



11D 643

05-067-~~07501~~  
07501

Loc# 326118



BP America, Inc.  
Durango Operations Center  
380 Airport Rd.  
Durango, CO 81303

June 16, 2001

Roger and Terry Hawkins  
2320 Gem Lane  
Bayfield, CO 81122

Dear Mr. & Mrs. Hawkins:

This correspondence is in reference to the water well testing we have performed on your well. These tests were performed in accordance with the Colorado Oil & Gas Conservation Commission (COGCC) Infill Application Order.

Enclosed please find the initial test results on methane contained in your water sample. We have not yet received the additional laboratory results from the sampling. A copy of those results will be forwarded to you once we have received them from the lab.

The results of the sampling indicate that methane exceeds 2 milligrams per liter (mg/l). This is an action level that requires additional sampling, which has been conducted, but the results are not available yet. This additional sampling will assist in determining the origin of the methane.

Your sample indicates a methane concentration of 19.1 mg/l as shown on the attached report. This concentration is a threshold that, under certain conditions, could lead to methane accumulating in areas that are not well ventilated. We would strongly recommend as a precaution that you arrange having your home analyzed to determine if any unsafe levels of methane could exist. It is also strongly recommended that you purchase a treatment system for this concentration of methane in your water. Independent third party contractors who could both assess your home to determine if you have unsafe levels of methane and install a treatment system at a reasonable cost to you are either Joe Bowden at 247-0132 or Ron Tate 247-4220.

The additional water sample results will be sent when they become available. Should you have any additional questions, please feel free to contact Cindy Beam in our Durango, CO office at 970-247-6844.

Sincerely,

Dave Brown  
Environmental Specialist

11D 643

BP Amoco Groundwater Monitoring  
Special Request -Water Well Test

061301-1  
FCG\_

Terry & Roger Hawkins  
NAME

6/13/01  
DATE

no  
BLM\_

043407  
BP#

no  
Permit#

2320 Gem Lane Bayfield, CO 81122  
AddressWaterWell

same  
MAILINGADD

970-884-8046  
TELEPHONE\_

Water Well Location and Permit Information

275  
WELLDEPTH

Feet

no  
STATICWATE

-107.64800  
LONG

37.24582  
LATITUDE

Garmin GPS Decimal  
Degrees

NW  
QTRQTR

4  
SECTION

34  
TOWNSHP

North

7  
RANGE

West

Smith-WolterGas Unit B#1  
NUMBER

Fee  
FEE\_FED\_TR

NW Sec 4 T34N R7W NUL  
LocationGasWell

API-05-067-07501

Field Chemistries

8.43  
PH\_FIELD

722  
COND\_FIELD

451  
TDS\_CALC

15.4  
H2O\_TEMP

Celsius

Water samples were collected and delivered to laboratory by Four Corner Geoscience the same day as site visit. Results will be mailed to you upon completion of analysis.

Methane Result in mg/L

19.10 mg/L  
CH4\_MG\_L

Detection Limit 0.0004 mg/L

Sample sent to Isotech

Owner notified per tele and letter immediately

Hydrogen sulfide(HACH Test Kit Field)

<0.1 mg/L  
H2S\_MG\_L

0.1 mg/L Det.Limit

San Juan Basin Health-State of Colorado Health Dept Test

ABSENT

BACTERIA\_E

Water white, effervescent, cloudy, very slight "S" odor intermittent. No sand or sediment. IRB&SRB underway

COMMENTS

Four Corners Geoscience conducted onsite field chemistries, observation of physical characteristics of water while pumping system to receive a fresh aquifer sample. Water samples were collected and delivered to EPA quality assured lab for analysis. Water samples for bacterial analysis were collected and delivered to San Juan Basin Health in Durango, CO. Samples for headspace gas analysis were taken to FCG lab and run within 4 hours of collection or less than 24 hours per USGS standard and methods for these analysis.

Four Corners Geoscience is not liable for the results of these analysis and recommends referral to specialists in the field or water treatment. All methods are conducted in accordance with the requirements for this groundwater monitoring program in La Plata Colorado and COGCC Order Numbers 112-156 and 112-157 July 2000



LABORATORY & RADIATION SERVICES  
8100 LOWRY BOULEVARD  
DENVER, CO 80230-6628

US MAIL  
PO BOX 17123  
DENVER, CO 80217

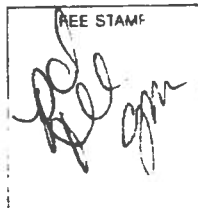
# WATER BACTERIOLOGY

*Smith Walter*  
*GUB #*  
*LINE PAID*

SAMPLE INFORMATION: ☐ COMMUNITY ☒ NON-COMMUNITY ☒ PRIVATE  
PWS ID ☐ ROUTINE ☒ RAW ☐ REPEAT FOR THE MONTH OF  
☐ SPECIAL PURPOSE ☐ FINISHED

NAME OF SYSTEM *Denver & Roger Hawkins* MG/L  
ADDRESS *2320 Sempronis* CITY *Bayfield* COUNTY *Co*  
CLORINE RESIDUE *1.2*

