2013 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 five members selected by DNRC for their expertise in hydrogeology, water quality, and CBM extraction systems and operations. Two additional ex-officio members represent the CBM industry, and water user and conservation interests. In addition to overseeing monitoring and reporting requirements for individual fields, TAC is assigned to review groundwater 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 2013 and the impacts of CBM development on groundwater resources through September 2012.

Summary of TAC Annual Meeting

TAC met at the MBOGC office in Billings on April 9, 2013. Attendees included TAC members, Elizabeth (Liddi) Meredith, Kyle Blasch, Emily Hinz, Tom Osborne, Terry Punt, and Russell Levens. Emily Hinz is a new TAC member, taking Angela McDannel's seat representing the Montana Department of Environmental Quality (DEQ). Also attending were Kim Overcast of the Billings DNRC Water Resources Office, Shawn Kuzara and John Wheaton of MBMG, LeAnna Johnson from the Coalbed Methane Protection Program, Pete Schade with DEQ, and Lana Wilson (Hydrometrics) representing Fidelity Exploration and Production Company and Summit Gas.

Groundwater Monitoring

Liddi Meredith presented a summary of the report titled 2013 Annual Coalbed Methane Regional Groundwater Monitoring Report: Powder River Basin, Montana. The 2013 annual report identifies 575 CBM wells in Montana that produced water and/or gas compared to 1,107 wells in Wyoming. Total water production in Montana is reported to be 15.8 million barrels or 2,041 acre-feet compared to 61 million barrels or 7,897 acre-feet in Wyoming. MBMG reports that the 20-foot drawdown contour extends a maximum distance of 1 to 1.5 miles from the edge of the CX Field, a shorter distance that predicted in the Final Statewide EIS. They attribute the shorter distance to lower development rates and production than anticipated in the EIS and the role of faults as barriers that reduce the lateral extent of drawdown.

Liddi Meredith also described a study being conducted under the Ground Water Investigation Program to identify and possibly quantify groundwater contribution from coal seams to surface waters within the Powder River Basin. MBMG researchers are sampling streams where they cross coal outcrops for isotopes of carbon and strontium in

attempt to “fingerprint” groundwater contribution as well as measuring stream gain or loss across the outcrops.

CBM Water Production

The CX Field operated by Fidelity Exploration & Production Company near Decker Montana and the Coal Creek and Dietz fields operated by Summit Gas were in production in Montana during 2012. Total water production from all CBM wells through September 2012 is listed in Table 1. MBMG monitors groundwater 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 2010 are found in Meredith et al (2013).

Table 1. Total water produced from CBM wells through September 2012. Well numbers include wells that produced water and/or gas.

Year / Field	# Wells	Total Water Production	
		Barrels	Gallons
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
2009	**887**	**35,850,182**	**1,505,707,644**
Coal Creek Field	32	2,087,222	87,663,324
CX Ranch Field	759	31,765,126	1,334,135,292
Dietz Field	95	1,846,468	77,551,656
Waddle Creek Field	1	151,366	6,357,372
2010	**822**	**33,540,339**	**1,408,694,238**
Coal Creek Field	28	2,261,728	94,992,576
CX Ranch Field	711	29,310,387	1,231,036,254
Dietz Field	82	1,817,520	76,335,840
Waddle Creek Field	1	150,704	6,329,568
2011	**748**	**26,940,211**	**1,131,488,862**
Coal Creek Field	23	1,841,774	77,354,508
CX Ranch Field	654	23,766,841	998,207,322
Dietz Field	70	1,239,176	52,045,392
Waddle Creek Field	1	92,420	3,881,640
2012	**575**	**15,818,948**	**665,235,816**
Coal Creek Field	19	866,486	37,232,412
CX Ranch Field	497	14,009,519	588,399,798
Dietz Field	58	927,316	38,947,272
Waddle Creek Field	1	15,627	656,334

References

Meredith, E.L., Wheaton, J.W., Bierbach, S., Chandler, K., Donato, T., Gunderson, J., Schwartz, C., 2011. 2010 Annual Coalbed Methane Regional Groundwater Monitoring Report: Powder River Basin, Montana. Montana Bureau of Mines and Geology Open File Report 600, 130 p. 6 sheets.