

Inorganics Case Narrative

Colorado Oil & Gas Conservation Commission Box Elder Creek

Work Order Number: 1508348

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 08/21/2015.
3. The samples were prepared for analysis based on Methods for the Chemical Analysis of Waters and Wastes (MCAWW), May 1994 procedures and Environmental Monitoring Systems Laboratory (EMSL) Rev 2.1 procedures.
4. The samples were analyzed following MCAWW and EMSL procedures for the current revisions of the following SOPs and methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	310.1	1106
Bicarbonate	310.1	1106
Carbonate	310.1	1106
pH	150.1	1126
Specific conductance	120.1	1128
TDS	160.1	1101
Bromide	300.0 Revision 2.1	1113
Chloride	300.0 Revision 2.1	1113
Fluoride	300.0 Revision 2.1	1113
Nitrate as N	300.0 Revision 2.1	1113
Nitrite as N	300.0 Revision 2.1	1113
Sulfate	300.0 Revision 2.1	1113

5. All standards and solutions were used within their recommended shelf life.
6. The samples were prepared and analyzed within the established hold time for each analysis.

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



7. General quality control procedures.

- n A preparation (method) blank and laboratory control sample (LCS) were prepared and analyzed with the samples in each applicable preparation batch.
- n The method blank associated with each applicable batch was below the reporting limit for the requested analytes.
- n All laboratory control sample criteria were met.
- n All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- n All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.

8. Matrix specific quality control procedures.

Per method requirements, matrix QC was performed for each analysis. Since a sample from this order number was not the selected quality control (QC) sample, matrix specific QC results are not included in this report.

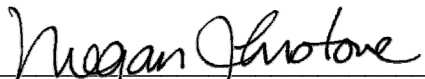
9. Electrical conductivity screening indicated that the concentration of dissolved salts was high in the samples. Therefore, it was necessary to dilute the samples prior to injection into the ion chromatograph in order to minimize the amount of salts loaded into the analytical column.

It was necessary to further dilute the samples in order to bring the chloride and sulfate concentrations into the analytical range of the ion chromatograph (IC).

Reduced aliquots were taken of the samples for the alkalinity, bicarbonate, and carbonate analysis. Reporting limits were elevated accordingly.

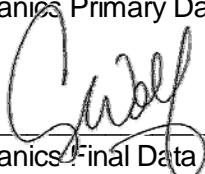
10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.

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



Megan Johnstone
Inorganics Primary Data Reviewer

8/28/15
Date



[Redacted Name]
Inorganics Final Data Reviewer

8/31/15
Date



Inorganic Data Reporting Qualifiers

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

- Concentration qualifier -- A "J" is entered if the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to ALS's Method Detection Limit. If the analyte was analyzed for but not detected a "U" is entered.
- QC qualifier -- Specified entries and their meanings are as follows:
 - N - Spiked sample recovery not within control limits.
 - * - Duplicate analysis (relative percent difference) not within control limits.
 - Z - Calibration spike recovery not within control limits.

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name: Box Elder Creek

Client Project Number:

Client PO Number:

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Box Elder Down	1508348-1		WATER	20-Aug-15	11:48
Box Elder Up	1508348-2		WATER	20-Aug-15	14:05
Trip Blank	1508348-3		WATER	20-Aug-15	7:00



225 Commerce Drive, Fort Collins, Colorado 80524
 TF: (800) 443-1511 PH: (970) 490-1511 FX: (970) 490-1522

Chain-of-Custody

Form 202r8

Time Zone (Circle):	EST	CST	MST	PST	Matrix: O = oil S = soil NS = non-soil solid W = water L = liquid E = extract F = filter

For metals or anions, please detail analytes below.

