



DEPARTMENT OF NATURAL RESOURCES

*John W. Hickenlooper, Governor*

P.O. Box 2651

Durango, CO 81302

Phone: (970) 259-1619

FAX: (970) 259-9128

[www.colorado.gov/cogcc](http://www.colorado.gov/cogcc)

File #200129974

November 13, 2013

Bernie Kempinski  
520 Miller Ranch Road  
Ignacio, CO 81137

RE: Water Well Test – October 17, 2013

Dear Bernie:

Enclosed please find a copy of the results of the October 17, 2013 sampling of your domestic water well, located on your property at 520 Miller Ranch Road in La Plata County, Colorado. You contacted the Colorado Oil & Gas Conservation Commission (COGCC) out of concerns that nearby oil and gas activity had impacted your water well. On October 17, 2013 COGCC and Four Corners Geoscience (FCG) staff collected well water samples for methane, hydrogen sulfide, field chemistries, bacteriology, and COGCC Rule 608 parameters. This letter presents the results of the COGCC sampling. You may have already received the raw data from ConocoPhillips as they volunteered to pay for these analyses.

### **Sampling Summary and Results**

COGCC and FCG staff collected samples from the frostfree located next to some outbuildings. Staff noted the water to be clear, with no odor, not tint and no bubbles. There was a trace of black shale in the sample bucket. Samples were collected after pumping approximately 400 gallons which appeared to be near the capacity of the well as air bubbles were observed. Samples were sent to Four Corners Geoscience (FCG) laboratory for methane analysis, San Juan Basin Health for bacteriology, and Green Analytical Laboratories (GAL) for all other parameters. Results are discussed below and presented in Table 1 and Attachments.

As in the past, chloride, fluoride and total dissolved solids (TDS) exceed the Colorado Department of Public Health and Environment (CDPHE) and Environmental Protection Agency's (EPA) primary and secondary drinking water standards. Total coliform was also present in the sample, indicating potential surface contamination. Primary Drinking Water Standards are legally enforceable standards that apply to public water systems only, but are used as a guideline for private water wells. The Secondary Standards are non-enforceable guidelines regulating contaminants that may cause cosmetic or aesthetic effects in drinking water. Specifics of your water well testing are provided below.

◆ ◆ ◆

**Calcium (Ca):** There are no drinking water standards for calcium.

The calcium concentration in the sample collected from your well was 221 mg/l.

**Chloride (Cl):** The CDPHE secondary drinking water standard for chloride is 250mg/l. Chloride concentrations in excess of 250 mg/l usually produce a noticeable taste in drinking water.

Chloride was detected at a concentration of 1010 mg/l in the sample collected from your water well, which is above the secondary drinking water standard.

**Fluoride (F):** The CDPHE human health standard for fluoride is 4.0 mg/l. Where fluoride concentrations are in the range of 0.7 mg/l to 1.2 mg/l health benefits such as reduced dental decay have been observed. Consumption of fluoride at concentrations of greater than 2.0 mg/l can result in mottling of teeth. Consumption of fluoride at concentrations greater than 4.0 mg/l can increase the risk of skeletal fluorosis or other adverse health effects. Fluoride occurs naturally in the groundwater in many areas in Colorado at concentrations that exceed the drinking water standard. It is not sourced by oil and gas activities.

Fluoride was detected at a concentration of **6.23 mg/l** in the sample collected from your water well which is above the CDPHE drinking water standard. This water should not be consumed by humans or animals without adequate treatment.

**Iron (Fe):** The CDPHE secondary drinking water standard for iron is 0.3 mg/l. Small amounts of iron are common in groundwater. Iron produces a brownish-red color in laundered clothing, can leave reddish stains on fixtures, and impart a metallic taste to beverages and food made with it. After a period of time iron deposits can build up in pressure tanks, water heaters, and pipelines, reducing the effective flow rate and efficiency of the water supply.

Iron was detected in the sample collected from your water well at a concentration of 0.164 mg/l which is below the CDPHE standard.

**Magnesium (Mg):** There are no drinking water standards for magnesium.

Magnesium was detected in the sample collected from your water well at a concentration of 5.08 mg/l.

