

August 21, 2007

Ms. Gopa Ross
11111 Box Canyon Road
Weston, CO 81091

CERTIFIED MAIL RETURN RECEIPT REQUESTED
7006 2760 0002 4668 6725

Re: Water Well Sampling (May 9, 2007)
NESE 35 T32S, R68W
Las Animas County

Dear Ms. Ross:

This letter is to inform you of results of bacterial testing performed on water from the well located at your home. I previously sent you a letter addressing other water quality analyses performed on a sample from your well collected on the same day.

BACTERIAL ANALYSIS

On May 9th the COGCC collected samples to analyze for the presence of iron, slime and sulfur bacteria in your water well. Samples from your water well were tested for the presence of iron-related (IRB), sulfate reducing (SRB) and slime forming (SLYM) bacteria using Biological Activity Reaction Test (BART) kits. In addition to detecting the presence of bacteria the BART Kits allow for an estimation of the size of the population and/or the rate at which they can metabolize and/or grow through an observable change or reaction. This reaction rate is referred to as the "aggressivity" of the bacterial population. The aggressivity levels of the bacteria are described as **Not Detected, Background, Moderately Aggressive, Very Aggressive, or Extremely Aggressive Levels**. The results of the tests are provided below and documented in Photographs 1 and 2. The progress of the bacterial growth after one day is seen in Photograph 1. Photograph 2 shows the progress of the bacterial tests seven days after the cultures were started.

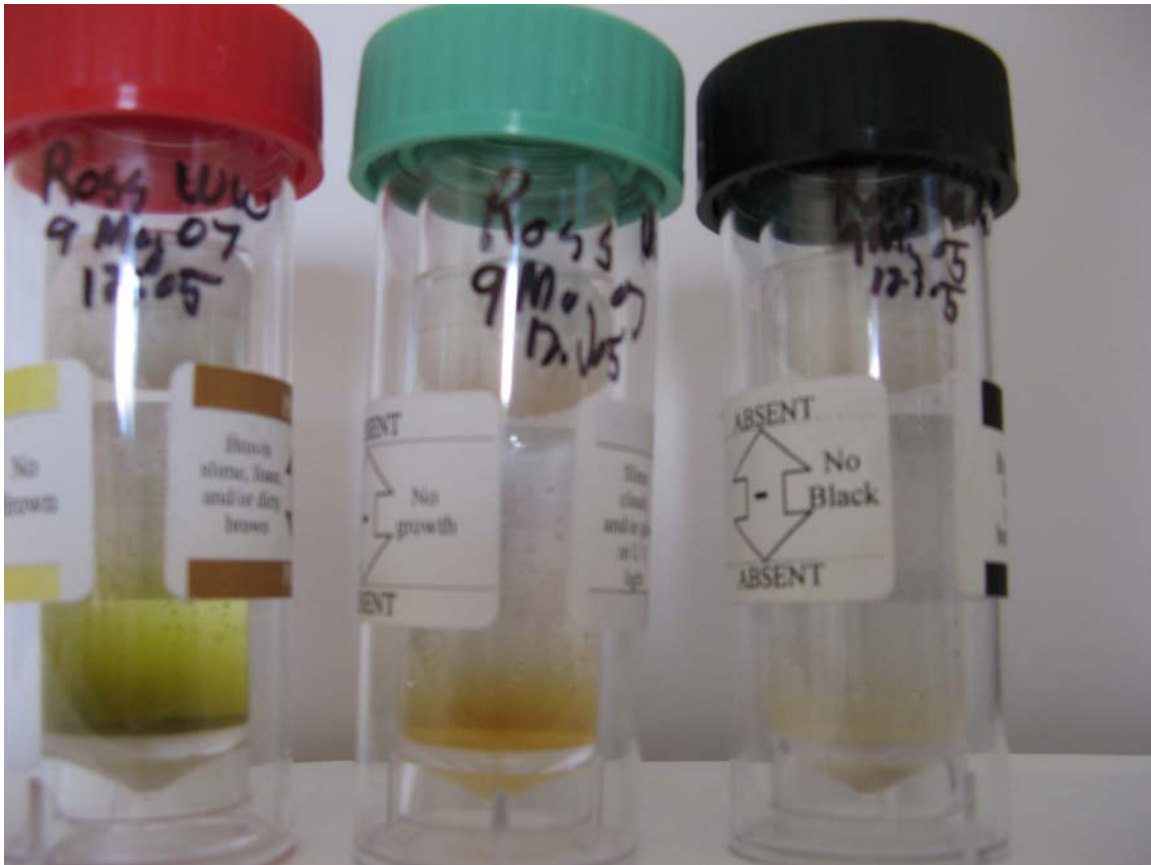
- **Iron-Related Bacteria (IRB):** Although not harmful, iron-related bacteria can become a nuisance by plugging the well pump, causing red staining on plumbing fixtures and laundered clothing, building up red, slimy accumulations on any surface the water touches, and causing what appears to be a sheen on standing water. Signs that may indicate an iron bacteria

