312-3-1

Run ID: it090313-2a4

Cleanup: NONE

Basis: As Received

File Name: 090313A.

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.002	0.002	U	
7440-42-8	BORON	1	0.1	0.1	U	
7440-70-2	CALCIUM	1	110	1		
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.014	0.01		
7439-89-6	IRON	1	0.1	0.1	U	
7439-93-2	LITHIUM	1	0.017	0.01		
7439-95-4	MAGNESIUM	1	1.3	1		
7439-96-5	MANGANESE	1	0.16	0.01		
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	1.3	1		
7440-23-5	SODIUM	1	190	1		
	SODIUM ADSORPTION RATIO	1	5	0.17		
7440-24-6	STRONTIUM	1	2	0.01		
7440-66-6	ZINC	1	0.28	0.02		

Data Package ID: it0903060-1

Dissolved Metals by 200.8

Method EPA200.8 Revision 5.4

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID:	Angely WW 1
Lab ID:	0903060-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-2

Run ID: IM090313-1A3

Cleanup: NONE

Basis: As Received

File Name: 13MAR09A

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-36-0	ANTIMONY	10	0.3	0.3	U	
7440-38-2	ARSENIC	10	2	2	U	
7440-43-9	CADMIUM	10	0.3	0.3	U	
7439-92-1	LEAD	10	0.5	0.5	U	
7439-98-7	MOLYBDENUM	10	2.2	1		
7782-49-2	SELENIUM	10	1	1	U	
7440-22-4	SILVER	10	0.1	0.1	U	
7440-28-0	THALLIUM	10	0.2	0.2	U	
7440-61-1	URANIUM	10	0.1	0.1	U	

Data Package ID: *im0903060-1*

Dissolved Metals by 200.8

Method EPA200.8 Revision 5.4

Sample Results

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID:	Angely WW 2
Lab ID:	0903060-2

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-2

Run ID: IM090313-1A3

Cleanup: NONE

Basis: As Received

File Name: 13MAR09A

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-36-0	ANTIMONY	10	0.91	0.3		
7440-38-2	ARSENIC	10	2	2	U	
7440-43-9	CADMIUM	10	0.3	0.3	U	
7439-92-1	LEAD	10	0.53	0.5		
7439-98-7	MOLYBDENUM	10	3.5	1		
7782-49-2	SELENIUM	10	1	1	U	
7440-22-4	SILVER	10	0.1	0.1	U	
7440-28-0	THALLIUM	10	0.2	0.2	U	
7440-61-1	URANIUM	10	0.1	0.1	U	

Data Package ID: *im0903060-1*

Metals by 200.7

Method EPA200.7 Revision 4.4

Method Blank

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Lab ID: F090311-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-1

Run ID: it090313-2a4

Cleanup: NONE

Basis: N/A

File Name: 090313A.

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-39-3	BARIUM	1	0.1	0.1	U	
7440-41-7	BERYLLIUM	1	0.002	0.002	U	
7440-42-8	BORON	1	0.1	0.1	U	
7440-70-2	CALCIUM	1	1	1	U	
7440-47-3	CHROMIUM	1	0.01	0.01	U	
7440-48-4	COBALT	1	0.01	0.01	U	
7440-50-8	COPPER	1	0.01	0.01	U	
7439-89-6	IRON	1	0.1	0.1	U	
7439-93-2	LITHIUM	1	0.01	0.01	U	
7439-95-4	MAGNESIUM	1	1	1	U	
7439-96-5	MANGANESE	1	0.01	0.01	U	
7440-02-0	NICKEL	1	0.02	0.02	U	
7440-09-7	POTASSIUM	1	1	1	U	
7440-23-5	SODIUM	1	1	1	U	
7440-24-6	STRONTIUM	1	0.01	0.01	U	
7440-66-6	ZINC	1	0.02	0.02	U	

Data Package ID: it0903060-1

Date Printed: Monday, March 23, 2009

ALS Paragon

LIMS Version: 6.252A

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Metals by 200.7

Method EPA200.7 Revision 4.4

Laboratory Control Sample

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Lab ID: F090311-1LCS

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 03/12/2009
 Date Analyzed: 03/13/2009
 Prep Method: EPA200.22.8

Prep Batch: IP090312-3
 QCBatchID: IP090312-3-1
 Run ID: it090313-2a4
 Cleanup: NONE
 Basis: N/A
 File Name: 090313A.

