Powder/Tongue Basin Advisory Group
Meeting Record
July 7, 2004
Sheridan, WY

Welcome
Facilitator Dale Gregory welcomed the group and the meeting was called to order at 6:01 p.m. All attendees introduced themselves, followed by a review of the overall meeting agenda. A sign-in sheet was passed around to record attendance. The next meeting is scheduled for September 29 in Kaycee.

Water Development Commission Report
Barry Lawrence updated the BAG on the status of the plans for the other basins. The BAG for the Northeast Wyoming Basins will be meeting July 8 in Moorcroft. The BAGs for the Bear, Green and Snake-Salt Basins will be meeting July 19 in Evanston, July 20 in Savery, and July 21 in Jackson. Barry discussed the status of all basin studies, and agendas for future meetings. Handouts from the prior meeting were distributed.

Yellowstone River Compact Discussions
Pat Tyrrell, State Engineer, indicated that the compact is between the states of Wyoming and Montana. The unused and unappropriated waters, as of January 1, 1950, were allocated as follows: Clarks Fork River – Wyoming 60%, Montana 40%; Wind/Bighorn River – Wyoming 80%, Montana 20%, Tongue River, excluding the Little Bighorn – Wyoming 40%, Montana 60%; and Powder River – Wyoming 42%, Montana 58%. The compact recognized all beneficial uses in place January 1, 1950 and all supplemental supplies to lands that are pre-1950 are exempt. In a May 18, 2004 letter to Wyoming, Montana has raised issues related to satisfying their pre-compact rights and Wyoming water storage amounts. Meetings have been held between the two states on June 10 and June 30. A Technical Committee has been formed to investigate actual diversions and water use in the two states. A lengthy discussion followed.

Lake DeSmet Update
Bruce Yates, Sheridan County, indicated that the water level in Lake DeSmet has varied from 4608.6 feet in December to 4609.5 feet in April. However, the level dropped to 4608.9 in June due to early irrigation demands. There are annual contracts for 24,000 acre-feet (AF) from the reservoir, and to date, 8,000+ AF has been released. Bruce indicated that the Level II, Phase 2 study of Lake DeSmet is underway.

In December 2003, Campbell County decided to withdraw from the three county joint powers board of Sheridan, Johnson and Campbell Counties, effective July 1, 2004. An amendment to the Joint Powers Board document regarding the operation of Lake DeSmet Reservoir is being prepared and new members to the

joint powers board and advisory group are being appointed. The amended document provides 2500AF to each county for municipal use. Bruce indicated that he would continue to manage Lake DeSmet, pending approval of the Joint Powers Board, on an annual basis and with a limit on expenditures of $10,000. Discussion followed.

Snow Telemetry and 2004 Season Recap

Dave Taylor indicated that the Natural Resources Conservation Service (NRCS) installs, operates, and maintains an extensive system to collect snowpack and related climatic data in the western United States called SNOTEL. Locally, the cooperative snow survey program monitors sites in Wyoming and the western half of South Dakota. Cooperators include various municipalities, the State Engineer's Office and the US Bureau of Reclamation. The first snow survey was conducted in 1906 by Dr. Church in the Lake Tahoe area. The program is in the 10 western states and Alaska, with Wyoming having 83 SNOTEL sites with automated equipment and 65 manually read sites. South Dakota has 2 sites each of the automated and manually read courses.

SNOTEL sites are designed to operate unattended and without maintenance for a year. Manually read courses are measured with a snow sampler, which takes a core and is weighed to determine the snow water equivalent. The standard SNOTEL site has a shelter for electronic equipment, a snow pillow, a storage precipitation gauge, a snow depth sensor, a temperature sensor, plus other sensors, including humidity, wind speed and direction, soil moisture, and solar radiation. The data is transmitted to two base stations in Boise, ID and Ogden, UT via meteor burst technology, and is then transmitted via telephone to Portland, OR. Most Wyoming sites report every three hours.

The snow survey data is available through the Water Resources Data System at http://www.wrds.uwyo.edu/wrds/nrcs/nrcs.html . Another site with snowpack information is the National Water and Climate Center at http://www.wcc.nrcs.usda.gov/ , with specific Wyoming SNOTEL sites at http://www.wcc.nrcs.usda.gov/snotel/Wyoming.wyoming.html

The "Basin Outlook Report", which is prepared annually, covers 13 basins within the state and collects data January through June at 63 forecast points. Dave indicated that most of the state is in a severe to extreme drought. The entire state, except the Platte River Basin, experienced 50-55% average runoff for 2004. The Platte River Basin experienced lower runoff. Discussion followed.

Testing of Hydrologic Models for Estimating Streamflow in Mountainous Areas

Bruce Brinkman presented the research that was used to test models that are used to estimate stream flows in Wyoming. This research looked only at the portion of these existing equations that covered the snow-covered months of October through March. Physically measurements were made mid-month, every

month, through the October to March time period during the winters of 2000-2001 and 2001-2002. The study sites consisted of eleven sites in the Brush Creek area, six sites in the Rock Creek area, six sites in the Douglas Creek area, and eight sites in the Encampment area. The measured data collected was then compared to the projected data of existing equations to determine their accuracy in this area of Wyoming. The data was then used to produce new equations for these flows in mountainous areas during winter conditions. The research resulted in new monthly equations for estimating monthly winter discharge. These equations are a function of the basin area and the range of the segment's basin elevation: discharges = f (basin area, elevation range). Once the new equations were determined, their projections were compared with measured values around the State of Wyoming. They were found to fit well with seven of nine sites tested. The two sites that did not fit were found to have special geologic conditions that need additional research. Discussion followed.

Methods of Water Treatment

Mickey Steward, Coalbed Methane Coordination Coalition, related the historical uses for salt and its value. However, in recent times, the challenge of finding and producing fresh water is greater. Mickey discussed the various methods of desalination, which included chemical separation, biological extraction, mechanical separation with pressure driven filter systems, distillation, electrolysis, jet ejector separation, and combinations of various technologies. The question for thought was which, if any, of the technologies could be utilized with coalbed methane water in the Powder River Basin. Discussion followed.

The BAG asked for a follow-up presentation on the subject matter at a later date.

The meeting was adjourned.