

The Dirty Side of Clean Energy: Coalbed Methane Production in Wyoming's Powder River Basin

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The United States is a challenged nation. As a nation at war, it is challenged to reduce its dependency on foreign supplies to meet current energy needs. As a nation in the midst of an energy crisis and increasingly stringent pollution regulations, it is challenged to develop cheaper and cleaner sources of power production. The immediate solution: coalbed methane (CBM). With its rich resource base, lax environmental regulations, and industry friendly politics, Wyoming's Powder River Basin (PRB) lays at ground zero for CBM exploitation. For many unfortunate landowners in the PRB, the dirty side of CBM quickly spread across their ranches and backyards. Although CBM and most other forms of natural gas may burn cleaner than any other fossil fuel, the production end is anything but clean.

The Rocky Mountain region contains massive deposits of CBM which, following the Supreme Court's 1999 decision in *Amoco Production Co. v. Southern Ute Indian Tribe*, are no longer off-limits to patentees on federal lands.[1] The *Amoco* decision immediately kicked off a major boom in CBM production that continues to rattle the Rocky Mountain west. The CBM boom is also fueled by a general push towards cleaner energy that forces power producers to explore alternatives to coal and oil fired generators.[2] Since natural gas is generally considered the cleanest of all fossil fuels,[3] it is no wonder why regions with large reserves like the PRB are being targeted for exploitation. Predictions estimate a 30% increase in natural gas consumption by the year 2010.[4] Furthermore, extraction and power generation of natural gas remains one of the cheapest and easiest means of producing energy.[5] Over 95% of future power plants in this country will be fired by CBM and other natural gases.[6]

CBM extraction differs from conventional drilling methods. The most common technique is a process that extracts groundwater from coal seams to release pressure and allow methane gas to reach the surface.[7] This "dewatering" process results in the discharge of enormous quantities of water onto the surface surrounding the well.[8] Unlike other forms of mining, these operations require numerous well sites for productive extraction.[9] Ten thousand wells currently tap into the PRB reserves with as many as 100,000 predicted in the future.[10]

Surface impacts from CBM production are readily apparent in the PRB. Additional surface water from CBM operations continues to increase erosion and stream sedimentation, leading to water quality degradation in the surrounding rivers and streams.[11] High concentrations of sodium, calcium, and magnesium in these discharges further this degradation and prohibit irrigators from putting this water to beneficial use.[12] Floodwaters from CBM production also spread across private lands causing significant damage to ranches and farmland.[13] In addition to the impacts from wastewater discharges, the invasion of production equipment into the PRB involves significant surface disturbance. As with most mining operations, CBM extraction requires an expansive network of roads, pipelines, powerlines, wellheads, and pump stations.[14] Typically, operations involving such production equipment drastically alter the landscape and disrupt wildlife habitat.

CBM extraction entails considerable subsurface disturbances as well. Dewatering operations inevitably draw down aquifers lying beneath the PRB, thus affecting their capacity for future-utilization.[15] Dewatering also leads to "migration" problems by allowing unpressurized methane gas to travel not only upward but horizontally as well.[16] This migrating methane can travel long distances and occasionally finds natural venting routes resulting in adverse exposure to humans, wildlife, and water resources on the surface.[17]

Despite these significant environmental impacts, Wyoming continues its unrestricted authorization of CBM mining in the PRB. Moreover, state officials are taking an aggressive approach towards promoting CBM production by advertising Wyoming's relatively non-restrictive environmental regulations pertaining to CBM operations.[18] The recent discovery of over 25 trillion cubic feet of CBM in the PRB, equivalent to

one year's supply of the nation's methane consumption,[19] quickly led to 10,000 active wells in the region generating over 900 million dollars in revenues in just under two years.[20] For Wyoming, which derives 40% of its income from energy production,[21] harnessing the revenues from taxes and royalties on CBM production undoubtedly overshadows any environmental concerns. These revenues turned the state's budget deficit into a 700 million dollar surplus in less than one year.[22] With another 70,000 wells projected in the PRB alone, state officials leave no doubt that Wyoming is open for business.[23]

The federal government, however, does not share Wyoming's enthusiasm for CBM production. The regional office of the Bureau of Land Management (BLM) has taken a more cautious approach by suspending drilling operations pending the completion of an environmental impact statement for the 50,000 proposed wells on the PRB's public lands.[24] During this time, the BLM must also revise its resource management plan to address the impacts of CBM mining in the region in accordance with the Federal Land Policy Management Act.[25] However, the BLM has already issued leases for 98% of all potential methane sites on federal lands within the basin.[26] And with 50,000 wells projected, BLM approval of even a fraction of these permits to drill will have a significant impact on the environment.

