

Proj# 2059



March 16, 2010

Mr. Marty Miller
6338 CR 311
New Castle, CO 81647

Subject: Analytical Results for Water Samples Collected During December 2009,
January 2010, and February 2010

Dear Marty:

Enclosed are the results of the laboratory analysis of the samples collected from your domestic water well on December 16, 2009; January 13, 2010; and February 11, 2010 – note that the February results include analysis of samples from both your well and from inside your house after the water has passed through your treatment system. The reports from the analytical laboratory are enclosed along with tables summarizing the results obtained. We have also included some historic data on these tables for your domestic well and your stock/irrigation well. Also enclosed is a short discussion on the applicable water quality standards and interpretation of laboratory analyses.

As we have discussed, Bill Barrett Corporation (BBC) will continue to sample your domestic well on a monthly basis for the next several months. We also have arranged to have your stock/irrigation well sampled and will determine whether additional sampling of that well is warranted once the analytical results are received. As soon as the results from the most recent sampling of both wells are received, we will provide you with copies of those results and will contact you to discuss those results.

If you have any questions regarding these results or the continued sampling of your wells, please feel free to contact me at 970-270-2853.

Sincerely,

A handwritten signature in black ink, appearing to read 'Doug Dennison', written over a horizontal line.

Doug Dennison
Environmental-Governmental Affairs Liaison

Cc: Linda Spry O'Rourke, COGCC

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Table 1 Historical Analytical Results
Marty Miller Domestic Well

Date	5/10/05	9/29/05	3/10/06	12/16/09	1/13/10	2/11/10	2/11/10	
Sample ID	MILL1	MILL1	MILL1	MILL1	MILL1	MILL1	MILL2	
Collection Location	Hydrant at well	Hydrant at well	Hydrant at well	Hydrant at well	Hydrant at well	Hydrant at well	In house-post filter	units
Organics								
Benzene	ND	ND	ND	ND	NR	NR	NR	µg/L
Toluene	ND	ND	ND	ND	NR	NR	NR	µg/L
Ethylbenzene	ND	ND	ND	ND	NR	NR	NR	µg/L
Total Xylene	ND	ND	ND	ND	NR	NR	NR	µg/L
Oil & Grease	3	NR	NR	NR	NR	NR	NR	mg/L
Methane	8.1	ND	4.5	2.5	6.9	NR	6.8	mg/L
Anions								
Chloride	72	15	53	48	NR	NR	NR	mg/L
Nitrate	ND	0.67	ND	ND	NR	NR	NR	mg/L
Nitrite	ND	ND	ND	ND	NR	NR	NR	mg/L
Sulfate	22	96	37	38	NR	NR	NR	mg/L
Fluoride	3.8	1.3	3.3	3.5	NR	NR	NR	mg/L
Bromide	ND	ND	ND	1.2	NR	NR	NR	mg/L
Total Metals								
Calcium	2.8	29	6.7	6.2	NR	NR	NR	mg/L
Iron	ND	ND	0.11	ND	NR	NR	NR	mg/L
Potassium	ND	1.5	0.61	0.62	NR	NR	NR	mg/L
Magnesium	0.44	12	1.9	1.7	NR	NR	NR	mg/L
Manganese	ND	ND	0.012	ND	NR	NR	NR	mg/L
Selenium	ND	ND	ND	0.024	NR	NR	NR	mg/L
Sodium	190	180	180	180	NR	NR	NR	mg/L
Water Quality								
Temperature (Field)	12.25	13.24	8.48	9.95	11.97	11.01	10.83	°C
Specific Conductance (Lab)	820	960	810	760	NR	NR	NR	µmohs/cm
Specific Conductance (Field)	0.803	0.813	0.705	0.737	0.747	0.753	0.499	mS/cm
Dissolved Oxygen (Field)	0.19	1.89	1.37	0.96	0.87	2.72	2.07	mg/L
pH (Lab)	8.9	7.5	8.3	8.6	NR	NR	NR	
pH (Field)	8.65	7.27	8.85	8.19	8.5	8.67	8.55	
Total Dissolved Solids (Lab)	470	580	430	470	NR	NR	NR	mg/L
Total Dissolved Solids (Field)	0.5	0.5	0.5	0.5	0.5	0.5	0.3	g/L
Turbidity (Field)	80.1	18.3	28.2	9.7	9.6	17.1	5.9	NTU
Bacteria								
Sulfate Reducing Bacteria	NR	NR	NR	NR	NR	ND	ND	CFU/mL
Iron Reducing Bacteria	NR	NR	NR	NR	NR	2300	9000	CFU/mL
Slime Forming Bacteria	NR	NR	NR	NR	NR	12500	12500	CFU/mL