**Manganese (Mn):** The CDPHE secondary drinking water standard for manganese is 0.05 mg/l. Manganese produces a brownish color in laundered clothing, may stain fixtures and affect the taste of coffee or tea.

Manganese was detected in the sample collected from your water well at a concentration of 0.0426 mg/l which is below the CDPHE standard.

**Nitrate (NO<sub>3</sub>) and Nitrite (NO<sub>2</sub>):** The CDPHE human health standard for nitrate is 10.0 mg/l. Nitrate can cause cyanosis in infants; a household water supply should not contain nitrate concentration in excess of 10 mg/l. The CDPHE human health standard for nitrite is 1.0 mg/l. Nitrite concentrations exceeding 1.0 mg/l should not be used for feeding infants.

Nitrate/Nitrite as N was detected in the sample collected from your water well at a concentration of 0.244 mg/l which is below the CDPHE standard.

**Potassium (K):** There are no drinking water standards for potassium.

Potassium was detected in the sample collected from your well at a concentration of 1.40 mg/l.

**Selenium (Se):** The CDPHE human health standard for selenium is 0.05 mg/l. Selenium is a contaminate metal which is commonly sourced from organic shales. It is not sourced by oil and gas activities. The Oxford area of Colorado has been documented to contain high levels of selenium in the near surface soils and is a type locality for selenium toxicity.

Selenium was detected at a concentration of 0.0136 mg/l in the sample collected from your water well, which is below the CDPHE human health standard.

**Sodium (Na):** People on salt restricted diets should be aware of the sodium concentration in the water they drink. A concentration of less than 20 mg/l is recommended by some for people on salt restricted diets or for people suffering from hypertension or heart disease. Sodium occurs naturally in the groundwater in many areas of Colorado at concentrations that exceed this health advisory level.

Sodium was detected in the water sample from your well at a concentration of **495 mg/l** which is above the recommended level for people on salt restricted diets. This is consistent with the historic concentrations in your well, which vary widely.

**Sulfate (SO<sub>4</sub>):** The CDPHE sulfate secondary standard for human drinking water is 250mg/l. Although CDPHE does not have an agricultural standard for sulfate, other agencies recommend a concentration below 1,500 mg/l for livestock watering. Waters containing high concentrations of sulfate, typically caused by the leaching of natural deposits of magnesium sulfate (Epsom salts) or sodium sulfate (Glauber's salt), may be undesirable because of their laxative effects.

Sulfate was detected in the sample collected from your water well at a concentration of 176 mg/l which is below the secondary standard.

**pH:** pH is the measure of the hydrogen ion concentration in water. The pH of water in its natural state is generally from 5.5 to 9.0. The CDPHE standard for domestic and agricultural water is a range of 6.5 to 8.5. Seven (7) represents neutrality, while values less than 7 indicate increasing acidity and values greater than 7 indicate increasing alkalinity.

pH was measured in the water sample from your well with a value of 7.71 which is below the CDPHE drinking water and agricultural standards.

**Total Dissolved Solids (TDS):** CDPHE's TDS secondary standard for human drinking water is 500 milligrams per liter (mg/l). Although CDPHE does not have an agricultural standard for TDS, other agencies recommend concentrations below 1,500 mg/l for irrigation, and below 5,000 mg/l for most livestock watering. TDS occurs naturally in the groundwater in many areas of Colorado at concentrations that exceed the drinking water standard.

TDS was detected in the water sample collected from your well at a concentration of **2160 mg/l** which is above the drinking water standard.

**Hardness:** Hardness is the soap-consuming capacity of water; that is, the more soap required to produce lather, the harder the water. Hardness is reported as calcium carbonate in milligrams per liter (mg/l).

Hardness was reported in the water sample collected from your well at 572 mg/l which is classified as very hard water.

**Methane Gas Analysis:** The concentration of methane in the water that could theoretically allow methane to accumulate in confined, unventilated spaces and potentially be explosive is 1.1-2.0 mg/l.

Methane gas was detected in the sample collected from your water well at a concentration of 0.04 mg/l. This is considered normal in this area and does not pose a risk.