CBM operations proceed on state lands unaffected by the federal suspension. The destruction from state permitted CBM operations has drawn an interesting alliance in the PRB. The PRB Resource Council (PRBRC) brings together the common interests of both ranchers and environmentalists in protecting the land from the rampantly developing methane industry in the region.[27] The PRBRC recently filed suit against the state of Wyoming claiming violations under the Clean Water Act (CWA) in permitting wastewater discharges from CBM mining operations.[28] Specifically, the council argues that the NPDES permits issued for CBM production by the Wyoming Department of Environmental Quality (WDEQ) violate the CWA by allowing degradation of water that could be used for agricultural purposes.[29] Additionally, the Wyoming Outdoor Council (WOC), PRBRC's co-plaintiffs in the lawsuit, recently convinced the U.S. Environmental Protection Agency to conduct a review of WDEQ's process for issuing NPDES permits.[30] Nonetheless, WOC and PRBRC realize their efforts can only slow down the process and that CBM production will inevitably continue to the detriment of conservationist and property owner interests within the basin.[31]

Indeed, CBM offers a timely solution to the nation's energy challenges. Yet, in times of crisis, long term effects from resource development often do not factor into the equation. So is the case for the PRB. Flooded prairie lands, depleted aquifers, and fragmented habitat are of little concern in Wyoming's quest to exploit its natural gas resources.

[1] See *Amoco Production Co. v. Southern Ute Indian Tribe*, 526 U.S. 865 (1999) (finding CBM deposits separate from federally owned coal reserves for mining purposes).

[2] Hal Clifford, *Wyoming's Powder Keg: Coalbed Methane Splinters the Powder River Basin*, THE HIGH COUNTRY NEWS, Nov. 5, 2001, at 1. EPA recently announced its plans to reduce emissions from coal fired plants by up to 80% in the future. *Id.* at 13.

[3] Methane combustion produces less pollutants than burning coal or oil and therefore lessens the harms from acid deposition. See Terry McCarthy, *High Noon in the West*, TIME, July 16, 2001 at 24.

[4] Douglas Jehl, *Gas-Rich Desert Will Test Bush Resolve*, NEW YORK TIMES, Feb. 4, 2001, available at <http://www.wyomingoutdoorcouncil.org/news/nytimes4feb01.html>.

[5] Clifford, *supra* note 2 at 1, 10.

[6] Jehl, *supra* note 4.

[7] *Coalbed Methane Boom in Wyoming's Powder River Basin*, Environmental News Network, Oct. 18, 2001, available at http://www.enn.com/news/enn-stories/2001/10/10182001/s_45302.asp [hereinafter ENN Article].

[8] Thomas F. Darin and Amy W. Beatie, *Debunking the Natural Gas "Clean Energy" Myth: Coalbed Methane in Wyoming's Powder River Basin*, 31 ELR 10566 (2001). Discharges can range from an average of 12 gallons per minute to as much as 85 gallons per minute. *Id.*

[9] See McCarthy, *supra* note 3 at 23.

[10] *Id.*

[11] Darin and Beatie, *supra* note 8. Impacts from CBM operations has placed the Powder river as number five on American Rivers most endangered rivers list. Amy Beatie and Tom Darin, *Encouraging Responsible Coalbed Methane Development*, Wyoming Outdoor Council Website, visited 11/10/01, available at <http://www.wyomingoutdoorcouncil.org/frontline/summer2001/cbm.html> [hereinafter WOC article].

[12] See Clifford, *supra* note 2 at 10.

[13] See *id.*

[14] McCarthy, *supra* note 3 at 24.

[15] Darin and Beatie, *supra* note 8.

[16] *Id.*

[17] *Id.*

[18] See Clifford, *supra* note 2 at 11. For example, Wyoming has no state legislation equivalent to the federal National Environmental Policy Act (NEPA). Therefore, significant actions like CBM lease approval and application to drill on state lands often do not undergo environmental review.

[19] McCarthy, *supra* note 3 at 23.

[20] *Id.* at 23, 24.

[21] Clifford, *supra* note 2 at 11.

[22] Tom Kenworthy, *Energy and Environment Clash Brews in Wyoming*, USA TODAY, Aug. 13, 2001, available at <http://www.usatoday.com/news/nation/2001/03/2001-03-30-energy.htm>.

[23] Clifford, *supra* note 2 at 10.

[24] ENN article, *supra* note 7. The BLM projects a 2002 completion date for the PRB EIS. *Id.*

[25] See 43 U.S.C. § 1712 (1994).

[26] ENN article, *supra* note 7.

[27] McCarthy, *supra* note 3 at 24.

[28] See Clifford, *supra* note 2.

[29] *Id.* See 33 U.S.C. § 1342(a) (1994).

[30] WOC article, *supra* note 11.

[31] See *id.*