Sample Aliquot: 50 g
 Final Volume: 50 g
 Result Units: MG/L
 Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-39-3	BARIUM	2	1.96	0.1		98	85 - 115%
7440-41-7	BERYLLIUM	0.05	0.0472	0.002		94	85 - 115%
7440-42-8	BORON	1	1	0.1		100	85 - 115%
7440-70-2	CALCIUM	40	39.7	1		99	85 - 115%
7440-47-3	CHROMIUM	0.2	0.198	0.01		99	85 - 115%
7440-48-4	COBALT	0.5	0.488	0.01		98	85 - 115%
7440-50-8	COPPER	0.25	0.249	0.01		100	85 - 115%
7439-89-6	IRON	1	0.958	0.1		96	85 - 115%
7439-93-2	LITHIUM	0.5	0.513	0.01		103	85 - 115%
7439-95-4	MAGNESIUM	40	40.7	1		102	85 - 115%
7439-96-5	MANGANESE	0.5	0.486	0.01		97	85 - 115%
7440-02-0	NICKEL	0.5	0.493	0.02		99	85 - 115%
7440-09-7	POTASSIUM	40	41.5	1		104	85 - 115%
7440-23-5	SODIUM	40	40.3	1		101	85 - 115%
7440-24-6	STRONTIUM	0.5	0.517	0.01		103	85 - 115%
7440-66-6	ZINC	0.5	0.514	0.02		103	85 - 115%

Data Package ID: *it0903060-1*

Date Printed: Monday, March 23, 2009

ALS Paragon

LIMS Version: 6.252A

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Metals by 200.7

Method EPA200.7 Revision 4.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID: Angely WW 1 LabID: 0903060-1MS	Sample Matrix: WATER % Moisture: N/A Date Collected: 09-Mar-09 Date Extracted: 12-Mar-09 Date Analyzed: 13-Mar-09 Prep Method: EPA200.2 Rev 2.8	Prep Batch: IP090312-3 QCBatchID: IP090312-3-1 Run ID: it090313-2a4 Cleanup: NONE Basis: As Received	Sample Aliquot: 50 g Final Volume: 50 g Result Units: MG/L File Name: 090313A.
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CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-39-3	BARIUM	0.1	U	1.85		0.1	2	92	70 - 130%
7440-41-7	BERYLLIUM	0.002	U	0.0456		0.002	0.05	91	70 - 130%
7440-42-8	BORON	0.1	U	1.02		0.1	1	102	70 - 130%
7440-70-2	CALCIUM	190		233		1	40	113	70 - 130%
7440-47-3	CHROMIUM	0.01	U	0.189		0.01	0.2	95	70 - 130%
7440-48-4	COBALT	0.01	U	0.476		0.01	0.5	95	70 - 130%
7440-50-8	COPPER	0.01	U	0.244		0.01	0.25	98	70 - 130%
7439-89-6	IRON	0.1	U	0.913		0.1	1	91	70 - 130%
7439-93-2	LITHIUM	0.026		0.617		0.01	0.5	118	70 - 130%
7439-95-4	MAGNESIUM	2.6		40.9		1	40	96	70 - 130%
7439-96-5	MANGANESE	0.19		0.651		0.01	0.5	93	70 - 130%
7440-02-0	NICKEL	0.02	U	0.476		0.02	0.5	95	70 - 130%
7440-09-7	POTASSIUM	2		59.1	N	1	40	143	70 - 130%
7440-23-5	SODIUM	280		327		5	40	107	70 - 130%
7440-24-6	STRONTIUM	3.9		4.3		0.01	0.5	86	70 - 130%
7440-66-6	ZINC	0.02	U	0.517		0.02	0.5	103	70 - 130%

Data Package ID: *it0903060-1*

Metals by 200.7

Method EPA200.7 Revision 4.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID: Angely WW 1

LabID: 0903060-1MSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QC BatchID: IP090312-3-1

Run ID: it090313-2a4

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: MG/L

File Name: 090313A.

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-39-3	BARIUM	1.83		2	91	0.1	20	1
7440-41-7	BERYLLIUM	0.0453		0.05	91	0.002	20	1
7440-42-8	BORON	1.01		1	101	0.1	20	1
7440-70-2	CALCIUM	231		40	108	1	20	1
7440-47-3	CHROMIUM	0.189		0.2	94	0.01	20	0
7440-48-4	COBALT	0.474		0.5	95	0.01	20	1
7440-50-8	COPPER	0.241		0.25	96	0.01	20	1
7439-89-6	IRON	0.907		1	91	0.1	20	1
7439-93-2	LITHIUM	0.611		0.5	117	0.01	20	1
7439-95-4	MAGNESIUM	40.6		40	95	1	20	1
7439-96-5	MANGANESE	0.646		0.5	92	0.01	20	1
7440-02-0	NICKEL	0.474		0.5	95	0.02	20	0
7440-09-7	POTASSIUM	58.6	N	40	142	1	20	1
7440-23-5	SODIUM	327		40	109	5	20	0
7440-24-6	STRONTIUM	4.25		0.5	76	0.01	20	1
7440-66-6	ZINC	0.518		0.5	104	0.02	20	0

Data Package ID: *it0903060-1*

Metals by 200.7

Method EPA200.7

Analytical Spike Sample Recovery

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID:	Angely WW 1
LabID:	0903060-1A

Run ID: it090313-2a4
 Date Analyzed: 13-Mar-09
 Result Units: mg/l

Target Analyte	Sample Result	Samp Qual	PS Result	PS Qual	Spike Added	PS % Rec.	Control Limits
POTASSIUM	1.99		63.3	N	40	153	75 - 125%

Data Package ID: *it0903060-1*

Metals by 200.8

Method EPA200.8 Revision 5.4

Method Blank

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Lab ID: F090311-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-2

