



# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

Buffalo Field Office  
1425 Fort Street  
Buffalo, Wyoming 82834-2436



BLM

JUN 09 2011

BUFFALO FO

Wyoming Department of Environmental Quality  
Water Quality Division attention: John Passehl  
Herschler Building, 4th Floor West  
122 West 25th Street  
Cheyenne, Wyoming 82002

Re: Permit Number 10-498 Patriot Energy Resources, LLC

Dear Mr. Passehl,

The Buffalo Field Office of the BLM reviewed Underground Injection Control (UIC) Permit application 10-498, filed by Patriot Energy Resources, LLC. The UIC application is being made to convert 32 Coal Bed Natural Gas (CBNG) wells to injectors in the South Kitty Field area.

Our review identified the following issues:

1. Table 5 of WDEQ Permit lists 32 domestic wells with depths ranging from 20' to 2038'. However, according to the Wyoming State Engineer's Office there are 37 additional domestic and stock water wells within the South Kitty Unit boundary (depths 80 to 2610'). BLM requests that these wells also be included in the requirement for baseline and periodic water quality sampling. Eighteen of the total 69 wells are drilled to a total depth of between 600 and 1100' which is approximately the depth to the Wyo coal. The operator should be required to offer to sample *all* the permitted stock and domestic wells within the proposed unit boundary.
2. Major water quality constituents such as calcium, magnesium, chloride and sulfate, while important, are not as much concern as some of the trace elements and organic compounds which could be liberated from the coal as the microbes digest. BLM requests that the permit include the requirement to test for the following trace metals: Arsenic (As), Barium (Ba), Boron (B), Radium 226 (Ra), Nickel (Ni), and Molybdenum (Mo). These elements are either identified as being prevalent in coalbed waters (Rice and Bartos 2002) or were present in the "nutrient enhancement" previously employed in these wells.
3. Since the produced water has the potential to be used for stock watering (as well as for human consumption), it would be beneficial if the bacterial population were quantified at baseline and monitored periodically.

Thank you for your consideration of these recommendations. If you have any questions, please contact me or Kathy Brus at (307)684-1100.

Sincerely,

A handwritten signature in black ink, appearing to read "Duane W. Spencer", with a long horizontal flourish extending to the right.

Duane W. Spencer  
Field Manager