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WATER LINES

NEWS FROM THE WATER RESOURCES DIVISION
OF THE MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

WATER NEWS

SMITH RIVER HYDROLOGY STUDY UNDER WAY

By Mike Roberts and Larry Dolan, DNRC

Water generated in the upper Smith River Basin serves many purposes. It irrigates of nearly 30,000 acres of cropland in the vicinity of White Sulphur Springs and provides streamflow for scenic floating and fisheries. Concerns over water availability for these uses prompted Meagher County Conservation District and the local office of the Natural Resource and Conservation Service to contact the Montana Department of Natural Resources and Conservation (DNRC) about heading up a study to investigate the relationship between upper basin irrigation, irrigation return flows, and instream flows in the Smith River.

Smith River above Camp Baker *- Photo by Larry Dolan*

The Smith River Hydrology Study, which examines the drainage area above Camp Baker, including Sheep Creek, is assessing the net effects that irrigation has on flows in the Smith River and its tributaries, and determining the effect that conversion from flood to sprinkler irrigation is having on the amount and timing of return flows.

To provide answers to these questions, surface and ground water data are being collected throughout the upper basin. Ten continuous streamflow gages monitor daily flows on the mainstem of the Smith River and major tributaries, and 15 staff gages installed on smaller streams are read semi-monthly. To track subsurface migration of water and fluctuations in water level,

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"To provide the most benefit, through the best use, of the state's water resources for the people of Montana."

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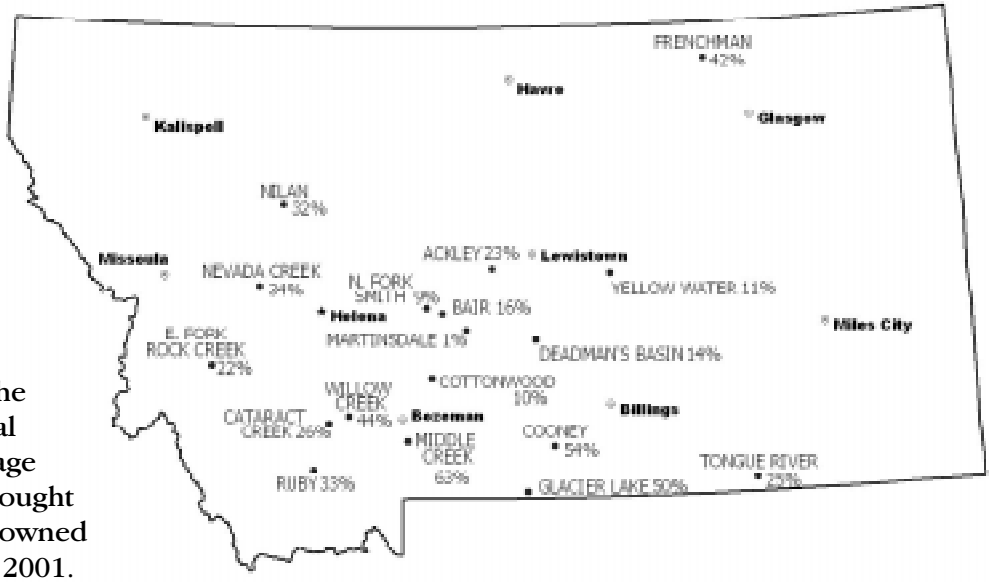
DISTRESSING WATER LEVELS AT DEPARTMENT RESERVOIRS

By Tim Kuehn, DNRC



Storage levels at state owned reservoirs managed by the DNRC are generally well below normal operating ranges for this time of year. Ron Roman, hydrographer for the State Water Projects Bureau, notes that 14 of 18 closely monitored reservoirs contain levels significantly below the average fall storage content.

Most of the reservoirs began the 2001 water year with below normal levels and never reached full storage capacity due to the continuing drought in Montana. Only five of the state-owned reservoirs reached full capacity in 2001. The 2002 water year is starting under the same adverse conditions. Numerous reservoirs are experiencing significantly reduced storage levels and without average or above average winter precipitation, it is likely the more severely impacted reservoirs will not fill in 2002. Notably, the reservoirs in the Mussellshell River Basin, (Martinsdale, Bair, Yellowater and Deadman's Basin) are experiencing the most critical situation.

Numerous structural issues arise when reservoirs are below an optimal water level for extended periods. Kevin Smith, project engineer, explains that freeze - thaw and wave action damage to control structures represents a significant concern. Freeze - thaw damage occurs when the water level is below the control structure and the concrete is exposed to fluctuating temperatures. Most of the reservoirs were built prior to the development of admixtures that protect concrete from freeze - thaw damage. Also, when water levels are exceedingly low, exposed embankments suffer damage from wave action, and concrete structures can be damaged by ice loads. Additionally, low reservoir levels provide for increased lacustrine and eolian deposits that can constrict water releases through the outlet conduit.

