



Inorganics Case Narrative

Colorado Oil & Gas Conservation Commission

Complaint 200294386

Work Order Number: 1102061

1. This report consists of 2 water samples.
2. The samples were received cool and intact by ALS on 02/05/10.
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 following methods:

<u>Analyte</u>	<u>Method</u>	<u>SOP #</u>
Alkalinity	310.1	1106 Rev 9
Bicarbonate	310.1	1106 Rev 9
Carbonate	310.1	1106 Rev 9
pH	150.1	1126 Rev 17
Specific conductance	120.1	1128 Rev 10
TDS	160.1	1101 Rev 11
TSS	160.2	1100 Rev 11
Bromide	300.0 Revision 2.1	1113 Rev 11
Chloride	300.0 Revision 2.1	1113 Rev 11
Fluoride	300.0 Revision 2.1	1113 Rev 11
Nitrate as N	300.0 Revision 2.1	1113 Rev 11
Nitrite as N	300.0 Revision 2.1	1113 Rev 11
Sulfate	300.0 Revision 2.1	1113 Rev 11

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 with the exception of nitrate as N and nitrite as N. The samples were received by ALS with no hold time remaining.

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. There were not more than 20 samples in each preparation batch.
- n The method blank associated with each applicable batch was below the reporting limit for the requested analytes. This indicates that no contaminants were introduced to the samples during preparation and analysis.
- n The LCS was within the acceptance limits for each applicable analysis.
- n All initial and continuing calibration blanks (ICB/CCB) associated with each applicable analytical batch were below the reporting limit for the requested analytes.
- n All initial and continuing calibration verifications (ICV/CCV) associated with each applicable analytical batch were within the acceptance criteria for the requested.

8. Matrix specific quality control procedures.

Sample 1102061-3 was designated as the quality control sample for the pH, specific conductance, TDS, and TSS analyses. Sample 1102061-1 was designated as the quality control sample for the bromide, chloride, fluoride, nitrate as N, nitrite as N, and sulfate analysis. Per method requirements, matrix QC was performed for the alkalinity, bicarbonate, and carbonate 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.

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 (MS) and matrix spike duplicate (MSD) were prepared and analyzed with the bromide, chloride, fluoride, nitrate as N, nitrite as N, and sulfate batch. All guidance criteria for precision and accuracy were met with the following exception:

<u>Analyte</u>	<u>Sample ID</u>
Nitrite as N	1102061-1MS & MSD

The native sample result is flagged for nitrite as N. The laboratory control sample indicates that the procedure was in control.

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

<u>Analyte</u>	<u>Sample ID</u>
Chloride	1102061-1MS & MSD
Fluoride	1102061-1MS & MSD



The chloride and fluoride concentrations in the native sample were above the analytical range; therefore accurate quantitation of MS/MSD recoveries were not possible as the spike added was small relative to the unspiked sample concentration. The LCS, ICV, and CCV results indicate the procedure was in control for these analytes.

- n A sample duplicate was prepared and analyzed with pH, specific conductance, TDS, and TSS batches. All guidance criteria for precision were met with the following exception:

<u>Analyte</u>	<u>Sample ID</u>
TSS	1102061-3D

The native sample result is flagged for duplicate failure.

For pH, the difference between the pH of the sample and its duplicate must be less than or equal to 0.2 pH units to be in control. RPD is not calculated for this analysis

9. Electrical conductivity screening indicated that the concentration of dissolved salts was high in sample 1102061-3. Therefore, it was necessary to dilute the sample prior to injection into the ion chromatograph in order to minimize the amount of salts loaded into the analytical column

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

Reduced aliquots were taken of sample 1102061-1 for the alkalinity, bicarbonate, and carbonate analysis. Reporting limits were elevated accordingly.

A reduced aliquot was taken of sample 1102061-3 for the TDS analysis. Reporting limits were elevated accordingly.

10. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in SOP 939 Revision 3.