**Hydrogen Sulfide Gas Analysis:** Sulfur-reducing bacteria, which use sulfur as an energy source, are the primary producers of large quantities of hydrogen sulfide. These bacteria chemically change natural sulfates in water to hydrogen sulfide. Sulfur-reducing bacteria live in oxygen-deficient environments such as deep wells, plumbing systems, water softeners and water heaters. These bacteria usually flourish on the hot water side of a water distribution system.

Hydrogen sulfide gas also occurs naturally in some groundwater. It is formed from decomposing underground deposits of organic matter such as decaying plant material. Hydrogen sulfide often is present in wells drilled in shale or sandstone, or near coal or peat deposits or oil fields.

Hydrogen sulfide gas was not detected in the sample collected from your well.

**Coliform Bacteria:** Coliforms are bacteria that are always present in the digestive tracts of animals, including humans, and are found in their wastes. They are also found in plant and soil material. Total coliform counts give a general indication of the sanitary condition of a water supply. When coliforms have been detected, repairs or modifications of the water system may be required.

Total coliform bacteria were present and E. coli bacteria were absent in the water sample collected from your well. Your wellhead cap was observed to be cracked during the sampling event and may be allowing surface contamination into your well. Well cap replacement is recommended.

## **Conclusions**

In conclusion the water from your domestic well exceeds CDPHE drinking water standards for fluoride, chloride and TDS, which is consistent with the samples which have been collected since 2008. This water should not be consumed by humans or animals without prior treatment due to the potential for fluoride toxicity. Sodium is also elevated which could pose a risk for individuals who are on salt-restricted diets. Both fluoride and sodium are naturally sourced by organic shales and are commonly elevated in your area. There is no indication of impacts to your water well from area oil and gas activities.

Please feel free to give me a call or email me at [karen.spray@state.co.us](mailto:karen.spray@state.co.us) if you want to discuss these results further.

Sincerely,  
Colorado Oil & Gas Conservation Commission Staff

Karen L. Spray, PG  
SW Environmental Protection Specialist

Cc: Matt Lepore – COGCC Director  
Jim Milne – COGCC Environmental Manager  
Alex Fischer – COGCC Environmental Supervisor  
File #200129974

Attachments: Table 1 – Analytical Summary  
FCG Field Report  
GAL Analytical Report  
San Juan Basin Health Bacterial Report

**TABLE 1**  
**ANALYTICAL SUMMARY**  
**Kempinski Water Well**

Parameter	Water Sample							CDPHE Standards		
	Sample Date									
	10/17/13	12/2/10	10/5/10	5/15/08	4/1/08	4/1/08(2)	Unit	Domestic	Agriculture	Units
Alkalinity, Total	180	214	258	118	194	162	mg/l	NS	NS	
Alkalinity, Bicarbonate	180	210	254	114	190	162	mg/l	NS	NS	
Alkalinity, Carbonate	<10	<10	<10	<10	<10	<10	mg/l	NS	NS	
Alkalinity, Hydroxide	<10	<10	<10	<10	<10	<10	mg/l	NS	NS	
Calcium	221	68.7	16	672	127	287	mg/l	NS	NS	
Chloride	1010	340	17	3020	590	126	mg/l	250	NS	mg/l
Conductivity	3700	2100	910	9440	2410	4400	uS/cm	NS	NS	
Fluoride	6.23	6.6	4.3	5	6.5	5.8	mg/l	4.0	2.0	mg/l
Iron	0.164	0.62	<0.05	0.11	<0.05	<0.05	mg/l	0.3	5	mg/l
Magnesium	5.08	2.5	1.9	15.6	3.0	6.3	mg/l	NS	NS	
Manganese	0.0426	0.0994	0.0044	0.0939	0.0409	NT	mg/l	0.05	0.2	mg/l
Nitrate/Nitrite as N	0.244	0.26	0.4	NT	0.12	NT	mg/l	10.0	100	mg/l
pH	7.71	7.86	8.09	6.33	8.04	7.63	S.U.	6.5-8.5	6.5-8.5	S.U.
Potassium	1.40	1.3	1.3	4.1	1.3	2.0	mg/l	NS	NS	
Selenium	0.0136	0.013	0.026	0.016	0.009	NT	mg/l	0.05	0.02	mg/l
Sodium	495*	296*	193*	1130*	402*	626*	mg/l	NS	NS	
Sulfate	176	205	190	243	174	178	mg/l	250	NS	
TDS	2160	1313	569	5820	1300	2630	mg/l	500	*1500	mg/l
Hardness	572	182	48	1740	329	743	mg/l	NS	NS	
<b>Other Parameters</b>										
Methane	0.04	ND	ND	NT	0.01	NT	mg/l	NS	NS	
Hydrogen sulfide	ND	ND	ND	NT	ND	NT	mg/l	NS	NS	
Total Coliform	PRES	ABS	PRES	NT	ABS	NT		Zero	NS	
E. Coli	ABS	ABS	ABS	NT	ABS	NT		Zero	NS	