COMMENTS:		QC PACKAGE (check below)		RELINQUISHED BY	SIGNATURE	DATE	TIME
		LEVEL II (Standard QC)	LEVEL III (Std QC + forms)				
<p>For metals or anions, please detail analytes below.</p> <p>Comments: <i>Left in 11 group metals on receipt = dissolved</i></p> <p><i>7667-1111-11, B2-207-1111</i></p> <p><i>7668-1111-11, B2-207-1111</i></p> <p><i>7669-1111-11, B2-207-1111</i></p> <p><i>7670-1111-11, B2-207-1111</i></p> <p><i>7671-1111-11, B2-207-1111</i></p> <p><i>7672-1111-11, B2-207-1111</i></p> <p><i>7673-1111-11, B2-207-1111</i></p> <p><i>7674-1111-11, B2-207-1111</i></p> <p><i>7675-1111-11, B2-207-1111</i></p> <p><i>7676-1111-11, B2-207-1111</i></p> <p><i>7677-1111-11, B2-207-1111</i></p> <p><i>7678-1111-11, B2-207-1111</i></p> <p><i>7679-1111-11, B2-207-1111</i></p> <p><i>7680-1111-11, B2-207-1111</i></p> <p><i>7681-1111-11, B2-207-1111</i></p> <p><i>7682-1111-11, B2-207-1111</i></p> <p><i>7683-1111-11, B2-207-1111</i></p> <p><i>7684-1111-11, B2-207-1111</i></p> <p><i>7685-1111-11, B2-207-1111</i></p> <p><i>7686-1111-11, B2-207-1111</i></p> <p><i>7687-1111-11, B2-207-1111</i></p> <p><i>7688-1111-11, B2-207-1111</i></p> <p><i>7689-1111-11, B2-207-1111</i></p> <p><i>7690-1111-11, B2-207-1111</i></p> <p><i>7691-1111-11, B2-207-1111</i></p> <p><i>7692-1111-11, B2-207-1111</i></p> <p><i>7693-1111-11, B2-207-1111</i></p> <p><i>7694-1111-11, B2-207-1111</i></p> <p><i>7695-1111-11, B2-207-1111</i></p> <p><i>7696-1111-11, B2-207-1111</i></p> <p><i>7697-1111-11, B2-207-1111</i></p> <p><i>7698-1111-11, B2-207-1111</i></p> <p><i>7699-1111-11, B2-207-1111</i></p> <p><i>7700-1111-11, B2-207-1111</i></p> <p><i>7701-1111-11, B2-207-1111</i></p> <p><i>7702-1111-11, B2-207-1111</i></p> <p><i>7703-1111-11, B2-207-1111</i></p> <p><i>7704-1111-11, B2-207-1111</i></p> <p><i>7705-1111-11, B2-207-1111</i></p> <p><i>7706-1111-11, B2-207-1111</i></p> <p><i>7707-1111-11, B2-207-1111</i></p> <p><i>7708-1111-11, B2-207-1111</i></p> <p><i>7709-1111-11, B2-207-1111</i></p> <p><i>7710-1111-11, B2-207-1111</i></p> <p><i>7711-1111-11, B2-207-1111</i></p> <p><i>7712-1111-11, B2-207-1111</i></p> <p><i>7713-1111-11, B2-207-1111</i></p> <p><i>7714-1111-11, B2-207-1111</i></p> <p><i>7715-1111-11, B2-207-1111</i></p> <p><i>7716-1111-11, B2-207-1111</i></p> <p><i>7717-1111-11, B2-207-1111</i></p> <p><i>7718-1111-11, B2-207-1111</i></p> <p><i>7719-1111-11, B2-207-1111</i></p> <p><i>7720-1111-11, B2-207-1111</i></p> <p><i>7721-1111-11, B2-207-1111</i></p> <p><i>7722-1111-11, B2-207-1111</i></p> <p><i>7723-1111-11, B2-207-1111</i></p> <p><i>7724-1111-11, B2-207-1111</i></p> <p><i>7725-1111-11, B2-207-1111</i></p> <p><i>7726-1111-11, B2-207-1111</i></p> <p><i>7727-1111-11, B2-207-1111</i></p> <p><i>7728-1111-11, B2-207-1111</i></p> <p><i>7729-1111-11, B2-207-1111</i></p> <p><i>7730-1111-11, B2-207-1111</i></p> <p><i>7731-1111-11, B2-207-1111</i></p> <p><i>7732-1111-11, B2-207-1111</i></p> <p><i>7733-1111-11, B2-207-1111</i></p> <p><i>7734-1111-11, B2-207-1111</i></p> <p><i>7735-1111-11, B2-207-1111</i></p> <p><i>7736-1111-11, B2-207-1111</i></p> <p><i>7737-1111-11, B2-207-1111</i></p> <p><i>7738-1111-11, B2-207-1111</i></p> <p><i>7739-1111-11, B2-207-1111</i></p> <p><i>7740-1111-11, B2-207-1111</i></p> <p><i>7741-1111-11, B2-207-1111</i></p> <p><i>7742-1111-11, B2-207-1111</i></p> <p><i>7743-1111-11, B2-207-1111</i></p> <p><i>7744-1111-11, B2-207-1111</i></p> <p><i>7745-1111-11, B2-207-1111</i></p> <p><i>7746-1111-11, B2-207-1111</i></p> <p><i>7747-1111-11, B2-207-1111</i></p> <p><i>7748-1111-11, B2-207-1111</i></p> <p><i>7749-1111-11, B2-207-1111</i></p> <p><i>7750-1111-11, B2-207-1111</i></p> <p><i>7751-1111-11, B2-207-1111</i></p> <p><i>7752-1111-11, B2-207-1111</i></p> <p><i>7753-1111-11, B2-207-1111</i></p> <p><i>7754-1111-11, B2-207-1111</i></p> <p><i>7755-1111-11, B2-207-1111</i></p> <p><i>7756-1111-11, B2-207-1111</i></p> <p><i>7757-1111-11, B2-207-1111</i></p> <p><i>7758-1111-11, B2-207-1111</i></p> <p><i>7759-1111-11, B2-207-1111</i></p> <p><i>7760-1111-11, B2-207-1111</i></p> <p><i>7761-1111-11, B2-207-1111</i></p> <p><i>7762-1111-11, B2-207-1111</i></p> <p><i>7763-1111-11, B2-207-1111</i></p> <p><i>7764-1111-11, B2-207-1111</i></p> <p><i>7765-1111-11, B2-207-1111</i></p> <p><i>7766-1111-11, B2-207-1111</i></p> <p><i>7767-1111-11, B2-207-1111</i></p> <p><i>7768-1111-11, B2-207-1111</i></p> <p><i>7769-1111-11, B2-207-1111</i></p> <p><i>7770-1111-11, B2-207-1111</i></p> <p><i>7771-1111-11, B2-207-1111</i></p> <p><i>7772-1111-11, B2-207-1111</i></p> <p><i>7773-1111-11, B2-207-1111</i></p> <p><i>7774-1111-11, B2-207-1111</i></p> <p><i>7775-1111-11, B2-207-1111</i></p> <p><i>7776-1111-11, B2-207-1111</i></p> <p><i>7777-1111-11, B2-207-1111</i></p> <p><i>7778-1111-11, B2-207-1111</i></p> <p><i>7779-1111-11, B2-207-1111</i></p> <p><i>7780-1111-11, B2-207-1111</i></p> <p><i>7781-1111-11, B2-207-1111</i></p> <p><i></i></p>							