(Smith River continued from page 1)

groundwater levels are being monitored at approximately 50 wells throughout the basin. Irrigated acres have been mapped by crop and irrigation system type for the purpose of estimating crop water use and irrigation return flows.

Hydrologists from DNRC's Water Management Bureau and Lewistown Water Resources Regional Office recently completed the second field season of the study. Thus far, data have been gathered for 2000 and 2001, which were two extremely low water years. At least one normal and one high water year will be needed to satisfy data needs for the study. Following the collection and analysis of data, findings will be summarized in a final report.

For more information, please contact Larry Dolan, Mike Roberts, or Bill Uthman at 444-6637.

OPERATIONS OF PAINTED ROCKS ESSENTIAL TO SUMMER FLOW IN THE BITTERROOT RIVER

By Larry Schock, DNRC

Painted Rocks Dam is a DNRC managed dam, located on the West Fork of the Bitterroot River approximately 22 miles south of Darby. The dam was built in 1939, primarily as an irrigation structure with some limited seasonal recreational uses.

The earthen embankment is 800 feet long and 143 feet high. When filled to the crest of the spillway the dam impounds 31,706 acre-feet (AF) of water, which cover 655 acres. DNRC has contracts to deliver 15,000 AF for instream fisheries flows and 10,000 AF for irrigation. The contracts require delivery of the water between May 1 and September 30.

The irrigation water is delivered as far north as Florence (approximately 65 miles downstream), and instream fisheries flows are protected as far as Bell Crossing (approximately 48 miles downstream).

Painted Rocks Dam *- Photo by Art Taylor*

DNRC's Missoula Water Resources Regional Office staff acts as the dam tender, ensuring that the reservoir is filled in a timely fashion and that the contracts are delivered on demand.

The target date for the reservoir to reach full pool is Memorial Day weekend in a normal year and mid-May during drought years. Since the reservoir is used seasonally as a flat-water recreation area, it is important to ensure that it is full for the unofficial start of the recreation season.

The reservoir is filled as spring runoff accelerates. After the reservoir stops spilling, the gates are adjusted weekly to ensure that inflows equal outflows and that the reservoir remains at full pool, until the water is called for.

The contract water delivery is determined by representatives of the Painted Rocks Water Users Association and the Montana Department of Fish, Wildlife and Parks (DFWP). Contract water is usually called for starting in early July and is delivered until the end of September.

The District Court has appointed Vern Woolsey as the water commissioner for the Bitterroot River. Vern is paid by the Painted Rocks Water Users Association and DFWP to ensure the protection and delivery of their contracted water. Therefore, Vern not only ensures that releases are made at the reservoir, but he is also the person who makes sure that the water makes it all of the way to the last water user in Florence.

During normal years the water stored in Painted Rocks Reservoir ensures robust crops and a healthy fisheries in the Bitterroot River. Painted Rocks contract water is the lifeline of the Bitterroot River during drought years. The stored water not only allows an extended season for valley irrigators, but it also provides instream flows for fisheries and recreation.

DFWP has identified an optimum low flow rate of 400 cubic feet per second (cfs) at the Bell Crossing bridge. Prior to the DFWP purchase of water, average late summer flows at Bell Crossing were in the 40 to 50 cfs range and were sometimes as low as 25 cfs. Since that purchase of Painted Rocks water, DFWP has consistently been able to meet the targeted flow rate at Bell Crossing during normal years. Even during the last two years of severe drought, the flows at Bell Crossing have not fallen below 200 cfs, helping to ensure healthy Bitterroot River fishery.

COUNTY DROUGHT RESPONSE COORDINATORS CONVENE IN HELENA

By Jesse Aber, DNRC

On November 9, nearly 20 local drought response coordinators from across the state were joined at the Capitol Building by members of the Governor's Drought Advisory Committee, Congressional delegation staff, and other county, state, and federal officials to discuss drought planning, response, and policy in the wake of two of Montana's most severe drought years on record. The state drought committee had decided at its August meeting to provide a season-end forum to hear from local drought response coordinators and county officials regarding their efforts to address the impacts of drought over the course of 2000 and 2001.

The meeting opened with a warm welcome from Lt. Governor Karl Ohs, chairman of the Governor's Drought Advisory Committee. The welcome was followed by some remarks from members of the drought committee, including DNRC Water Resources Division Administrator Jack Stults, who briefly outlined the purpose of the meeting. Jack emphasized the committee's need to hear from county commissioners and drought coordinators regarding their experiences in dealing with a variety of drought–related issues from their respective areas of the state.