Run ID: IM090313-1A3

Cleanup: NONE

Basis: N/A

File Name: 13MAR09A

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
7440-36-0	ANTIMONY	10	0.3	0.3	U	
7440-38-2	ARSENIC	10	2	2	U	
7440-43-9	CADMIUM	10	0.3	0.3	U	
7439-92-1	LEAD	10	0.5	0.5	U	
7439-98-7	MOLYBDENUM	10	1	1	U	
7782-49-2	SELENIUM	10	1	1	U	
7440-22-4	SILVER	10	0.1	0.1	U	
7440-28-0	THALLIUM	10	0.2	0.2	U	
7440-61-1	URANIUM	10	0.1	0.1	U	

Data Package ID: im0903060-1

Date Printed: Monday, March 23, 2009

ALS Paragon

LIMS Version: 6.252A

Page 1 of 1

Metals by 200.8

Method EPA200.8 Revision 5.4

Laboratory Control Sample

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Lab ID: FM90311-1LCS

Sample Matrix: WATER
 % Moisture: N/A
 Date Collected: N/A
 Date Extracted: 03/12/2009
 Date Analyzed: 03/13/2009
 Prep Method: EPA200.22.8

Prep Batch: IP090312-3
 QCBatchID: IP090312-3-2
 Run ID: IM090313-1A3
 Cleanup: NONE
 Basis: N/A
 File Name: 13MAR09A

Sample Aliquot: 50 g
 Final Volume: 50 g
 Result Units: UG/L
 Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7440-36-0	ANTIMONY	20	20.4	0.3		102	85 - 115%
7440-38-2	ARSENIC	40	41	2		103	85 - 115%
7440-43-9	CADMIUM	20	21.2	0.3		106	85 - 115%
7439-92-1	LEAD	100	104	0.5		104	85 - 115%
7439-98-7	MOLYBDENUM	20	20.8	1		104	85 - 115%
7782-49-2	SELENIUM	40	45.5	1		114	85 - 115%
7440-22-4	SILVER	20	20.9	0.1		105	85 - 115%
7440-28-0	THALLIUM	1	0.885	0.2		88	85 - 115%
7440-61-1	URANIUM	20	21	0.1		105	85 - 115%

Data Package ID: *im0903060-1*

Metals by 200.8

Method EPA200.8 Revision 5.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID: Angely WW 1

LabID: 0903060-1MS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 09-Mar-09

Date Extracted: 12-Mar-09

Date Analyzed: 13-Mar-09

Prep Method: EPA200.2 Rev 2.8

Prep Batch: IP090312-3

QCBatchID: IP090312-3-2

Run ID: IM090313-1A3

Cleanup: NONE

Basis: As Received

Sample Aliquot: 50 g

Final Volume: 50 g

Result Units: UG/L

File Name: 13MAR09A

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7440-36-0	ANTIMONY	0.3	U	20.2		0.3	20	101	70 - 130%
7440-38-2	ARSENIC	2	U	39.8		2	40	100	70 - 130%
7440-43-9	CADMIUM	0.3	U	20.4		0.3	20	102	70 - 130%
7439-92-1	LEAD	0.5	U	103		0.5	100	103	70 - 130%
7439-98-7	MOLYBDENUM	2.2		24.1		1	20	110	70 - 130%
7782-49-2	SELENIUM	1	U	39.6		1	40	99	70 - 130%
7440-22-4	SILVER	0.1	U	20.6		0.1	20	103	70 - 130%
7440-28-0	THALLIUM	0.2	U	0.895		0.2	1	89	70 - 130%
7440-61-1	URANIUM	0.1	U	21.8		0.1	20	109	70 - 130%

Data Package ID: *im0903060-1*

Metals by 200.8

Method EPA200.8 Revision 5.4

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Paragon

Work Order Number: 0903060

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200205808

Field ID: Angely WW 1 LabID: 0903060-1MSD	Sample Matrix: WATER % Moisture: N/A Date Collected: 09-Mar-09 Date Extracted: 12-Mar-09 Date Analyzed: 13-Mar-09 Prep Method: EPA200.2 Rev 2.8	Prep Batch: IP090312-3 QCBatchID: IP090312-3-2 Run ID: IM090313-1A3 Cleanup: NONE Basis: As Received	Sample Aliquot: 50 g Final Volume: 50 g Result Units: UG/L File Name: 13MAR09A
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CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7440-36-0	ANTIMONY	20		20	100	0.3	20	1
7440-38-2	ARSENIC	39.7		40	99	2	20	0
7440-43-9	CADMIUM	19.8		20	99	0.3	20	3
7439-92-1	LEAD	101		100	101	0.5	20	2
7439-98-7	MOLYBDENUM	23.7		20	107	1	20	2
7782-49-2	SELENIUM	39.9		40	100	1	20	1
7440-22-4	SILVER	20.3		20	102	0.1	20	1
7440-28-0	THALLIUM	1.23		1	123	0.2	20	
7440-61-1	URANIUM	21.4		20	107	0.1	20	2

Data Package ID: *im0903060-1*