**CDPHE** Colorado Department of Public Health and the Environment

**Domestic** Water Quality Control Commission 5 CCR 1002-41, Regulation No. 41 - The Basic Standards for Groundwater.

**Agriculture** \* Standards for agriculture complied from CDPHE and other of sources.

**mg/l** milligrams per liter (ppm or parts per million).

**NS** No Standard.

**NT** Not Tested

**Human health standard.**

**Secondary standard.**

\* Above recommended concentration for persons on a sodium-restricted diet

**Four Corners Geoscience  
P.O. Box 4224  
Durango, CO 81302  
Domestic Water Well  
Field Data Report**

DATE 10/17/2013

IID(COGCC) 2043

FCG # 101713-L1

Facility ID COGCC 706941

NAME Bernie & Rita Kempinski

AddressWaterWell 520 Miller Ranch Road Ignacio, CO 81137

Mailing Address 520 Miller Ranch Road Ignacio, CO 81137

**DWR Permit Data**

430834C

Receipt # DWR

209556

WaterWellPermit#

500

WellDepth(Ft)

85

StaticWater Level(Ft)

2

Yield

NENW

QTRQTR

21

SECTION

32

TWP(North)

6

RGE(West)

1660S2940E

FTG

-107.50026

Longitude(DecDegrees)

37.00449

Latitude(DecDegrees)

**Field Chemistries**

7.78

PH\_FIELD

3800

ElectricConductivity

2375

TDS\_CALC

15

WATERTEMP\_

Water samples collected and delivered to approved analytical lab. Results attached.  
Please refer to Water Well booklet for interpretation of lab chemistries.

**Methane Result (mg/L)(Dissolved)**

0.04

mg/L

Detection Limit 0.0005 mg/L

**HydrogenSulfide (mg/L)**

HACH Test Kit Field 25378-00

<0.1

mg/L

Detection Limit 0.1 mg/L

**San Juan Basin Health-State of Colorado  
Health Dept Coli-Alert Test**

Present

ColiformBacteria

Met Bernie. Sample from frostfree next to outbuildings. Water clear, no odor, no tint, no bubbles, trace black shale in sample bucket. Karen Spray present for test. Pumped approximately 400 gallons.

**COMMENTS**

**Operator Conoco Phillips**

GasWellName Allison Unit #149H

Four Corners Geoscience conducted onsite field chemistries, observations of physical characteristics of well water while pumping well to receive a fresh aquifer sample. Water samples were collected and delivered to an EPA accredited analytical laboratory.

Methane samples were delivered to Four Corners Geoscience for analysis for methane in accordance with BLM/USGS Method established in 1993 for LaPlata County Colorado.

Onsite water well evaluation and sample collection and analysis are conducted in compliance with the Colorado Oil and Gas Conservation Commission Order Numbers 112-156 and 112-157 established in July 2000 and all subsequent Orders for 80 Acre infill Drilling.

Four Corners Geoscience is not liable for the results or interpretation of these analyses. Qualified specialists should be consulted for interpretation or treatment of water.



**San Juan Basin Health Department  
Water Bacteriology Result**

**Coli-Alert Test for Presence or Absence of  
Coliform Bacteria in Water Wells and other Water Sources**

Your coli-form bacteria sample was collected at the time of your water well test by Four Corners Geoscience, Inc. and delivered to San Juan Basin Health Department laboratory for analysis for coliform bacteria.

A copy of your result is attached below.