Preservative Key:



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: COGCC

Workorder No: 1508348

Project Manager: AW

Initials: CDT Date: 8-21-15

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<u>NO</u>
2. Are custody seals on shipping containers intact?	NONE	<u>YES</u>	NO
3. Are Custody seals on sample containers intact?	<u>NONE</u>	YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<u>YES</u>	NO
5. Are the COC and bottle labels complete and legible?		<u>YES</u>	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<u>YES</u>	NO
7. Were airbills / shipping documents present and/or removable?	<u>DROP OFF</u>	YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	<u>YES</u>	NO
9. Are all aqueous non-preserved samples pH 4-9?	N/A	<u>YES</u>	NO
10. Is there sufficient sample for the requested analyses?		<u>YES</u>	NO
11. Were all samples placed in the proper containers for the requested analyses?		<u>YES</u>	NO
12. Are all samples within holding times for the requested analyses?		<u>YES</u>	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<u>YES</u>	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ____ < green pea ____ > green pea	N/A	YES	<u>NO</u>
15. Do any water samples contain sediment? Amount Amount of sediment: ____ dusting ____ moderate ____ heavy	N/A	YES	<u>NO</u>
16. Were the samples shipped on ice?		<u>YES</u>	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <u>#4</u>	RAD ONLY	<u>YES</u>	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>1.6</u>			
No. of custody seals on cooler: <u>1</u>			
External µR/hr reading: <u>NA</u>			
Background µR/hr reading: <u>NA</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? YES / NO / <u>NA</u> (If no, see Form 008.)			

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

If applicable, was the client contacted? YES / NO / NA Contact: Gary Date/Time: 8/21/15

Project Manager Signature / Date: Gary 8/21/15

BICARBONATE AS CaCO₃

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Teresa Buettgenbach

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/25/2015	08/25/2015	N/A	1	250	20		25 ml
Box Elder Up	1508348-2	08/20/2015	08/25/2015	08/25/2015	N/A	1	230	20		25 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1508348-1*

CARBONATE AS CaCO3

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348
Reporting Basis: As Received
Prep Method: NONE
Analyst: Teresa Buettgenbach
Final Volume: 100 ml
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/25/2015	08/25/2015	N/A	1	20	20	U	25 ml
Box Elder Up	1508348-2	08/20/2015	08/25/2015	08/25/2015	N/A	1	20	20	U	25 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: ak1508348-1

TOTAL ALKALINITY AS CaCO₃

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348 **Final Volume:** 100 ml
Reporting Basis: As Received **Matrix:** WATER
Prep Method: NONE **Result Units:** MG/L
Analyst: Teresa Buettgenbach

