

Elkhead Creek Reservoir Enlargement: Project Completion and Releases Result in Increased Administration

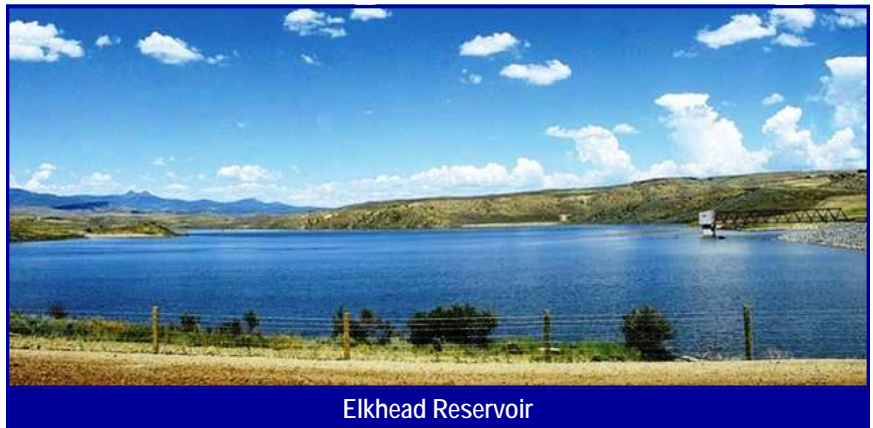
Jean Ray, Hydrographic Engineer, Division 6 Office, Steamboat Springs

Background

Elkhead Creek Reservoir (Elkhead Reservoir), located near the City of Craig in northwest Colorado, reopened for public use in the summer of 2007 following a 2 ½-year closure during which the dam was enlarged to approximately 25,000 acre-feet, roughly double the reservoir's original storage capacity. The Colorado River Water Conservation District (Colorado River District) managed the enlargement project and funded \$17.8 million of the \$31 million cost. The Upper Colorado Endangered Fish Recovery Program (Recovery Program) funded the remaining \$13.2 million. The additional water will be used to enhance the recreational amenity for the residents of northwestern Colorado, meet the current and future needs of people in the Yampa River Basin, and augment flows in the Yampa River to benefit the endangered fish.

History

Elkhead Reservoir opened in 1974 to provide lake fishing opportunities for northwestern Colorado and to provide water for the steam-powered turbines at Craig's coal-fired power plants. In 1990, the City of Craig purchased Elkhead Reservoir from the Colorado Department of Natural Resources (Division of Wildlife) to secure its' municipal water supply and provide recreation. At that time, it was



Elkhead Reservoir

recognized that new water supply issues within the basin had to be addressed. These included the following two primary concerns:

- Recovery of endangered fish species in the Yampa River — To comply with Federal Endangered Species Act guidelines and Recovery Program objectives, additional water releases were necessary to maintain adequate streamflow in the

Yampa River from late July through September. The Yampa River is the largest tributary to the Green River and plays an important role in the lifecycle of the endangered fish in the Upper Colorado River Basin (Colorado pikeminnow, humpback chub, bonytail, and razorback sucker). In addition to directly providing habitat, the Yampa River delivers flows and sediment downstream to the Green River, helping to maintain hundreds of miles of river habitat considered vital to the recovery of the four endangered fish species.

- Continued growth and development in the Yampa River Basin— The City of Craig and Moffat and Routt counties continue to grow and require additional water supply to accommodate projected growth in the region.



Colorado pikeminnow



Humpback Chub

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Elkhead Creek Reservoir Enlargement (cont.)

Yampa River Basin Management Plan

To address these issues, a basin-wide management plan was prepared and several alternative water supply scenarios within the Yampa River Basin were evaluated, including the Elkhead Dam and Reservoir enlargement. The plan addressed endangered species recovery, assessed water development in the Yampa River Basin, and projected water needs in the basin through the year 2045.

After more than a decade of close collaboration among local, state and federal organizations and Yampa valley residents, the management plan was completed and the Elkhead Reservoir enlargement was selected as the preferred alternative for implementation to address concerns in the basin. The expansion was approved to provide water to help sustain endangered fish populations without curtailing current or future human use of the Yampa River.

Elkhead Enlargement Completion

The enlargement was completed after several years of design and construction activities (refer to Streamlines Volume XIX, Issues 2 and 4). The total enlargement pool is approximately 12,000 acre-feet. Five thousand acre-feet of this enlargement is designated for in-river fish habitat and enhancement purposes and use in furtherance of the Recovery Program in the critical habitat reach of the

Yampa River (Yampa River from Craig to the Green River at Echo Park) for the four endangered fish species. An additional 2,000 acre-feet of water is available to the Recovery Program through a 20-year lease with the Colorado River District.

Water not dedicated to the Recovery Program is available for contract through the Colorado River District for future growth in Routt and Moffat Counties. Adding extra storage for human consumption at Elkhead Reservoir ensures that residents of Craig will have water to use now and in the future. The project also creates an improved recreational amenity for the region. Colorado State Parks and the City of Craig constructed improved camping, day-use, and boating facilities at the reservoir. The reservoir also serves as a sport fishery and receives nonnative sport fish removed from the Yampa River as part of efforts to recover the endangered fish.