Next, local coordinators addressed the group with Kathleen Williams, of Fish, Wildlife, and Parks facilitating the ensuing discussion. A number of local drought coordinators addressed the group during "Local Drought Response Experiences - Successes, Challenges, and Suggestions." The discussion was aimed at sharing solutions to common problems associated with drought, including municipal water supply shortages, U.S. Department of Agriculture assistance programs, such as grazing and haying of Conservation Reserve Program lands, and impacts to main street businesses that support rural community economies.

Following lunch, group discussion was again facilitated by Kathleen in an exercise titled, "Turning Suggestions into Reality - How to Improve Montana's Drought Planning and Response." The thrust of this discussion was to apply the experiences and lessons learned from the morning session, framing them in terms of proactive measures that improve drought response through early anticipation of the most likely impacts, given developing drought conditions.

A number of participants felt that drought response in 2001 was improved over that in 2000 in that the drought and local meetings had continued relatively unabated, although the accrual of damage and responses slowed during the winter months. Glenn Patrick, of Montana Farm Service Agency, reported that $5.89M was issued to Montana producers during Fiscal Year 2001, mostly for stock water wells. Generally, reports from local coordinators emphasize the cumulative and debilitating effects that consecutive drought years have had on entire counties, including local services and all levels of business. Choteau County Commissioner, Ken Evans warned of human toll being taken by drought, citing the potential for increased gambling, alcoholism, depression and domestic discord. Other participants warned of the loss of farms of families that have owned and operated the same place for four generations.

Montana Congressional delegation representatives reported on efforts underway in Congress with the Farm Bill, which will provide additional assistance to rural Montana communities to address the impacts of drought. One suggestion, offered by Rich Moy of DNRC, was to host a two-day seminar in early spring in Helena to brief local drought coordinators on drought planning and sources of funding assistance.

The next meeting of the committee was scheduled for January 17, 2002, to make updates to the state's drought plan and take further action based on the comment gathered at the November 9th meeting. The November 9, 2001 meeting notes, agenda, and attendance list will be posted on the committee's Internet site at, http://nris.state.mt.us/drought.

GERALD MUELLER – A MEDIATOR AND WATERSHED GROUP FACILITATOR'S PERSPECTIVE ON WATER ISSUES

By Cindy Forgey and Jesse Aber, DNRC

For the last 13 years Gerald Mueller has operated his own mediation and facilitation business, Consensus Associates, which is focused on building agreements and solving problems regarding natural resources. Since 1991, Gerald has acted as the facilitator for the Upper Clark Fork River Basin Steering Committee, a watershed group created pursuant to a 1991 state statute. From 1974 to 1988, he worked in state government, including three years on the staff of Lt. Governor, and later Governor Ted Schwinden, and seven years as one of Montana's two representatives on the Northwest Power Planning Council, an interstate compact body charged with planning the Pacific Northwest electricity supply and with drafting a plan to ensure the protection, mitigation, and enhancement of Columbia River Basin fish and wildlife. Gerald has a M.S. in Atmospheric Science from Colorado State University and a B.A. in Physics from California State University at Fullerton. He and his wife Caralee make their home in Missoula.

Gerald feels the most challenging water quality issue facing Montanas today is improving water quality problems caused by dispersed, or non-point sources. A number of non-point water quality problems are caused by land use practices that degrade stream structure and function through bank erosion, siltation, increased water temperature, and flow alterations. In response to litigation and court orders, state government is attempting to address non-point problems through the Total Maximum Daily Load (TMDL) Program, which involves compiling scientifically defensible lists of instream contaminants and impairments for those rivers and streams with water quality problems as well as deadlines for developing plans for cleaning them up.

***Gerald Mueller** - Photo by Bill Schultz*

While such plans and deadlines may provide a handy demonstration of progress to a judge, Gerald feels that the landowners, necessary as willing partners in the implementation of plans, may be offended by the regulatory threat such mandated deadlines imply. Gerald feels that such an approach does not engender the enthusiastic cooperation and program participation by those who ultimately determine land uses - landowners. With their local stream on the list of impaired water bodies, and thus feeling accused as water quality offenders, local landowners become defensive and attack the list. Faced with deadlines and yet another government planning requirement, landowners tend to hunker down. "Just the program name, TMDL, conveys an 'I, the state bureaucrat, know more than you do' attitude, which tends to promote distrust," according to Gerald.

Gerald doubts that a regulatory approach to non-point water quality will succeed: "Neither the state nor the federal government will have enough water cops and court rooms to force Montanans to improve non-point related water quality. That does not mean that we are necessarily doomed to bad water." His premise is that people who live with streams and rivers both want and need good water quality. If right, then a more productive approach to existing problems would be for the state to empower local water quality champions who can help landowners identify opportunities for fixing non-point problems. Help requires both technical assistance and money to design and pay for improvement projects. "The help must be voluntary which means that the lists and formal plans - the means of keeping score - should be kept back in Helena," according to Gerald.