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 Johnson

Megan Johnson

Inorganics Primary Data Reviewer

2/16/11
Date

A. C. Johnson

Inorganics Final Data Reviewer

2/15/11
Date



Inorganic Data Reporting Qualifiers

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

- Concentration qualifier -- 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: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

Client Project Name: Complaint 200294386

Client Project Number:

Client PO Number: OE PHA 11000000014

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
Dahl WW PM	1102061-1		WATER	03-Feb-11	14:56
Trip Blank	1102061-2		WATER	03-Feb-11	6:30
Dahl WW AM	1102061-3		WATER	03-Feb-11	11:59



ALS Laboratory Group

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

Chain-of-Custody

Form 202r8

WORKORDER
#

1102061

PROJECT NAME	Complaint 20294386	SAMPLER	Instant	DATE	4 Feb 2011	PAGE	1 of 1
PROJECT No.		SITE ID		TURNAROUND	14 days	DISPOSAL	By Lab or Return to Client
COMPANY NAME	Cole C. H. Co. Inc. (C.H. Co.)	EDD FORMAT					
SEND REPORT TO	Peter Gutierrez	PURCHASE ORDER					
ADDRESS	PO Box 168	BILL TO COMPANY					
CITY / STATE / ZIP	Trinidad CO 81082	INVOICE ATTN TO					
PHONE	719-846-3011	ADDRESS					
FAX		CITY / STATE / ZIP					
E-MAIL	peter.gutierrez@chco.us	PHONE					
		FAX					
		E-MAIL					
Lab ID	Field ID	Matrix	Sample Date	Sample Time	# Bottles	Pres.	QC
①	Dahl WW PM	W	3 Feb 2011	14:56	3	1	X
②	Tr. Blk	W	3 Feb 2011	16:30	2	1	X
①	D. H. WW PM	W	3 Feb 2011	14:56		8	X X X X X X X X X X X X
③	Dahl WW AM	W	3 Feb 2011	11:59	1	8	
↓	Dahl WW AM	W	3 Feb 2011	11:58	2	8	X X X
↓	Dahl WW AM	W	3 Feb 2011	11:58	1	8	X X X X X X X
↓	Dahl WW AM	W	3 Feb 2011	11:58	1	3	X

*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:	Anions = Br, Cl, F, NO ₃ , SO ₄ , CO ₃ Filter & acid for metals in preservation 200.0 - 1000 - 16 metals 200.0 - 1000 - 11 metals 200.0 - 1000 - 11 metals 200.0 - 1000 - 11 metals
Preservative Key:	1-HCl 2-HNO ₃ 3-H ₂ SO ₄ 4-NaOH 5-NaHSO ₄ 7-Other 8-4 degrees C 9-5035

SIGNATURE	PRINTED NAME	DATE	TIME
RELINQUISHED BY: P. Gutierrez	Peter Gutierrez	4 Feb 2011	12:45
RECEIVED BY: C. Trumble	C Trumble	24 Feb 2011	10:45
RELINQUISHED BY:			
RECEIVED BY:			
RELINQUISHED BY:			
RECEIVED BY:			



CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CUGCCWorkorder No: 1102061Project Manager: AWInitials: CDTDate: 2-5-11

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	YES	<input checked="" type="radio"/> 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: <u> </u> < green pea <u> </u> > 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*: <u>#2</u> <input checked="" type="radio"/> <u>#4</u>	RAD ONLY	<input checked="" type="radio"/> YES
Cooler #:	<u>1</u>		
Temperature (°C):	<u>3.8°</u>		
No. of custody seals on cooler:	<u>2</u>		
External μ R/hr reading:	<u>12</u>		
Background μ R/hr reading:	<u>11</u>		
Were external μ R/hr readings \leq two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES <input type="radio"/> NO <input type="radio"/> NA (If no, see Form 008.)			

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

Headspace: 1102061-2-1
 - 2-2
 - 3-1
 - 3-2
 } GREEN PEA

Sample 1102061-3-4 and 1102061-3-5 received @ pH 2.5

If applicable, was the client contacted? YES / NO ☒ NO Contact: _____ Date/Time: _____

Project Manager Signature / Date: _____

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

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

BICARBONATE AS CaCO₃

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/09/2011	02/09/2011	N/A	1	240	20		25 ml
Dahl WW AM	1102061-3	02/03/2011	02/09/2011	02/09/2011	N/A	1	5	5	U	100 ml

Comments:

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

Data Package ID: *ak1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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LIMS Version: 6.454