problem include “yellowish, red or orange colored water, rusty deposits in toilet tanks and strange smells resembling fuel oil, cucumbers or sewage. Sometimes the odor will only be apparent in the morning or after other extended periods of non-use” (CDPHE, Laboratory Services Division).

Moderately aggressive to very aggressive levels of IRB bacteria were detected in the water sample collected at this well. The green cloudy layer, at the bottom of the IRB tube (red cap) in Photograph 1, indicates the aggressive nature of the IRB population present in the water from your well.

- **Slime Forming Bacteria (SLYM):** Although not usually harmful, Slime Forming Bacteria (SFB) can become a nuisance by plugging well pumps and causing slimy accumulations on plumbing fixtures and standing water. Slimes are often gelatinous in nature and may range in color from white, to red, or black. As slime bacteria mats grow they create an environment in which complex associations of other strains of bacteria can develop.

Levels of SLYM bacteria were not detected or possibly present at background levels in the water sample collected from this well as indicated by the slightly cloudy liquids seen the green capped vial in Photograph 2.



Photograph 1. BART Kits May 10, 2007

- **Sulfate Reducing Bacteria (SRB):** Sulfate reducing bacteria are serious nuisance organisms in water since they can cause severe taste and odor problems. These bacteria reduce sulfate that occurs naturally in the water and generate hydrogen sulfide (H_2S) gas as they grow. In turn, the hydrogen sulfide (H_2S) gas is a nuisance because it smells like rotten eggs, initiates corrosion on metal surfaces and reacts with dissolved metals such as iron to generate black sulfide deposits.

The test indicated that SRB were not detected in well water as shown by the clear liquids in the black capped vial in Photograph 2.



Photograph 2. BART Kits May 16, 2007

Since iron bacteria were detected in the sample collected from this well you should consider treating the well and distribution system with disinfecting solutions on a regular basis. Once bacterial colonies are established they are difficult to eliminate; therefore, you may need to establish a schedule for periodic disinfection of your well system to help control the bacteria present in it. Pamphlets published by the CDPHE that provide more information concerning the treatment of iron and sulfur bacteria and shock chlorination treatment of bacteria are included as Attachment 1. You may also want to contact a licensed water well contractor for additional information or for help in disinfecting your well and distribution system. Additional information and assistance can be provided through the State of Colorado Health Department. Contact information for the agency is provided below.

Colorado Department of Public Health and Environment

Colorado Drinking Water Program
4300 Cherry Creek Drive South
Denver, CO 80246-1530
Phone: 303-692-3500
Fax: 303-782-0390

Ross Water Well (permit 256909)
Project 1922
August 21, 2007

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 . At your request I am also sending this letter directly to Tom Glibota (via e-mail).

Sincerely,
Colorado Oil and Gas Conservation Commission

Peter Gintautas
Environmental Protection Specialist

Attachments: Attachment 1- CDPHE Pamphlets
Attachment 2- BART Kit Evaluation Chart

cc: Tom Glibota (via e-mail)