Please call San Juan Basin Health at 970-247-5702 for more information regarding the results and disinfection of water wells. You may consider contacting a water well specialist for treatment of your water well.

San Juan Basin Health Department/Laboratory 281 Sawyer Drive P.O. Box 140 Durango, CO 81302		<b>WATER BACTERIOLOGY</b>		<b>TO BE BILLED</b> Fee Stamp <b>FCG#101713-L1</b>	
<b>SAMPLE INFORMATION:</b> <input type="checkbox"/> COMMUNITY <input type="checkbox"/> NON-COMMUNITY <input checked="" type="checkbox"/> PRIVATE				DATE _____ TIME _____ BY _____	
PWS ID _____ COO _____ <input type="checkbox"/> ROUTINE <input checked="" type="checkbox"/> RAW <input type="checkbox"/> REPEAT FOR THE MONTH OF _____				COLLECTED <b>10/17/13</b> <input type="checkbox"/> AM <input checked="" type="checkbox"/> PM	
<input type="checkbox"/> SPECIAL PURPOSE <input type="checkbox"/> FINISHED				RECEIVED _____ <input type="checkbox"/> AM <input type="checkbox"/> PM	
SAMPLE SITE <b>Bernie Kempinski</b> CHLORINE RESIDUAL _____ MG/L				<b>RESULTS: SEE REVERSE FOR EXPLANATION</b>	
ADDRESS <b>520 Miller Rd</b> CITY _____ COUNTY <b>81137</b>				TOTAL COLIFORM <input checked="" type="checkbox"/> PRESENT <input type="checkbox"/> ABSENT per 100m	
<b>ORDERED BY:</b> (SAMPLE MAY NOT BE TESTED IF ALL INFORMATION IS NOT PROVIDED)				E. COLI <input type="checkbox"/> PRESENT <input checked="" type="checkbox"/> ABSENT per 100m	
RESULTS SENT TO: <b>FCG Geoscience</b> PHONE _____				<b>OCT 17 '13 14063067</b>	
LAB PROCEDURE				<input checked="" type="checkbox"/> Colilert-18 <input type="checkbox"/> Colilert-24 <input type="checkbox"/> Collisure-24 48	
STD. MTH _____				ANALYST <b>CS</b>	
20th ED _____					
9223C _____					
<input type="checkbox"/> QUANTI-TRAY <input checked="" type="checkbox"/> STD BACT. <input type="checkbox"/> OTHER _____					
<b>Ms. Lynn Fechter</b> <b>P.O. Box 4224</b> <b>Durango, CO 81302-4224</b>					





75 Suttle Street  
Durango, CO 81303  
970.247.4220 Phone  
970.247.4227 Fax  
[www.greenanalytical.com](http://www.greenanalytical.com)

01 November 2013

Gwen Frost  
Conoco Phillips-Farmington  
3401 30th Street  
Farmington, NM 87401  
RE: GMW

Enclosed are the results of analyses for samples received by the laboratory on 10/17/13 14:10.  
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads 'Debbie Zufelt'. The script is cursive and fluid, with the first name 'Debbie' and last name 'Zufelt' clearly legible.

Debbie Zufelt  
Reports Manager

All accredited analytes contained in this report are denoted by an asterisk (\*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. Our NELAP accreditation can be viewed at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water.

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water



dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

[www.GreenAnalytical.com](http://www.GreenAnalytical.com)

Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

**Reported:**  
11/01/13 10:35

#### ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Kempinski Water Well - FCG101713-L1	1310169-01	Water	10/17/13 12:06	10/17/13 14:10

Green Analytical Laboratories

A handwritten signature in black ink that reads 'Debbie Zufelt'.