CARBONATE AS CaCO₃

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/09/2011	02/09/2011	N/A	1	20	20	U	25 ml
Dahl WW AM	1102061-3	02/03/2011	02/09/2011	02/09/2011	N/A	1	5	5	U	100 ml

Comments:

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

Data Package ID: *ak1102061-1*

TOTAL ALKALINITY AS CaCO₃

Method EPA310.1

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/09/2011	02/09/2011	N/A	1	240	20		25 ml
Dahl WW AM	1102061-3	02/03/2011	02/09/2011	02/09/2011	N/A	1	5	5	U	100 ml

Comments:

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

Data Package ID: *ak1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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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: Complaint 200294386

Work Order Number: 1102061

Final Volume: 20 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: pH

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/08/2011	02/08/2011	N/A	1	7.17	0.1		20 ml
Dahl WW AM	1102061-3	02/03/2011	02/08/2011	02/08/2011	N/A	1	2.27	0.1		20 ml

Comments:

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

Data Package ID: *ph1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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SPECIFIC CONDUCTIVITY

Method EPA120.1

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 45 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: NONE

Result Units: umhos/cm

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/08/2011	02/08/2011	N/A	1	971	1		45 ml
Dahl WW AM	1102061-3	02/03/2011	02/08/2011	02/08/2011	N/A	1	6220	1		45 ml

Comments:

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

Data Package ID: *sc1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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TOTAL DISSOLVED SOLIDS

Method EPA160.1

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: METHOD

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/07/2011	02/08/2011	N/A	1	640	20		100 ml
Dahl WW AM	1102061-3	02/03/2011	02/07/2011	02/08/2011	N/A	1	2800	200		10 ml

Comments:

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

Data Package ID: *td1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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TOTAL SUSPENDED SOLIDS

Method EPA160.2

Sample Results

Lab Name: ALS Environmental -- FC

Client Name: Colorado Oil & Gas Conservation Commission

Client Project ID: Complaint 200294386

Work Order Number: 1102061

Final Volume: 100 ml

Reporting Basis: As Received

Matrix: WATER

Prep Method: METHOD

Result Units: MG/L

Client Sample ID	Lab ID	Date Collected	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag	Sample Aliquot
Dahl WW PM	1102061-1	02/03/2011	02/07/2011	02/08/2011	N/A	1	29	20		100 ml
Dahl WW AM	1102061-3	02/03/2011	02/07/2011	02/08/2011	N/A	1	110	20	*	100 ml

Comments:

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

Data Package ID: *ts1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW PM

Lab ID: 1102061-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 03-Feb-11

Date Extracted: 07-Feb-11

Date Analyzed: 07-Feb-11

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: As Received

File Name: 10207_029.DXD

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 16:27	10	22	1		
16887-00-6	CHLORIDE AnalysisTime: 16:27	10	110	2		
14797-65-0	NITRITE AS N AnalysisTime: 14:16	1	0.1	0.1	U	N
24959-67-9	BROMIDE AnalysisTime: 14:16	1	0.2	0.2	U	
14797-55-8	NITRATE AS N AnalysisTime: 14:16	1	0.2	0.2	U	
14808-79-8	SULFATE AnalysisTime: 14:16	1	52	1		

Data Package ID: ic1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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Ion Chromatography

Method EPA300.0 Revision 2.1

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW AM

Lab ID: 1102061-3

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 03-Feb-11

Date Extracted: 07-Feb-11

Date Analyzed: 07-Feb-11

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: As Received

File Name: 10207_020.DXD

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Dilution Factor	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE AnalysisTime: 16:40	100	260	10		
16887-00-6	CHLORIDE AnalysisTime: 16:40	100	1400	20		
14797-65-0	NITRITE AS N AnalysisTime: 14:29	5	0.5	0.5	U	
24959-67-9	BROMIDE AnalysisTime: 14:29	5	1	1	U	
14797-55-8	NITRATE AS N AnalysisTime: 14:29	5	1	1	U	
14808-79-8	SULFATE AnalysisTime: 14:29	5	44	5		

Data Package ID: ic1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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LIMS Version: 6.454

BICARBONATE AS CaCO₃

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: AK110209-2MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK110209-2

QCBatchID: AK110209-2-1

Run ID: ak110209-1a

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag
AK110209-2MB	2/9/2011	02/09/2011	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1102061-1*