ORDERED BY: (SAMPLE MAY NOT BE TESTED IF ALL INFORMATION IS NOT PROVIDED)  
*( ) 247-5046*  
PHONE



LAB 106 (07/87)

NAME *YGG*  
ADDRESS *P.O. Box 4224*  
CITY / STATE / ZIP *Durango CO 81302*  
TEST ORDERED ☒ STD BACT. ☐ OTHER

DATE TIME BY  
COLLECTED *6/13/01* ☒ AM ☒ PM  
RECEIVED *6/14/01* ☐ AM ☒ PM

RESULTS: SEE REVERSE FOR EXPLANATION

TOTAL COLIFORM ☐ PRESENT ☒ ABSENT

MOST PROBABLE NO. COLIFORM/100ML

*00.0009*

☐ DENVER ☒ DURANGO ☐ GRD. JCT.  
ANALYST *EW*

7/9/00 14.27

## EXPLANATION OF RESULTS

Coliform absent: less than 1.1 (<1.1) indicates a safe sample.

Coliform present: Unsafe Sample, greater than or equal to 1 coliform per 100 ml; water should be treated and retested

TNTC - Too Numerous To Count: The test plate contained more than 200 bacterial colonies other than coliform. Coliform bacterial growth may have been inhibited. The water supply may be unsafe. Treat and retest

TNTC - Too Numerous To Count with coliform present: Same as above, but with coliform bacteria present. The presence of other bacteria prevents an accurate coliform count. Water supply is unsafe. Treat and retest

Confluent Growth: The test plate was covered with bacterial growth. Coliform bacteria growth may have been inhibited. The water supply may be unsafe. Treat and retest

Confluent Growth with Coliform Present: Same as above, but with coliform bacteria present. The presence of other bacteria prevents an accurate coliform count. Water supply is unsafe. Treat and retest

Outdated Samples: Sample greater than 48 hours old when received. Please resample

QNS: Quantity not sufficient for testing. Please resample

Overfilled: Unsatisfactory, laboratory cannot process accurately. Please resample

BP Amoco  
380 Airport Road  
Durango, CO 81303  
Attention: Kourtney Williams

**Acculabs I.D.: 7-106-042-02**

Date Received: 06/14/01

Date Reported: 07/05/01

QC Batches:

**PROJECT NAME:** Smith Wolter GU B#1  
**PROJECT NUMBER:** 0  
**SAMPLE I.D.:** Terry & Roger Hawkins


Sample Date: 06/13/01

Sample Matrix: Water

## Laboratory Report

### RESULTS

| PARAMETER               | METHOD  | REPORT |        | DIL | UNITS | Maximum Contamination Level |
|-------------------------|---------|--------|--------|-----|-------|-----------------------------|
|                         |         | LIMIT  | RESULT |     |       |                             |
| Alkalinity, Total       | 2320B   | 10     | 135    | 1   | mg/L  | 4.0                         |
| Alkalinity, Bicarbonate | 2320B   | 10     | 133    | 1   | mg/L  |                             |
| Alkalinity, Carbonate   | 2320B   | 10     | <10    | 1   | mg/L  |                             |
| Alkalinity, Hydroxide   | 2320B   | 10     | <10    | 1   | mg/L  |                             |
| Calcium                 | 200.7   | 0.5    | 11.9   | 1   | mg/L  |                             |
| Chloride                | 4500CL  | 10     | 119    | 1   | mg/L  | 0.05                        |
| Conductivity            | 120.1   | 1.0    | 620    | 1   | uS/cm |                             |
| Fluoride                | 4500F C | 0.2    | 6.5    | 1   | mg/L  |                             |
| Iron                    | 200.7   | 0.05   | 0.05   | 1   | mg/L  |                             |
| Magnesium               | 200.7   | 0.5    | 0.5    | 1   | mg/L  |                             |
| Nitrate/Nitrite as N    | 353.2   | 0.05   | <0.05  | 1   | mg/L  | 0.05                        |
| pH                      | 150.1   | NA     | 8.23   | NA  | SU    |                             |
| Potassium               | 200.7   | 0.5    | <0.5   | 1   | mg/L  |                             |
| Selenium                | 3114B   | 0.001  | 0.001  | 1   | mg/L  |                             |
| Sodium                  | 200.7   | 0.5    | 126    | 1   | mg/L  |                             |
| Sulfate                 | 4500SO4 | 10     | <10    | 1   | mg/L  | 0.05                        |
| TDS                     | 160.1   | 10     | 375    | 1   | mg/L  |                             |
| Hardness                | Calc    | 14     | 32     | 1   | mg/L  |                             |
| CAB                     | Calc    |        | 1.49   |     | %     |                             |

  
John Green, Laboratory Manager

# ANALYSIS REPORT

## Water Analysis Report

Lab Number: 32737  
Submitter Sample Name: Terry & Roger Hawkins Water  
Submitter Sample ID:  
Submitter Job #:  
Company: BP Amoco  
Field or Site: Smith Wolter GU B#1  
Location:  
Depth/Formation:  
Container Type: Glass Bottle  
Sample Collected: 6/13/2001  
Results Reported: 7/06/2001