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/25/2015	08/25/2015	N/A	1	250	20		25 ml
Box Elder Up	1508348-2	08/20/2015	08/25/2015	08/25/2015	N/A	1	230	20		25 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 3 of 3

pH in water @25 Degrees Celsius

Method EPA150.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348
Reporting Basis: As Received
Prep Method: NONE
Analyst: James A. Ceimet
Final Volume: 20 ml
Matrix: WATER
Result Units: pH

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/24/2015	08/24/2015	N/A	1	8.19	0.1		20 ml
Box Elder Up	1508348-2	08/20/2015	08/24/2015	08/24/2015	N/A	1	8.39	0.1		20 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ph1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

SPECIFIC CONDUCTIVITY

Method EPA120.1

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348
Reporting Basis: As Received
Prep Method: NONE
Analyst: James A. Ceimet
Final Volume: 45 ml
Matrix: WATER
Result Units: umhos/cm

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/24/2015	08/24/2015	N/A	1	2460	1		45 ml
Box Elder Up	1508348-2	08/20/2015	08/24/2015	08/24/2015	N/A	1	2310	1		45 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: sc1508348-1

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

TOTAL DISSOLVED SOLIDS

Method EPA160.1 Revision 9

Sample Results

Lab Name: ALS Environmental -- FC
Client Name: Colorado Oil & Gas Conservation Commission
Client Project ID: Box Elder Creek
Work Order Number: 1508348
Reporting Basis: As Received
Prep Method: METHOD
Analyst: Teresa Buettgenbach
Final Volume: 50 ml
Matrix: WATER
Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ/LOD	Flag	Sample Aliquot
Box Elder Down	1508348-1	08/20/2015	08/24/2015	08/25/2015	N/A	1	1700	40		50 ml
Box Elder Up	1508348-2	08/20/2015	08/24/2015	08/25/2015	N/A	1	1600	40		50 ml

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *td1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Field ID:	Box Elder Down
Lab ID:	1508348-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 20-Aug-15

Date Extracted: 21-Aug-15

Date Analyzed: 22-Aug-15

Prep Method: NONE

Prep Batch: IC150821-2

QCBatchID: IC150821-2-2

Run ID: IC150821-2A3

Cleanup: NONE

Basis: As Received

File Name: 50821_077.dxd

Analyst: Joel F. Nolte

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 02:31	4	0.95	0.4	0.12		
16887-00-6	CHLORIDE AnalysisTime: 15:41	25	220	5	1.5		
14797-65-0	NITRITE AS N AnalysisTime: 02:31	4	0.4	0.4	0.12	U	
24959-67-9	BROMIDE AnalysisTime: 02:31	4	0.76	0.8	0.24	J	
14797-55-8	NITRATE AS N AnalysisTime: 02:31	4	2	0.8	0.24		
14808-79-8	SULFATE AnalysisTime: 15:41	25	700	25	7.5		

Data Package ID: *ic1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 2

Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Field ID:	Box Elder Up
Lab ID:	1508348-2

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 20-Aug-15

Date Extracted: 21-Aug-15

Date Analyzed: 22-Aug-15

Prep Method: NONE

Prep Batch: IC150821-2

QCBatchID: IC150821-2-2

Run ID: IC150821-2A3

Cleanup: NONE

Basis: As Received

File Name: 50821_078.dxd

Analyst: Joel F. Nolte

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 02:46	4	0.98	0.4	0.12		
16887-00-6	CHLORIDE AnalysisTime: 16:26	25	220	5	1.5		
14797-65-0	NITRITE AS N AnalysisTime: 02:46	4	0.4	0.4	0.12	U	
24959-67-9	BROMIDE AnalysisTime: 02:46	4	0.86	0.8	0.24		
14797-55-8	NITRATE AS N AnalysisTime: 02:46	4	2.4	0.8	0.24		
14808-79-8	SULFATE AnalysisTime: 16:26	25	660	25	7.5		

Data Package ID: *ic1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 2 of 2

BICARBONATE AS CaCO₃

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: AK150825-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK150825-1

QCBatchID: AK150825-1-1

Run ID: AK150825-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK150825-1MB	8/25/2015	08/25/2015	N/A	1	5	5	U

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 3

CARBONATE AS CaCO₃

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: AK150825-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK150825-1

QCBatchID: AK150825-1-1

Run ID: AK150825-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK150825-1MB	8/25/2015	08/25/2015	N/A	1	5	5	U

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 2 of 3

TOTAL ALKALINITY AS CaCO₃

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: AK150825-1MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK150825-1