Regarding water quantity, Gerald continues, "The most challenging water quantity issue

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PROJECTS BUREAU ACQUIRES CONSERVATION EASEMENT

By Tim Kuehn, DNRC

The department recently entered into a conservation easement with Decker Coal Company on the Badger Creek Ranch located in Big Horn County, Montana. Tim Kuehn, project management specialist, negotiated the terms and conditions of the easement with Decker on behalf of the department. The conservation easement partially fulfills wildlife habitat mitigation measures associated with rehabilitating the Tongue River dam.

The Badger Creek Ranch consists of 957 acres located along the upper Tongue River Valley. Both the Tongue River and Badger Creek flow through the ranch for distances of 1.6 and 1.0 miles, respectively. The proximity of riparian zones, bottomlands, and sagebrush grassland uplands with hiding habitats for larger game in the Rocky Mountain juniper communities makes the ranch highly productive wildlife habitat Wildlife on the ranch includes mule deer, whitetail deer, wild turkey, sharp-tailed grouse, Canadian geese, pheasants, and many species of non-game wildlife.

Mule deer at dusk *- Photo Courtesy of Jane Horton*

The easement will maintain the agricultural value of the land while protecting the wildlife habitat, particularly the wetland/riparian areas, the sagebrush grassland plains, and the conifer vegetation community. Additional benefits include keeping valuable lands in private ownership for agricultural use, rewarding the landowner for its role in wildlife management, and providing public recreational opportunities.

The conservation easement prohibits certain activities on the property including subdividing the land, eradicating sagebrush, harvesting timber, strip mining, draining wetlands, operating a commercial feedlot, leasing hunting opportunities, disposing of public waste or increased tilling of land. The landowner reserves the right to pasture and graze livestock in accordance with the management plan, regulate public use of the land, develop and maintain water resources, maintain historical ranch buildings and improvements, and cultivate existing fields. A baseline report documenting current ranch conditions was prepared in house by Jane Horton, GIS program manager, and will serve to resolve potential disputes.

The department and landowner will jointly conduct periodic management plan reviews and site visits. The management plan may require modifications to ensure that the goals of the conservation easement are met.

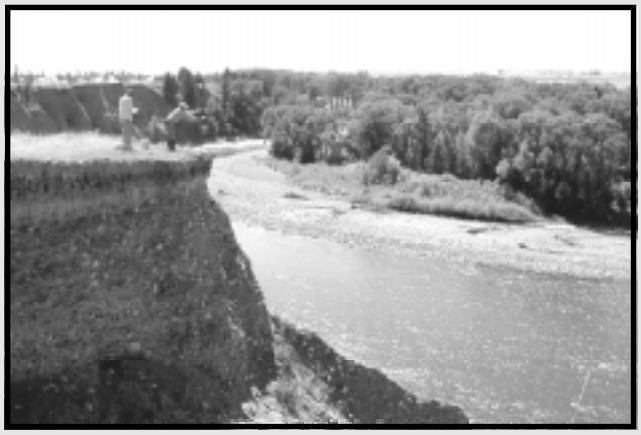
(Gerald Mueller continued from Page 1)

is finding a balance between the needs of the people and businesses with the legal right to use water with the needs of the stream itself."

Gerald thinks that the most challenging long-term water questions that matter today are, "Who will manage our water, and how will they manage it? The state must find the means to allow water to be managed locally and collaboratively, by watershed. It must be managed locally because neither the federal or state governments will ever again have the people or dollars to manage it through some centralized system."

According to Gerald, "Ultimately, local people determine water allocation and quality. It must be managed by watershed because water usage ties the people in watersheds together. Water resources are not discrete from the landforms and ecosystems that give rise to them and, in part, determine their quality. Water resources must be managed collaboratively because all of the interests in water - agriculture, hydropower, municipal, recreation - need each other and our legal and political systems will not allow any one interest to dominate the others. Agriculture alone will be unable to pay for water systems and water management. Urbanites need farmers and ranchers not just for food and fiber, but for open space, fish and wildlife habitat, and access to recreation."

2001 PHOTOS



Upper Yellowstone River. DNRC Water Management and Water Projects personnel conducted a GPS survey of major eroding banks as part of Yellowstone Cumulative Effects Study - Photo by Jim Robinson

A DNRC continuous streamflow gage on the Smith River above Fort Logan. The Smith River Hydrology Study completed it's second field season in 2001. - Photo by Mike Roberts

North Fork Blackfoot River upstream of Ryan Bridge. The North Fork Blackfoot Hydrology Study was completed in March 2001. - Photo by Mike Roberts

Bair Dam Rehabilitation Project Begins Phase I, which included rock and overburden excavation was completed Fall 2001. Phase II, which includes a new spillway will be bid this winter - Photo by John Sanders

A YEAR IN REVIEW

MONTANA WATER TRIVIA

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