ND - Analysis performed, constituent Not Detected

NR - Specific Constituent Analysis Not Requested

µg/L - micrograms per Liter

mg/L - milligrams per Liter

°C - degrees Celcius

µmohs/cm - micromohs per centimeter

mS/cm - milliSiemens per centimeter (equivalent to 1,000 mmohs/cm)

g/L - grams per Liter

NTU - Nephthelometric Turbidity Units

CFU/mL - Colony Forming Units per milliliter

Table 2 Historical Analytical Results
Marty Miller Irrigation Well

Date	5/10/05	9/29/05	3/10/06	
Sample ID	MILL2	MILL2	MILL2	
Collection Location	Well fitting	Well fitting	Well fitting	units
Organics				
Benzene	ND	ND	ND	µg/L
Toluene	ND	ND	ND	µg/L
Ethylbenzene	ND	ND	ND	µg/L
Total Xylene	ND	ND	ND	µg/L
Oil & Grease	ND	NR	NR	mg/L
Methane	8.8	7.2	27	mg/L
Anions				
Chloride	120	140	130	mg/L
Nitrate	ND	ND	ND	mg/L
Nitrite	ND	ND	ND	mg/L
Sulfate	130	49	72	mg/L
Fluoride	3.1	4.5	4	mg/L
Bromide	ND	1.1	ND	mg/L
Total Metals				
Calcium	32	17	19	mg/L
Iron	0.64	ND	0.19	mg/L
Potassium	1.6	1	1.1	mg/L
Magnesium	14	6.8	8	mg/L
Manganese	0.018	ND	ND	mg/L
Selenium	ND	ND	ND	mg/L
Sodium	240	230	220	mg/L
Water Quality				
Temperature (Field)	12.13	13.19	11.14	°C
Specific Conductance (Lab)	1300	1200	1200	µmohs/cm
Specific Conductance (Field)	1.321	1.082	1.001	mS/cm
Dissolved Oxygen (Field)	1	0.7	2.87	mg/L
pH (Lab)	7.8	7.9	7.6	
pH (Field)	7.55	8.05	8.03	
Total Dissolved Solids (Lab)	770	640	590	mg/L
Total Dissolved Solids (Field)	0.9	0.7	0.6	g/L
Turbidity (Field)	29.9	17	47.9	NTU
Bacteria				
Sulfate Reducing Bacteria	NR	NR	NR	CFU
Iron Reducing Bacteria	NR	NR	NR	CFU
Slime Forming Bacteria	NR	NR	NR	CFU

µg/L - micrograms per Liter

ND - Analysis performed, constituent Not Detected

NR - Specific Constituent Analysis Not Requested

mg/L - milligrams per Liter

°C - degrees Celcius

µmohs/cm - micromohs per centimeter

mS/cm - milliSiemens per centimeter (equivalent to 1,000 µmohs/cm)

g/L - grams per Liter

NTU - Nephthelometric Turbidity Units

CFU/mL - Colony Forming Units per milliliter

Table 3 Volatile Organic (EPA 8260B) Compound Analytical Results
Marty Miller Domestic Well