Debbie Zufelt, Reports Manager

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. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

**Kempinski Water Well - FCG101713-L1  
706941**

**1310169-01 (Water)**

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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**General Chemistry**

Alkalinity, Bicarbonate*	180	10.0		mg/L	1	10/22/13	2320 B		ABP
Alkalinity, Carbonate*	<10.0	10.0		mg/L	1	10/22/13	2320 B		ABP
Alkalinity, Hydroxide*	<10.0	10.0		mg/L	1	10/22/13	2320 B		ABP
Alkalinity, Total*	180	10.0		mg/L	1	10/22/13	2320 B		ABP
Chloride	1010	100	50.0	mg/L	10	10/22/13	4500-Cl- C		ABP
Conductivity*	3700	10.0		uS/cm	1	10/17/13	2510 B		MJV
Fluoride*	6.23	1.00	0.0950	mg/L	5	10/18/13	4500-F- C		ABP
Nitrate/Nitrite as N*	0.244	0.020	0.010	mg/L	1	10/22/13	EPA353.2		KLJ
pH*	7.71			pH Units	1	10/17/13	EPA150.1		MJV
Sulfate	176	20.0	2.16	mg/L	2	10/21/13	4500-SO42- E		ABP
TDS*	2160	10.0		mg/L	1	10/23/13	EPA160.1		JAW

**Total Recoverable Metals by ICP (E200.7)**

Calcium*	221	1.00	0.004	mg/L	1	10/31/13	EPA200.7		JGS
Hardness	572	6.62	0.088	mg/L	1	10/31/13	Calc		JGS
Iron*	0.164	0.050	0.004	mg/L	1	10/31/13	EPA200.7		JGS
Magnesium*	5.08	1.00	0.019	mg/L	1	10/31/13	EPA200.7		JGS
Potassium*	1.40	1.00	0.364	mg/L	1	10/31/13	EPA200.7		JGS
Sodium*	495	1.00	0.004	mg/L	1	10/31/13	EPA200.7		JGS

**Total Recoverable Metals by ICPMS (E200.8)**

Manganese*	0.0426	0.0005	0.0004	mg/L	1	10/29/13	EPA200.8		JGS
Selenium*	0.0136	0.0010	0.0004	mg/L	1	10/29/13	EPA200.8		JGS

Cation/Anion Balance -3.53

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

### General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B310178 - General Prep - Wet Chem

<b>Duplicate (B310178-DUP1)</b>		<b>Source: 1310165-01</b>		Prepared & Analyzed: 10/17/13						
pH	8.29		pH Units		8.28			0.121	20	
<b>Reference (B310178-SRM1)</b>				Prepared & Analyzed: 10/17/13						
pH	8.77		pH Units		8.93	98.2	90-110			

#### Batch B310181 - General Prep - Wet Chem

<b>Duplicate (B310181-DUP1)</b>		<b>Source: 1310165-01</b>		Prepared & Analyzed: 10/17/13						
Conductivity	3870	10.0	uS/cm		3760			2.88	20	
<b>Reference (B310181-SRM1)</b>				Prepared & Analyzed: 10/17/13						
Conductivity	1420		uS/cm		1450	97.6	94.5-105.5			

#### Batch B310186 - General Prep - Wet Chem

<b>Blank (B310186-BLK1)</b>				Prepared & Analyzed: 10/18/13						
Fluoride	ND	0.200	mg/L							
<b>LCS (B310186-BS1)</b>				Prepared & Analyzed: 10/18/13						
Fluoride	1.01	0.200	mg/L		1.00	101	85-115			
<b>LCS Dup (B310186-BSD1)</b>				Prepared & Analyzed: 10/18/13						
Fluoride	0.998	0.200	mg/L		1.00	99.8	85-115	1.39	20	

#### Batch B310195 - General Prep - Wet Chem

<b>Blank (B310195-BLK1)</b>				Prepared: 10/21/13 Analyzed: 10/22/13						
Nitrate/Nitrite as N	ND	0.020	mg/L							

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

### General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B310195 - General Prep - Wet Chem

##### LCS (B310195-BS1)

Prepared: 10/21/13 Analyzed: 10/22/13

Nitrate/Nitrite as N	0.504	0.020	mg/L	0.500	101	90-110
----------------------	-------	-------	------	-------	-----	--------

##### LCS Dup (B310195-BSD1)

Prepared: 10/21/13 Analyzed: 10/22/13

Nitrate/Nitrite as N	0.507	0.020	mg/L	0.500	101	90-110	0.593	20
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#### Batch B310197 - General Prep - Wet Chem

