AN EVALUATION OF COALBED METHANE PRODUCTION TRENDS IN WYOMING'S POWDER RIVER BASIN: A TOOL FOR RESOURCE MANAGEMENT

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ABSTRACT

In this study, we evaluated production histories of the first 10 years of coalbed methane (CBM) development in the Powder River Basin (PRB). We then used this evaluation to predict future gas and water production as CBM activity moves to the west in the PRB over the next decade. CBM wells more than 2 years old with water/gas ratios greater than two have produced 4.6 percent of the gas and 38 percent of the water in the PRB to date. Water/gas ratios for the first 10 years of CBM development in the PRB (22,111 wells 2 years old or older) averaged 1.83 barrels of water per 1,000 cubic feet (Mcf) of gas produced. The predicted water/gas ratio for future CBM development in the Upper, Middle, and Little Powder River and Upper Tongue River drainages is less than three barrels/Mcf. In stark contrast, the Clear Creek and Crazy Woman drainages have projected water/gas ratios greater than 300 barrels/Mcf. From now until 2020, CBM development in the Clear Creek and Crazy Woman Creek drainages is predicted to supply only 0.15 percent of the total gas extracted in the PRB but will produce 20 percent of the water (130 billion gallons).

We recommend that all CBM wells with water/gas ratios greater than three after two years of production be reviewed. Barring extenuating circumstances, these wells should be regulated as water wells. Finally, the observations outlined in this study support a moratorium on CBM activity in the Clear Creek and Crazy Woman Creek drainages.

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