Delta D of water ----- -81.6 per mil relative to VSMOW  
Delta O-18 of water ----- -12.04 per mil relative to VSMOW  
Tritium content of water ----- na  
Delta C-13 of DIC ----- -13.61 per mil relative to VPDB  
Carbon-14 content of DIC ----- na

Remarks:



# ANALYSIS REPORT

Lab #: 32738 Job #: 2788  
Sample Name/Number: Terry & Roger Hawkins  
Company: BP Amoco  
Date Sampled: 6/13/2001  
Container: Glass Bottle  
Field/Site Name: Smith Wolter GU B#1  
Location:  
Formation/Depth:  
Sampling Point:  
Date Received: 6/15/2001 Date Reported: 7/12/2001

| Component        | Chemical<br>mol. % | Delta 13C<br>per mil | Delta D<br>per mil | Delta 15N<br>per mil |
|------------------|--------------------|----------------------|--------------------|----------------------|
| Carbon Monoxide  | nd                 |                      |                    |                      |
| Hydrogen Sulfide | nd                 |                      |                    |                      |
| Helium           | 0.0048             |                      |                    |                      |
| Hydrogen         | nd                 |                      |                    |                      |
| Argon            | 0.22               |                      |                    |                      |
| Oxygen           | 1.24               |                      |                    |                      |
| Nitrogen         | 11.76              |                      |                    |                      |
| Carbon Dioxide   | 0.14               |                      |                    |                      |
| Methane          | 86.58              | -80.50               | -221.0             |                      |
| Ethane           | 0.060              |                      |                    |                      |
| Ethylene         | nd                 |                      |                    |                      |
| Propane          | nd                 |                      |                    |                      |
| Iso-butane       | na                 |                      |                    |                      |
| N-butane         | nd                 |                      |                    |                      |
| Iso-pentane      | nd                 |                      |                    |                      |
| N-pentane        | nd                 |                      |                    |                      |
| Hexanes +        | nd                 |                      |                    |                      |

Total BTU/cu.ft. dry @ 60deg F & 14.7psia, calculated: 879

Specific gravity, calculated: 0.613

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



11D 643



BP America, Inc.  
Durango Operations Center  
380 Airport Rd.  
Durango, CO 81303

September 19, 2001

Roger and Terry Hawkins  
2320 Gem Lane  
Bayfield, Colorado 81122

Dear Mr. and Mrs. Hawkins:

This correspondence is in reference to the water well testing we have performed on your well at your request. These tests are performed in accordance with the Colorado Oil & Gas Conservation Commission (COGCC) Infill Application Order.

We have enclosed a booklet entitled "How Well Do You Know Your Water Well?" that was made available to the participants at water well seminars that were presented by local water professionals. This booklet has some very important information in better understanding how your water well functions and how to interpret the sample results attached.

Enclosed please find the test results on methane and bacteria and a lab analysis of the water from your water well. Also included is information allowing you to assess your test results and determine acceptable ranges for parameters tested.

In our earlier letter dated June 16, 2001, we advised you to have your home analyzed to determine if any unsafe level of methane exists and a recommendation that a treatment system be installed. We have now received results on the origin of the methane gas in your well.

Because your water well samples contained dissolved gas concentrations in excess of 2.0 mg/l, we ordered isotopic analyses of the methane in two separate water samples to determine its origin. Results indicate that the methane in your water well is of relatively shallow origin, and is produced naturally by underground bacteria. The composition of this "biogenic" methane in your water well is not similar to nor associated with any of the deeper gases produced by oil and gas wells in the vicinity of your home. If you would prefer an independent assessment of this conclusion, please contact Debbie Baldwin of the Colorado Oil and Gas Commission. She can be reached at (303) 894-2100, ext. 111. She has copies of your results.

You should note that the level of fluoride in your drinking water is 6.5 mg/l, which exceeds the EPA's primary drinking water standards. The water well booklet recommends you stop drinking the water and contact the Health Department. In the booklet, there is a reference to this level of fluoride, on page 17, where the Water Treatment Decision Guide can be found. If additional information is required that is not in the booklet, it is recommended you contact either Joe Bowden at 247-0132 or Ron Tate at 884-2336. These two individuals are water treatment professionals that can provide expertise at a reasonable cost to you.

Although there is no established EPA drinking water standard for sodium, a level of 20-112 mg/L has been recommended by various agencies as an acceptable range. Your water exceeds this range. Elevated amounts of sodium can be detrimental to plants and grass. In addition, higher sodium levels can present health risks to individuals with high blood pressure. If additional information is required that is not in the booklet, it is recommended you contact either one of the water treatment professionals mentioned above.

If you have questions regarding the information enclosed, please contact Cindy Beam with **bp** in our Durango, CO office at 970-247-6844.

Sincerely,

*Dave Brown* (cb)

Dave Brown