Date Printed: Tuesday, February 15, 2011

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CARBONATE AS CaCO₃

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: AK110209-2MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK110209-2

QCBatchID: AK110209-2-1

Run ID: ak110209-1a

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag
AK110209-2MB	2/9/2011	02/09/2011	N/A	1	5	5	U

Comments:

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

Data Package ID: *ak1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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TOTAL ALKALINITY AS CaCO3

Method EPA310.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: AK110209-2MB

Sample Matrix: WATER

% Moisture: N/A

Prep Batch: AK110209-2

QCBatchID: AK110209-2-1

Run ID: ak110209-1a

Cleanup: NONE

Basis: N/A

Sample Aliquot: 100 ml

Final Volume: 100ml

Result Units: MG/L

Lab ID	Date Prepared	Date Analyzed	Percent Moisture	Dilution Factor	Result	Reporting Limit	Flag
AK110209-2MB	2/9/2011	02/09/2011	N/A	1	5	5	U

Comments:

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

Data Package ID: ak1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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TOTAL ALKALINITY AS CaCO₃

Method EPA310.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: AK110209-2LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/09/2011

Date Analyzed: 02/09/2011

Prep Batch: AK110209-2

QCBatchID: AK110209-2-1

Run ID: ak110209-1a

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	99.8	5		100	85 - 115

Data Package ID: ak1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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pH

Method EPA150.1

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW AM

Lab ID: 1102061-3D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 02/03/2011

Date Extracted: 02/08/2011

Date Analyzed: 02/08/2011

Prep Batch: PH110208-1

QCBatchID: PH110208-1-1

Run ID: ph110208-1a

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	2.27		2.24		0.1	1		0.2

Data Package ID: *ph1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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LIMS Version: 6.454

Specific Conductance in Water

Method EPA120.1

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW AM

Lab ID: 1102061-3D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 02/03/2011

Date Extracted: 02/08/2011

Date Analyzed: 02/08/2011

Prep Batch: SC110208-1

QCBatchID: SC110208-1-1

Run ID: sc110208-1a

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	6220		6210		1	1	0	10

Data Package ID: sc1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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LIMS Version: 6.454

Total Dissolved Solids

Method EPA160.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: TD110207-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Feb-11

Date Analyzed: 08-Feb-11

Prep Method: METHOD

Prep Batch: TD110207-1

QCBatchID: TD110207-1-1

Run ID: td110208-1a

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	Reporting Limit	Result Qualifier	EPA Qualifier
10-33-3	TOTAL DISSOLVED SOLIDS	1	20	20	U	

Data Package ID: *td1102061-1*

Total Dissolved Solids

Method EPA160.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: TD110207-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/07/2011

Date Analyzed: 02/08/2011

Prep Method: METHOD

Prep Batch: TD110207-1

QCBatchID: TD110207-1-1

Run ID: td110208-1a

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	433	20		108	85 - 115%

Data Package ID: *td1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

LIMS Version: 6.454

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Total Dissolved Solids

Method EPA160.1

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW AM

Lab ID: 1102061-3D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 02/03/2011

Date Extracted: 02/07/2011

Date Analyzed: 02/08/2011

Prep Batch: TD110207-1

QCBatchID: TD110207-1-1

Run ID: td110208-1a

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-33-3	TOTAL DISSOLVED SOLIDS	2800		2880		200	1	1	5

Data Package ID: *td1102061-1*

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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Total Suspended Solids

Method EPA160.2

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: TS110207-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Feb-11

Date Analyzed: 08-Feb-11

Prep Method: METHOD

Prep Batch: TS110207-1

QCBatchID: TS110207-1-1

Run ID: ts110208-1a

Cleanup: NONE

Basis: N/A

File Name: Manual Entry

Sample Aliquot: 500 ml

Final Volume: 500 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
10-32-2	TOTAL SUSPENDE SOLIDS	1	4	4	U	

Data Package ID: ts1102061-1

Total Suspended Solids

Method EPA160.2

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: TS110207-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/07/2011

Date Analyzed: 02/08/2011

Prep Method: METHOD

Prep Batch: TS110207-1

QCBatchID: TS110207-1-1

Run ID: ts110208-1a

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
10-32-2	TOTAL SUSPENDED SOLIDS	583	566	20		97	85 - 115%