QCBatchID: AK150825-1-1

Run ID: AK150825-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	RptLimit/ LOQ	Flag
AK150825-1MB	8/25/2015	08/25/2015	N/A	1	5	5	U

Comments:

1. ND or U = Not Detected at or above the client requested detection limit.

Data Package ID: *ak1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 3 of 3

TOTAL ALKALINITY AS CaCO₃

Method EPA310.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: AK150825-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/25/2015

Date Analyzed: 08/25/2015

Prep Batch: AK150825-1

QCBatchID: AK150825-1-1

Run ID: AK150825-1A1

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
	TOTAL ALKALINITY AS CaCO ₃	100	97.4	5		97	85 - 115

Data Package ID: *ak1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

pH

Method EPA150.1

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Field ID:	Box Elder Up
Lab ID:	1508348-2D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 08/20/2015

Date Extracted: 08/24/2015

Date Analyzed: 08/24/2015

Prep Batch: PH150824-1

QCBatchID: PH150824-1-1

Run ID: PH150824-1A1

Cleanup: NONE

Basis: As Received

File Name:

Sample Aliquot: 20 ml

Final Volume: 20 ml

Result Units: pH

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-29-7	PH	8.39		8.39		0.1	1		0.2

Data Package ID: *ph1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.781

Specific Conductance in Water

Method EPA120.1

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Field ID:	Box Elder Up
Lab ID:	1508348-2D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 08/20/2015

Date Extracted: 08/24/2015

Date Analyzed: 08/24/2015

Prep Batch: SC150824-1

QCBatchID: SC150824-1-1

Run ID: SC150824-1A1

Cleanup: NONE

Basis: As Received

File Name:

Sample Aliquot: 45 ml

Final Volume: 45 ml

Result Units: umhos/cm

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-34-4	SPECIFIC CONDUCTIVITY	2310		2310		1	1	0	10

Data Package ID: sc1508348-1

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.781

Total Dissolved Solids

Method EPA160.1 Revision 9

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: TD150824-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 24-Aug-15

Date Analyzed: 25-Aug-15

Prep Method: METHOD

Prep Batch: TD150824-1

QCBatchID: TD150824-1-1

Run ID: TD150825-1A1

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	20	20	U	

Data Package ID: *td1508348-1*

Total Dissolved Solids

Method EPA160.1 Revision 9

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: TD150824-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/24/2015

Date Analyzed: 08/25/2015

Prep Method: METHOD

Prep Batch: TD150824-1

QCBatchID: TD150824-1-1

Run ID: TD150825-1A1

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
10-33-3	TOTAL DISSOLVED SOLIDS	400	416	20		104	85 - 115%

Data Package ID: *td1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: IC150821-2MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 21-Aug-15

Date Analyzed: 21-Aug-15

Prep Batch: IC150821-2

QCBatchID: IC150821-2-2

Run ID: IC150821-2A3

Cleanup: NONE

Basis: N/A

File Name: 50821_048.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.1	0.1	0.03	U	
16887-00-6	CHLORIDE	1	0.2	0.2	0.06	U	
14797-65-0	NITRITE AS N	1	0.1	0.1	0.03	U	
24959-67-9	BROMIDE	1	0.2	0.2	0.06	U	
14797-55-8	NITRATE AS N	1	0.2	0.2	0.06	U	
14808-79-8	SULFATE	1	1	1	0.3	U	

Data Package ID: ic1508348-1

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

LIMS Version: 6.781

Page 1 of 1

Ion Chromatography

Method EPA300.0 Revision 2.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1508348

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Box Elder Creek

Lab ID: IC150821-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08/21/2015

Date Analyzed: 08/21/2015

Prep Method: NONE

Prep Batch: IC150821-2

QCBatchID: IC150821-2-2

Run ID: IC150821-2A3

Cleanup: NONE

Basis: N/A

File Name: 50821_047.dxd

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
16984-48-8	FLUORIDE	5	5.33	0.1		107	90 - 110%
16887-00-6	CHLORIDE	10	10.3	0.2		103	90 - 110%
14797-65-0	NITRITE AS N	5	5.04	0.1		101	90 - 110%
24959-67-9	BROMIDE	10	10.3	0.2		103	90 - 110%
14797-55-8	NITRATE AS N	10	10.3	0.2		103	90 - 110%
14808-79-8	SULFATE	50	52.1	1		104	90 - 110%

Data Package ID: *ic1508348-1*

Date Printed: Friday, August 28, 2015

ALS Environmental -- FC

Page 1 of 1

LIMS Version: 6.781