Elkhead Enlargement Dedication

The public was invited to participate in the dedication of the enlarged Elkhead Dam and Reservoir on July 11, 2007 at Elkhead Reservoir State Park. The event, sponsored by the Colorado River District in cooperation with the Recovery Program, was attended by many area residents, as well as local, state, and federal representatives.

"The dedication of the enlarged Elkhead Dam and Reservoir is a landmark event for the State of Colorado," said Colorado Department of Natural Resources Director Harris Sherman. "The cooperation which led to its completion will serve as a model for other projects that will help the state



Elkhead Reservoir in early spring

achieve its concurrent goals of conserving threatened and endangered species while providing for recreational fishing opportunities. In addition, the project puts in place a plan for continued development of water resources under state water law to benefit all citizens of Colorado."

Sherman emphasized that the project was an extraordinary collaboration between state, federal, and local officials. "This project is so important," he said. "It provides necessary water to the City of Craig for future economic development, while supplying water for the Craig Station and for the endangered fish. It made water available to broaden the recreational facilities in the State of Colorado, and achieved a balance between the needs of the people and conservation."

Division 6 Administration Activities

District 44 Water Commissioners have the responsibility to protect the water released from Elkhead Reservoir and to deliver the water to and through the critical habitat reach. In August 2006, in anticipation of a potential release in 2007, over sixty letters requesting the installation of suitable and proper headgates and/or measuring devices were sent to water users on Elkhead Creek below Elkhead Reservoir and on the Yampa River from its confluence with Elkhead Creek to the Green River. Thirty-three orders were issued in July 2007 to those water users who had not complied. In November 2007, twenty-four extensions of time (until June 30,



Spillway on enlarged Elkhead Reservoir

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Elkhead Creek Reservoir Enlargement (cont.)

2008) were granted to those water users who had still not installed appropriate devices. District 44 Water Commissioners verified compliance this summer. After this time, if devices have not been installed, further enforcement action will be taken.

Administrative procedures were developed in early 2007 to deliver water released from Elkhead Reservoir past numerous structures and through the critical habitat reach. There were several discussions of potential “test” releases of stored water in the summer of 2007 for the purpose of determining losses, as well as allowing Division 6 the opportunity to develop a workable plan for the delivery and protection of the waters. In addition, Division 6 personnel continued to work with the water users on the lower Yampa River in understanding the administrative procedures associated with the delivery of reservoir releases for the endangered fish species.



New flume on the Deep Cut Ditch

In the summer of 2007, as a result of low flows on the Yampa River through the critical habitat reach, water was released from Elkhead Reservoir for in-river fish habitat and enhancement uses. Water was delivered to and through the critical habitat reach in August and September of 2007. Releases were made from Elkhead Reservoir starting August 1 at a rate of 40 cfs and ran until August 9 and then resumed on August 13 at the rate of 46 cfs. Based upon target flow rates at the Maybell gage, releases were made at



Maybell Canal diverts water from the Yampa River within the critical habitat reach

varying rates until September 20 when rain events resulted in increased flows in the Yampa River and the flows no longer needed to be supplemented. In total, approximately 5,000 acre-feet were released and protected through the critical habitat reach by regulating all diversions. The Colorado River District is likely to apply to make this amount absolute in Water Court in 2008.

One major problem associated with the delivery is determining the level of transportation loss that will be assessed to the reservoir releases. Many measurements were taken by Division 6 on Elkhead Creek and the Yampa River to assist with determining transit losses during the release of reservoir water in August and September 2007. Several spreadsheet models were prepared based upon these flow measurements and flows at the stream gages on Elkhead Creek and on the Yampa River between Hayden and Maybell. In addition, Division 6 requested the assistance of other Division of Water Resources (DWR) staff and the Colorado Water Conservation Board (CWCB) to incorporate these data into previous basin modeling efforts to assist with loss determinations. Preliminary review of the data indicate that the majority of the loss appeared to occur in Elkhead Creek, which was basically dry at the time the release was

initiated. The Colorado River District has recently contracted with the United States Geological Survey (USGS) to further evaluate stream loss, particularly on Elkhead Creek. The USGS has installed an additional gage on Elkhead Creek to assist in the determination of streamflow losses. Until sufficient additional data are collected and evaluated,

a standard transit loss value of ten percent is being applied from the reservoir through the critical habitat reach.

The Future

With the first year of releases complete, Division 6 looks forward to continued cooperation with the Colorado River District, CWCB, Fish and Wildlife Service, City of Craig, and others in the delivery and protection of water released from the enlarged Elkhead Reservoir. One major activity for 2008 is to assure that all headgate and measuring device orders issued in 2007 on Elkhead Creek below Elkhead Reservoir and the Yampa River downstream of Elkhead Creek are in compliance. In addition, Division 6 will continue to work with other entities to assess transit losses and assure that water released for the fish are protected through the critical habitat reach.



Elkhead Reservoir after enlargement



CALENDAR OF EVENTS

- September 16-17** Colorado Water Conservation Board Meeting, Alamosa, Colorado; for more information, contact Lisa Barr at 303-866-2599
- October 2-3** Colorado Water Officials Association 2008 Annual Meeting, REI Flagship Store, Denver, CO; for more information, contact Marta Ahrens at 303-866-3581
- October 7** Colorado Board of Examiners of Water Well Construction and Pump Installation Contractors Meeting, Denver, Colorado; for more information, contact Gina DeArcos at 303-866-3581

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