##### Blank (B310197-BLK1)

Prepared & Analyzed: 10/21/13

Sulfate	ND	10.0	mg/L
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##### LCS (B310197-BS1)

Prepared & Analyzed: 10/21/13

Sulfate	48.0	10.0	mg/L	50.0	96.0	85-115
---------	------	------	------	------	------	--------

##### LCS Dup (B310197-BSD1)

Prepared & Analyzed: 10/21/13

Sulfate	46.0	10.0	mg/L	50.0	92.0	85-115	4.26	20
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#### Batch B310201 - General Prep - Wet Chem

##### Blank (B310201-BLK1)

Prepared & Analyzed: 10/22/13

Alkalinity, Total	ND	10.0	mg/L
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##### LCS (B310201-BS1)

Prepared & Analyzed: 10/22/13

Alkalinity, Total	101	10.0	mg/L	100	101	85-115
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##### LCS Dup (B310201-BSD1)

Prepared & Analyzed: 10/22/13

Alkalinity, Total	103	10.0	mg/L	100	103	85-115	1.96	20
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Debbie Zufelt, Reports Manager

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dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

### General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B310202 - General Prep - Wet Chem

##### Blank (B310202-BLK1)

Prepared & Analyzed: 10/22/13

Chloride	ND	10.0	mg/L
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##### LCS (B310202-BS1)

Prepared & Analyzed: 10/22/13

Chloride	100	10.0	mg/L	100	100	85-115
----------	-----	------	------	-----	-----	--------

##### LCS Dup (B310202-BSD1)

Prepared & Analyzed: 10/22/13

Chloride	99.0	10.0	mg/L	100	99.0	85-115	1.01	20
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#### Batch B310221 - General Prep - Wet Chem

##### Blank (B310221-BLK1)

Prepared & Analyzed: 10/23/13

TDS	ND	10.0	mg/L
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##### Duplicate (B310221-DUP1)

Source: 1310167-01

Prepared & Analyzed: 10/23/13

TDS	16400	10.0	mg/L	17300	5.33	20
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##### Reference (B310221-SRM1)

Prepared & Analyzed: 10/23/13

TDS	1920	10.0	mg/L	1920	99.7	85-115
-----	------	------	------	------	------	--------

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3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

### Total Recoverable Metals by ICP (E200.7) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B310291 - EPA 200.2

##### Blank (B310291-BLK1)

Prepared: 10/30/13 Analyzed: 10/31/13

Calcium	ND	1.00	mg/L							
Iron	ND	0.050	mg/L							
Magnesium	ND	1.00	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

##### LCS (B310291-BS1)

Prepared: 10/30/13 Analyzed: 10/31/13

Calcium	4.38	1.00	mg/L	4.00		110	85-115			
Iron	4.36	0.050	mg/L	4.00		109	85-115			
Magnesium	22.3	1.00	mg/L	20.0		111	85-115			
Potassium	7.89	1.00	mg/L	8.00		98.6	85-115			
Sodium	6.75	1.00	mg/L	6.48		104	85-115			

##### LCS Dup (B310291-BSD1)

Prepared: 10/30/13 Analyzed: 10/31/13

Calcium	4.34	1.00	mg/L	4.00		109	85-115	0.906	20	
Iron	4.32	0.050	mg/L	4.00		108	85-115	1.09	20	
Magnesium	22.0	1.00	mg/L	20.0		110	85-115	1.12	20	
Potassium	7.85	1.00	mg/L	8.00		98.2	85-115	0.405	20	
Sodium	6.68	1.00	mg/L	6.48		103	85-115	1.06	20	

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Debbie Zufelt, Reports Manager

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dzufelt@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

Reported:  
11/01/13 10:35

### Total Recoverable Metals by ICPMS (E200.8) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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#### Batch B310274 - EPA 200.2M

##### Blank (B310274-BLK1)

Prepared & Analyzed: 10/29/13

Manganese	ND	0.0005	mg/L
Selenium	ND	0.0010	mg/L

##### LCS (B310274-BS1)

Prepared & Analyzed: 10/29/13

Manganese	0.0565	0.0005	mg/L	0.0500	113	85-115
Selenium	0.259	0.0010	mg/L	0.250	104	85-115

