

Wind/Bighorn Basin Advisory Group
Meeting Record
Cody, WY
April 1, 2003

Welcome

Barry Lawrence with the Wyoming Water Development Commission welcomed the group and the meeting was called to order at 3:01 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 July 15 in Thermopolis at 6:00 p.m.

Water Development Commission Report

Barry Lawrence updated the Basin Advisory Group (BAG) on the status of the plans for the other basins. The BAGs for the Powder/Tongue and Northeast Wyoming Basins will be meeting April 2 in Buffalo and April 3 in Newcastle. The Bear, Green, and Snake/Salt River Basins met March 24 in Cokeville, March 25 in Rock Springs, and March 26 in Alpine. Open houses for the Platte River Basin will be held this spring. Barry discussed the status of all basin studies, and agenda for future meetings.

John Jackson indicated that four new commissioners had been appointed, including Dick Geving in Division III and Dan Budd in Division IV. Nineteen new projects were authorized in the Omnibus Water Bill – Planning, including studies for the Ten Sleep Water Supply, Kirby Creek Watershed Plan, Midvale Conservation Program, and Owl Creek Master Plan projects. Twenty-seven projects were authorized in the Omnibus Water Bill – Construction. The projects in this basin included the following:

- Basin Gardens, which will construct a new water transmission system;
- Northwest Rural Water, which will construct new pipelines and storage;
- Basin Raw Water, which will provide for the rehabilitation and expansion of existing facilities;
- Byron Raw Water, which will provide for the construction of improvements to an existing irrigation system;
- Deaver Flume, which will provide for the replacement and rehabilitation of the Marchant Coulee flume and Deaver Flume;
- Greybull Highway 14 Crossing, which will provide for the relocation of water supply pipelines;
- LeClair Laterals, which will replace open ditches with piped systems;
- Riverton Valley Underflow, which will replace and rehabilitate 4 underflow structures;
- Hanover Flume, which will recoat or reline the Hanover Flume across the Big Horn River; and

- Highline Canal, which will provide for the replacement of an existing diversion structure, the installation of new delivery structures, and reline open ditches with piped ditches.

The Groundwater Exploration Grant Program, which was amended in 2002, was appropriated an additional budget of \$1,500,000. Eligibility for the Small Water Project Program was amended to include the entire state.

Facilitator Joel Whalen introduced himself.

State Engineer's Office Report

Loren Smith introduced himself as the newly appointed Division III Superintendent, State Engineer's Office. He spoke of the field office staff's early season work with the local irrigators, projects ongoing, and the emphasis with getting information online. He also commented on his planned participation with the Wind/Bighorn BAG. He thanks the group and indicated that he would be available to assist as needed from his Riverton office.

Wyoming's Drought

Jan Curtis, State Climatologist, introduced the drought website and drought related links, which included the palmer index, soil moisture and Snotel maps. Most of the state is in an exceptional drought, but due to recent snowstorms, has been upgraded to an extreme drought. He emphasized the importance of precipitation in April for the basin, which is currently at, or slightly above normal precipitation. A brief discussion followed.

Tree-Ring Based Reconstructions of Precipitation Variability in the Bighorn Basin Region over the Past 750 Years

Steve Gray, University of Wyoming, Botany Department, indicated that almost all water-resources planning is based on the climate of the past 100 years due to the instrumental records only covering that time frame. This time frame may not adequately reflect long-term trends and cycles. However, tree-ring archives provide long duration records. Steve discussed the study objectives and sampling methodologies employed. In this area, 124 trees from five sites were used in the study, which included Douglas fir, ponderosa, and limber pines. The reconstructed precipitation amounts from the tree ring samples indicated that past centuries point to droughts being more pronounced and longer in length. In assessing the instrumental record for the 20th century, it appears that droughts were relatively short with unusually wet conditions in contrast to earlier time frames. Steve asked the group to consider the possibility of a 20-year drought in the basin. A lengthy discussion followed. Steve indicated the study was published in Geophysical Research Letters, American Geophysical Union, v. 30, March 2003.

Wind/Bighorn Basin Outlook Forecast

John Lawson, US Bureau of Reclamation, discussed the reservoir storage allocations, inflows and outflows, snowpack and associated runoff, and current reservoir water supply conditions for Buffalo Bill, Boysen and Bull Lake Reservoirs. It is expected that the three reservoirs will have below average April-July runoff, ranging from 75-96% average. These values were compared to last year's conditions. A brief discussion followed.

Overview of Yellowstone River Basin NAWQA (National Water Quality Assessment) Results

Dave Peterson, US Geological Survey, indicated the Yellowstone study unit is headquartered in Cheyenne and maintains 3 field offices. There are 50 study units nationwide and studies are updated on a rotational basis. Study components include surface water quality and streamflow, groundwater quality, and aquatic ecology.

At 10 basin sites, the surface water was sampled at monthly intervals and high flow events from January 1999 through October 2001 for major ions, nutrients, DOC, suspended sediment and bacteria. Trace elements were sampled at 5 sites and pesticides were sampled at 3 intensive sites. Fecal coliform sampling was conducted at about 100 sites in 3 sub basins (Wind, Bighorn and Goose Creek).

54 wells in the Quaternary and Lower Tertiary aquifers along with 29 wells in a land use study (rural ranchettes) were sampled for major ions, nutrients, trace elements, VOCs, pesticides, etc.

Bed sediment and fish tissue sampling, habitat measurements, algae, invertebrate, fish community sampling, and an algal nutrient synoptic were all components of the aquatic ecology analyses. Some trace element concentrations in bed sediment were within range of possible effects. Trace element concentrations in fish tissue were generally less than levels of concern ie. copper, selenium, mercury. The Yellowstone River was identified as moderate to severely impacted with algae.

Many of the reports are currently in progress, and the national data may be obtained online at <http://water.usgs.gov/nawqa/> and the Yellowstone River Basin data can be obtained at <http://wy.water.usgs.gov/YELL/index.htm>

Cody Kayaking Opportunities

Ed Conning of the Beartooth Paddlers discussed the kayaking resources of the basin, and showed videos of various sites. He indicated that interest in the sport is growing and many communities are building whitewater parks. He indicated that Cody was interested in building such a facility.

Wind/Bighorn Power Study

Doug Beahm, BRS, Inc. and Chip Paulson, MWH, discussed the power study component of the Wind/Bighorn Basin Plan. Further, he discussed the objectives of both the power and power market studies. There are no fossil fuel sites, but a number of hydropower facilities exist, including the Shoshone project, which primarily serve power demand within the basin. Therefore, a limited unmet demand exists. Four utilities have expressed interest in storage-related hydropower. 236 potential hydropower sites were identified. Chip summarized the criteria used to screen the sites to 11.

Doug discussed the coal resources and potential sites with regard to coal fired power production. Only 3% of the basin's coal deposits are mineable due to the depth of the deposits. He discussed coal bed methane and natural gas reserves in the basin and related siting issues. Economically, most hydropower sites didn't meet benefit/cost feasibility criteria. In summary, adding hydropower to a water supply facility is more feasible than a dedicated hydropower facility; hydropower facilities do not offer significant employment opportunities, whereas coal-fired power plants do and are technically and economically feasible; and, gas turbine plants are the most viable alternative economically.

The meeting adjourned at 6:10 p.m.