2009 Annual Report
Powder River Basin Controlled Groundwater Area
Technical Advisory Committee

Introduction

The Powder River Basin Controlled Groundwater Area (PRBCGA) was established to protect existing water users from impacts resulting from coal bed methane (CBM) development. The Montana Board of Oil and Gas Conservation (MBOGC) implements the PRBCGA through regulations that require characterization, monitoring, and evaluation of ground-water conditions, and mitigation of impacts to existing water users.

A technical advisory committee (TAC) was established to oversee the ground-water characterization, monitoring, and evaluation requirements of the PRBCGA. TAC consists of six members selected by DNRC for their expertise in hydrogeology, water quality, and CBM extraction systems and operations. In addition to overseeing monitoring and reporting requirements for individual fields, TAC is assigned to review ground-water data and scientific evidence related to the PRBCGA and make recommendations to the MBOGC regarding mitigation of impacts.

The purpose of this report is to describe the activities of TAC during 2009 and the impacts of CBM development on ground-water resources through September 2008.

Summary of TAC Annual Meeting

TAC met at the Bureau of Land Management office in Billings on April 28, 2009. Attending the March meeting were TAC members, John Wheaton, John Kilpatrick, Angela McDannel, Andy Bobst, Tom Osborne and Russell Levens. Also attending were Tom Richmond and Jim Halvorson of the Montana Board of Oil and Gas Conservation, Shaylan Haugen and Keith Kerbel of the Montana Department of Natural Resources and Conservation, Elizabeth Meredith of the Montana Bureau of Mines and Geology, Scott Straessler representing Pinnacle Gas Resources, Inc., Mike Keller and Lana Wilson (Hydrometrics) representing Fidelity Exploration and Production Company, and Brad Sauer and Becca Fischer representing the Northern Plains Resource Council. The purpose of the meeting was to discuss groundwater monitoring results, proposed changes to TAC membership, TAC involvement in a study proposed under House Bill 575, and a monitoring plan for Fidelity Exploration and Production Company.

Groundwater Monitoring

Tom Osborne and Lana Wilson described industry monitoring and reporting and Lana Wilson handed out a memorandum summarizing wells that were monitored and data reported to MBMG. Elizabeth Meredith and John Wheaton presented a summary of the 2008 Water Year Annual Coalbed Methane Regional Ground-Water Monitoring Report: Powder River Basin, Montana (2008 annual report). The 2008 annual report identifies 907 CBM wells in Montana that produced either water or gas compared to 2,647 wells in Wyoming. Total water production in Montana is reported to be 40 million barrels or 5,171 acre-feet compared to 1.3 billion barrels or 16,360 acre-feet in Wyoming. MBMG reports that the 20-foot drawdown contour extends a maximum distance of 1 to 2 miles from the edge of the CX Field, a shorter distance that predicted in the Final Statewide EIS. MBMG also reports that total dissolved solids of produced water typically range from 1,000 to 2,000 and sodium adsorption ratios range from 45 to 70. MBMG did not

receive any data from Pinnacle Gas Resources Inc. nor has the TAC received a monitoring plan for their fields.

The TAC discussed the 2008 annual report and made the following requests for future reports:

- Provide more analysis of spring monitoring data.
- Include a section on effects to inventoried water sources.
- Include data from both the Ground-Water Information Center and DNRC water rights database.

In additional discussion, John Wheaton described an effort by MBMG to provide monitoring equipment and training to landowners to allow them to monitor water levels and spring flows that could be provided for future reporting. John also reminded industry representatives that monitoring data were needed by October or early November to be included in the next annual report.

CBM Water Production

The CX Field operated by Fidelity Exploration & Production Company near Decker Montana and the Coal Creek and Dietz fields operated by Pinnacle Oil and Gas Inc. were in production in Montana during 2008. Saint Mary Land and Exploration Company produced methane and water from one well in the Waddle Creek Field. Total water production from all CBM wells through September 2008 is listed in Table 1. MBMG monitors ground-water levels and chemistry in dedicated monitoring wells installed beginning in the 1970s to document the effects dewatering of coal-mine and for coal bed methane production. Locations of regional monitoring wells, and data and interpretations from monitoring conducted through 2008 are found in Meredith et al (2009).

Table 1. Total water produced from CBM wells through September 2008.

Field	Year	# Wells	Total Water Production	
			Barrels	Gallons
All	**2000**	**165**	**20,169,638**	**847,124,796**
	CX Ranch Field	165	20,169,638	847,124,796
	2001	**236**	**38,756,615**	**1,627,777,830**
	CX Ranch Field	236	38,756,615	1,627,777,830
	2002	**244**	**16,299,771**	**684,590,369**
	CX Ranch Field	244	16,299,771	684,590,369
	2003	**327**	**11,415,551**	**479,453,122**
	CX Ranch Field	327	11,415,551	479,453,122
	2004	**423**	**15,426,082**	**647,895,458**
	CX Ranch Field	423	15,426,082	647,895,458
	2005	**529**	**19,426,428**	**815,909,976**
	Coal Creek Field		1,665,378	69,945,876
	CX Ranch Field		17,760,490	745,940,540
	Dietz Field		561	23,562
	2006	**808**	**21,317,810**	**895,348,020**
	Coal Creek Field		2,653,015	111,426,630
	CX Ranch Field		18,536,211	778,520,862
	Dietz Field		128,584	5,400,528
	2007	**723**	**38,325,853**	**1,609,685,831**
	Coal Creek Field		3,090,469	129,799,698
	CX Ranch Field		33,463,422	1,396,508,872
	Dietz Field		1,771,963	74,422,446
	2008	**908**	**40,210,222**	**1,688,829,324**
	Coal Creek Field	32	1,766,946	74,211,732
	CX Ranch Field	773	35,501,872	1,491,078,624
	Dietz Field	102	2,763,864	116,082,288
	Waddle Creek Field	1	88,770	3,728,340

References

Meredith, E.L., Wheaton, J.W., Kuzara, S.L., and Donato, T., 2008. 2008 Water Year Annual Coalbed Methane Regional Ground-Water Monitoring Report: Powder River Basin, Montana. Montana Bureau of Mines and Geology Open File Report 578, 75 p. 6 sheets.