Data Package ID: ts1102061-1

Date Printed: Tuesday, February 15, 2011

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Total Suspended Solids

Method EPA160.2

Duplicate Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW AM

Lab ID: 1102061-3D

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 02/03/2011

Date Extracted: 02/07/2011

Date Analyzed: 02/08/2011

Prep Batch: TS110207-1

QCBatchID: TS110207-1-1

Run ID: ts110208-1a

Cleanup: NONE

Basis: As Received

File Name: Manual Entry

Sample Aliquot: 100 ml

Final Volume: 100 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	Sample Result	Samp Qual	Duplicate Result	Dup Qual	Reporting Limit	Dilution Factor	RPD	RPD Limit
10-32-2	TOTAL SUSPENDE SOLIDS	110		115	*	20	1	6	5

Data Package ID: ts1102061-1

Date Printed: Tuesday, February 15, 2011

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LIMS Version: 6.454

Ion Chromatography

Method EPA300.0 Revision 2.1

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: IC110207-1MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Feb-11

Date Analyzed: 07-Feb-11

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: N/A

File Name: 10207_012.DXD

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	Reporting Limit	Result Qualifier	EPA Qualifier
16984-48-8	FLUORIDE	1	0.1	0.1	U	
16887-00-6	CHLORIDE	1	0.2	0.2	U	
14797-65-0	NITRITE AS N	1	0.1	0.1	U	
24959-67-9	BROMIDE	1	0.2	0.2	U	
14797-55-8	NITRATE AS N	1	0.2	0.2	U	
14808-79-8	SULFATE	1	1	1	U	

Data Package ID: ic1102061-1

Date Printed: Tuesday, February 15, 2011

ALS Environmental -- FC

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LIMS Version: 6.454

Ion Chromatography

Method EPA300.0 Revision 2.1

Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Lab ID: IC110207-1LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 02/07/2011

Date Analyzed: 02/07/2011

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: N/A

File Name: 10207_013.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	2.5	2.33	0.1		93	90 - 110%
16887-00-6	CHLORIDE	5	4.89	0.2		98	90 - 110%
14797-65-0	NITRITE AS N	2	2.13	0.1		106	90 - 110%
24959-67-9	BROMIDE	5	5.23	0.2		105	90 - 110%
14797-55-8	NITRATE AS N	5	5.1	0.2		102	90 - 110%
14808-79-8	SULFATE	25	25	1		100	90 - 110%

Data Package ID: ic1102061-1

Date Printed: Tuesday, February 15, 2011

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LIMS Version: 6.454

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Ion Chromatography

Method EPA300.0 Revision 2.1

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1102061

Client Name: Colorado Oil & Gas Conservation Commission

ClientProject ID: Complaint 200294386

Field ID: Dahl WW PM

LabID: 1102061-1MS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 03-Feb-11

Date Extracted: 07-Feb-11

Date Analyzed: 07-Feb-11

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

File Name: 10207_027.DXD

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
14797-65-0	NITRITE AS N	0.1	U	2.38	N	0.1	2	119	85 - 115%
24959-67-9	BROMIDE	0.2	U	5.27		0.2	5	105	85 - 115%
14797-55-8	NITRATE AS N	0.2	U	5.06		0.2	5	101	85 - 115%
14808-79-8	SULFATE	52		71.1		1	20	96	85 - 115%

Field ID: Dahl WW PM

LabID: 1102061-1MSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 03-Feb-11

Date Extracted: 07-Feb-11

Date Analyzed: 07-Feb-11

Prep Method: NONE

Prep Batch: IC110207-1

QCBatchID: IC110207-1-1

Run ID: IC110207-1A

Cleanup: NONE

Basis: As Received

Sample Aliquot: 5 ml

Final Volume: 5 ml

Result Units: MG/L

File Name: 10207_028.DXD

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
14797-65-0	NITRITE AS N	2.41	N	2	121	0.1	15	2
24959-67-9	BROMIDE	5.35		5	107	0.2	15	1
14797-55-8	NITRATE AS N	5.14		5	103	0.2	15	2
14808-79-8	SULFATE	71.3		20	97	1	15	0

Data Package ID: ic1102061-1