Date	2/11/10	2/11/10	DL	Units
Sample ID	MILL1	MILL2		
Collection Location	Hydrant at well	In house-post filter		
Acetone	ND	ND	0.050	mg/L
Acrolein	ND	ND	0.050	mg/L
Acrylonitrile	ND	ND	0.010	mg/L
Benzene	ND	ND	0.0010	mg/L
Bromobenzene	ND	ND	0.0010	mg/L
Bromodichloromethane	ND	ND	0.0010	mg/L
Bromoform	ND	ND	0.0010	mg/L
Bromomethane	ND	ND	0.0050	mg/L
n-Butylbenzene	ND	ND	0.0010	mg/L
sec-Butylbenzene	ND	ND	0.0010	mg/L
tert-Butylbenzene	ND	ND	0.0010	mg/L
Carbon tetrachloride	ND	ND	0.0010	mg/L
Chlorobenzene	ND	ND	0.0010	mg/L
Chlorodibromomethane	ND	ND	0.0010	mg/L
Chloroethane	ND	ND	0.0050	mg/L
2-Chloroethyl vinyl ether	ND	ND	0.050	mg/L
Chloroform	ND	ND	0.0050	mg/L
Chloromethane	ND	ND	0.0025	mg/L
2-Chlorotoluene	ND	ND	0.0010	mg/L
4-Chlorotoluene	ND	ND	0.0010	mg/L
1,2-Dibromo-3-Chloropropane	ND	ND	0.0050	mg/L
1,2-Dibromoethane	ND	ND	0.0010	mg/L
Dibromomethane	ND	ND	0.0010	mg/L
1,2-Dichlorobenzene	ND	ND	0.0010	mg/L
1,3-Dichlorobenzene	ND	ND	0.0010	mg/L
1,4-Dichlorobenzene	ND	ND	0.0010	mg/L
Dichlorodifluoromethane	ND	ND	0.0050	mg/L
1,1-Dichloroethane	ND	ND	0.0010	mg/L
1,2-Dichloroethane	ND	ND	0.0010	mg/L
1,1-Dichloroethene	ND	ND	0.0010	mg/L
cis-1,2-Dichloroethene	ND	ND	0.0010	mg/L
trans-1,2-Dichloroethene	ND	ND	0.0010	mg/L
1,2-Dichloropropane	ND	ND	0.0010	mg/L
1,1-Dichloropropene	ND	ND	0.0010	mg/L
1,3-Dichloropropane	ND	ND	0.0010	mg/L
cis-1,3-Dichloropropene	ND	ND	0.0010	mg/L
trans-1,3-Dichloropropene	ND	ND	0.0010	mg/L
2,2-Dichloropropane	ND	ND	0.0010	mg/L
Di-isopropyl ether	ND	ND	0.0010	mg/L
Ethylbenzene	ND	ND	0.0010	mg/L
Hexachloro-1,3-butadiene	ND	ND	0.0010	mg/L
Isopropylbenzene	ND	ND	0.0010	mg/L
p-Isopropyltoluene	ND	ND	0.0010	mg/L
2-Butanone (MEK)	ND	ND	0.010	mg/L
Methylene Chloride	ND	ND	0.0050	mg/L
4-Methyl-2-pentanone (MIBK)	ND	ND	0.010	mg/L
Methyl tert-butyl ether	ND	ND	0.0010	mg/L
Naphthalene	ND	ND	0.0050	mg/L
n-Propylbenzene	ND	ND	0.0010	mg/L
Styrene	ND	ND	0.0010	mg/L
1,1,1,2-Tetrachloroethane	ND	ND	0.0010	mg/L
1,1,2,2-Tetrachloroethane	ND	ND	0.0010	mg/L
1,1,2-Trichloro-1,2,2-trifluoroethane	ND	ND	0.0010	mg/L
Tetrachloroethene	ND	ND	0.0010	mg/L

Table 3 Volatile Organic (EPA 8260B) Compound Analytical Results
Marty Miller Domestic Well

Date	2/11/10	2/11/10	DL	Units
Sample ID	MILL1	MILL2		
Collection Location	Hydrant at well	In house-post filter		
Toluene	ND	ND	0.0050	mg/L
1,2,3-Trichlorobenzene	ND	ND	0.0010	mg/L
1,2,4-Trichlorobenzene	ND	ND	0.0010	mg/L
1,1,1-Trichloroethane	ND	ND	0.0010	mg/L
1,1,2-Trichloroethane	ND	ND	0.0010	mg/L
Trichloroethene	ND	ND	0.0010	mg/L
Trichlorofluoromethane	ND	ND	0.0050	mg/L
1,2,3-Trichloropropane	ND	ND	0.0010	mg/L
1,2,4-Trimethylbenzene	ND	ND	0.0010	mg/L
1,2,3-Trimethylbenzene	ND	ND	0.0010	mg/L
1,3,5-Trimethylbenzene	ND	ND	0.0010	mg/L
Vinyl chloride	ND	ND	0.0010	mg/L
Xylenes, Total	ND	ND	0.003	mg/L

DL - Detection Limit = the lowest concentration that can be detected for each analysis

ND - Analysis performed, constituent Not Detected

mg/L - milligram per Liter

Table 4 Isotopic Analytical Results
Marty Miller Domestic Well

Date	5/10/05	12/16/09	1/13/10	2/11/10	units
Sample ID	MILL1	MILL1	MILL1	MILL2	
Collection Location	Hydrant at well	Hydrant at well	Hydrant at well	In house-post filter	
Gases					
Argon	0.642	1.02	0.761	0.911	%
Oxygen	0.0424	2.39	0.16	2.36	%
Carbon Dioxide	0.045	0.24	0.14	0.18	%
Nitrogen	50.36	62.19	47.78	51.93	%
Organic Gases					
Methane	48.86	33.73	50.45	44	%
Ethane	0.0159	0.379	0.622	0.565	%
Propane	0	0.0459	0.0756	0.0547	%
isobutane	0	0.0036	0.0064	0.0007	%
n-butane	0	0.0003	0.0012	0.0007	%
isopentane	0	0	0.0007	0.001	%
n-pentane	0	0	0.0012	0.0014	%
Hexanes+	0	0	0.001	0	%
Isotopes					
delta C13 of Methane	-56.85	-50.94	-51.78	-51.94	per mil
delta D of Methane	-13.1	-196.3	-198.6	-203.5	per mil
delta C13 of Ethane	-27.8	-27.1	-27.6	-27.63	per mil
delta C13 of Propane	0	-25.3	-25.4	0	per mil
delta D in water	0	0	0	0	per mil
delta O18 in water	0	0	0	0	per mil
delta 13C DIC in water	0	0	0	0	per mil