



May 26, 2009

Mr. Chad Pulsifer  
918 S Los Charros Court  
Pueblo West, CO 81007-6405

RE: Complaint 200204502  
Water Well Isotopic Analysis  
Well Permit 250313  
SWSW 35 32S 68W Las Animas County, Colorado

Dear Chad:

In response to your request for a baseline water quality testing of your water well before additional drilling takes place in the vicinity of this stock well, the Colorado Oil and Gas Conservation Commission (COGCC) conducted a field visit to your property on April, 14, 2009. Samples were collected on April 14, 2009 for gas composition and isotopic analysis.

#### **FIELD TESTING**

I visited your property on April 14, 2009 and provided you with analytical results from sampling conducted for the COGCC by Whetstone Associates. Staff from Norwest Applied Hydrology also were at your home on April 14<sup>th</sup>. You started the well pumping and after pH and temperature stabilized I then collected a sample. I did observe bubbles in the water as it was pumped. The water was clear and I did not notice any odors from the water. The sample for analysis of gas composition and isotopic analysis were received by Isotech Laboratories in Champaign, Illinois on April 15, 2009.

#### **METHANE GAS ANALYSIS**

The gas composition and isotopic results are included as Attachment 1. The concentration of methane is much greater than that of ethane.

#### **CONCLUSIONS**

A plot of the carbon and hydrogen isotopic composition of methane present in water from your domestic well is included as Attachment 2. The isotopic composition is not similar to the isotopic composition of methane sampled and analyzed from a domestic well in the vicinity of your well (Ross). The isotopic composition of the methane present in water from your well is more similar to methane produced from microbial processes than to the isotopic composition of methane from CBM wells in Las Animas county.

I have also included the original copies of lab data you provided to me on April 14, 2009 as you requested. I am still trying to better understand the source of methane in your well water and will send you an update shortly.

Chad Pulsifer  
Complaint 200204502  
May 26, 2009

If you have any questions or would like to discuss these matters further, please contact me at 719-846-3091 or by email at [peter.gintautas@state.co.us](mailto:peter.gintautas@state.co.us) .

Sincerely,  
Colorado Oil and Gas Conservation Commission

Peter Gintautas  
Environmental Protection Specialist

Attachments:    Attachment 1 -    Isotech Laboratories Data Report  
                         Attachment 2 –    Plot of Isotopic Composition  
                         Attachment 3 -    Previous Lab Data

Lab #: 160377 Job #: 11291  
 Sample Name/Number: Pulsifer WW  
 Company: Colorado Oil & Gas Conservation  
 Date Sampled: 4/14/2009  
 Container: Dissolved Gas Bottle  
 Field/Site Name: Complaint 200204502  
 Location:  
 Formation/Depth:  
 Sampling Point:  
 Date Received: 4/15/2009 Date Reported: 5/14/2009

| Component                    | Chemical<br>mol. % | Delta 13C<br>per mil | Delta D<br>per mil | Delta 18O<br>per mil |
|------------------------------|--------------------|----------------------|--------------------|----------------------|
| Carbon Monoxide -----        | nd                 |                      |                    |                      |
| Hydrogen Sulfide -----       | nd                 |                      |                    |                      |
| Helium -----                 | nd                 |                      |                    |                      |
| Hydrogen -----               | nd                 |                      |                    |                      |
| Argon -----                  | 0.352              |                      |                    |                      |
| Oxygen -----                 | 6.17               |                      |                    |                      |
| Nitrogen -----               | 20.09              |                      |                    |                      |
| Carbon Dioxide -----         | 0.78               |                      |                    |                      |
| Methane -----                | 72.57              | -56.12               | -259.2             |                      |
| Ethane -----                 | 0.0405             |                      |                    |                      |
| Ethylene -----               | nd                 |                      |                    |                      |
| Propane -----                | nd                 |                      |                    |                      |
| Iso-butane -----             | nd                 |                      |                    |                      |
| N-butane -----               | nd                 |                      |                    |                      |
| Iso-pentane -----            | nd                 |                      |                    |                      |
| N-pentane -----              | nd                 |                      |                    |                      |
| Hexanes + -----              | nd                 |                      |                    |                      |
| Water -----                  |                    |                      | -78.3              | -10.09               |
| Dissolved Inorganic Carbon - |                    | -12.40               |                    |                      |

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 736

Specific gravity, calculated: 0.682

Remarks: Analysis is of gas extracted from water by headspace equilibration. Analysis has been corrected for helium added to create headspace. Helium dilution factor = 0.72

nd = not detected. na = not analyzed. Isotopic composition of carbon is relative to VPDB. Isotopic composition of hydrogen and oxygen are relative to VSMOW. Calculations for BTU and specific gravity per D3588. Chemical compositions are normalized to 100%. Mol. % is approximately equal to vol. %. ASTM Chemical analysis based on standards accurate to within 2%

# Isotopic Composition of Methane from Pulsifer Water Well