##### LCS Dup (B310274-BSD1)

Prepared & Analyzed: 10/29/13

Manganese	0.0556	0.0005	mg/L	0.0500	111	85-115	1.71	20
Selenium	0.263	0.0010	mg/L	0.250	105	85-115	1.34	20

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Debbie Zufelt, Reports Manager

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Conoco Phillips-Farmington  
3401 30th Street  
Farmington NM, 87401

Project: GMW  
Project Name / Number: Allison #149 H  
Project Manager: Gwen Frost

**Reported:**  
11/01/13 10:35

### Notes and Definitions

DET Analyte DETECTED  
ND Analyte NOT DETECTED at or above the reporting limit  
NR Not Reported  
dry Sample results reported on a dry weight basis  
\*Results reported on as received basis unless designated as dry.  
RPD Relative Percent Difference  
LCS Laboratory Control Sample (Blank Spike)  
RL Report Limit  
MDL Method Detection Limit

Green Analytical Laboratories

A handwritten signature in black ink that reads 'Debbie Zufelt'.

Debbie Zufelt, Reports Manager

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# CHAIN OF CUSTODY RECORD

Page 1 of 1

Client: Conoco Phillips

## NOTES:

1) Ensure proper container packaging.

2) Ship samples promptly following collection.

3) Designate Sample Reject Disposition.

## Table 1. - Matrix Type

1 = Surface Water, 2 = Ground Water  
3 = Soil/Sediment, 4 = Prod. W., 5 = Oil  
6 = Waste, 7 = Other (Specify) \_\_\_\_\_

FOR GAL USE ONLY

GAL JOB #

1310-169

Contact: Gwen Frost

Address: 3401 30th Street

Farmington NM 87402

Phone Number: 505-326-5549

Email: Gwen@conoco-phillips.com

Project Name: Allison #149H

Samplers Signature: [Signature]

Lab Name: Green Analytical Laboratories

(970) 247-4220

FAX (970) 247-4227

Address: 75 Suttle Street, Durango, CO 81303

www.greenanalytical.com

## Analyses Required

Sample ID	Date	Time	Collected by: (Init.)	Matrix Type From Table 1	No. of Containers	Sample Filtered ? Y/N	Unpreserved (Ice Only)	Preservative(s)					Comments
								HNO3	HCL	H2SO4	NAOH	Other (Specify)	
1 KEMPINSKI	10/17/13	1206	af	2	3	N	X						Facility #
WATER WELL													766941
3 101713-L1													T > 1 NTU
4.													
5.													
6.													
7.													
8.													
9.													
10.													
Relinquished by: <u>[Signature]</u>	Date: <u>10-17-13</u>	Time: <u>351</u>	Received by: <u>[Signature]</u>	Date: <u>10-17-13</u>	Time: <u>351</u>								
Relinquished by: <u>[Signature]</u>	Date: <u>10-17-13</u>	Time: <u>1410</u>	Received by: <u>[Signature]</u>	Date: <u>10-17-13</u>	Time: <u>1410</u>								

\* Sample Reject: ☐ Return ☐ Dispose ☐ Store (30 Days)

SEE ATTACHED CONOCO/PHILLIPS COBDS



## Lynn Fechter

---

**From:** Frost, Gwendolynne <Gwendolynne.Frost@conocophillips.com>  
**Sent:** Wednesday, October 16, 2013 2:15 PM  
**To:** 'Lynn Fechter'  
**Subject:** RE: kempinski

Lynn  
Please bill the water sampling event to the following charge code.

AM02461749 / BLAKLBN / Gwen Frost

Thank you for assisting us with collecting the sample.

Thank you,  
*Gwen Frost*  
Environmental Coordinator  
ConocoPhillips HSE  
Office: 505-326-9549  
Cell: 505-215-3121

---

**From:** Lynn Fechter [<mailto:lynn@fcgeo.com>]  
**Sent:** Wednesday, October 16, 2013 12:48 PM  
**To:** Frost, Gwendolynne  
**Subject:** [EXTERNAL]kempinski

Lynn M. Fechter  
Four Corners Geoscience  
P.O. Box 4224  
Durango, CO 81302-4224  
970-247-5046  
970-749-0636