



THE STATE OF WYOMING

Water Development Office

6920 YELLOWTAIL ROAD TELEPHONE: (307) 777-7626 CHEYENNE, WY 82002
FAX: (307) 777-6819



TECHNICAL MEMORANDUM

TO: Water Development Commission

DATE: July 13, 2012

FROM: Interstate Streams Division,
Wyoming State Engineer’s Office

REFERENCE: Snake/Salt River Basin Plan
Update, 2012

SUBJECT: Salmon Recovery Efforts in the Snake River Basin – *Tab XX (2012)*

Contents

1.0 Introduction.....	1
2.0 Background.....	1
3.0 Million Acre-Feet Study	2
4.0 Conclusion	4
References.....	5

1.0 Introduction

Wyoming is a headwaters state. Wyoming sits at the top of nearly every major river basin west of the Mississippi River, including the Snake/Salt River basin, the major tributary to the Columbia River. As such, the beneficial use of water within Wyoming can often be influenced or affected by the issues and decisions made by others located downstream of Wyoming. While interstate compacts provide certainty for the long-term development and use of Wyoming’s apportioned water resources, new issues important to a larger public beyond Wyoming and often derived from enactments of federal law, periodically bring pressures upon and affect the use and management of water in Wyoming. In this regard, the State of Wyoming, through the State Engineer’s Office, is routinely engaged in a variety of “downstream issues” to represent and protect the State’s water interests.

2.0 Background

In the Snake River basin, the primary downstream issue relates to the on-going efforts at recovering a variety of salmon and steelhead fish species that are listed as either threatened or endangered by the National Marine Fishery Service (NMFS) pursuant to the Endangered Species Act (ESA). These anadromous fish species are located along the Columbia River and Lower Snake River in western Idaho. Interestingly, there are additional listed species of trout, snails and plants located along the Snake River upstream of the river reaches directly affected by the salmon and steelhead yet downstream of the Wyoming/Idaho border. These ESA listings are under the management of the Fish and Wildlife Service (FWS) and the flow and habitat needs of these species often conflict with the desired flow regimes for the listed anadromous fish. In the field of water resources, the extent of influence from the ESA is often directly related to actions or decisions made by federal agencies such as the Bureau of Reclamation (Bureau)

regarding their dam and reservoir projects, the Corps of Engineers (COE) regarding Clean Water Act Section 404 permitting decisions, or the Forest Service regarding Special Use Permit decisions. These are but a few examples of the federal actions that can trigger a biological review pursuant to the implementation of the ESA.

For a number of years federal agencies, primarily through the COE and NMFS, have committed extensive financial resources to a variety of scientific studies and structural changes to existing COE dams and hydropower plants. River and reservoir operational changes within the Columbia River system were also addressed. One of the many options and potential solutions targeted for species recovery that was identified in the 1995 Biological Opinion of the NMFS on the Federal Columbia River Power System, focused on a COE juvenile migration study responding to concerns about the declining propagation of the listed salmon and steelhead. This study evaluated methods of moving the juveniles more rapidly to the ocean.

Of the contentious alternatives evaluated, one option proposed to augment the natural flow of the river system by increasing the downstream river flow velocity to convey the juvenile fish to and through the Columbia River and the existing set of mainstem reservoirs, to the ocean. Another controversial alternative to achieve this same migration result was an evaluation of the removal of some of the mainstem COE dams and reservoirs, thereby eliminating flow impediments and slack water regimes. With regard to river flow augmentation, the COE and NMFS requested that the Bureau evaluate their Upper Snake River reservoir operations and identify additional water resources that could be committed to the recovery of the listed fish species. Separate from facilities owned by Idaho Power Company, all of the larger reservoirs in the Snake River system upstream of Lower Granite Dam are owned and operated by the Bureau. This system of reservoirs has a combined capacity of about 7 million acre-feet (AF) of active storage space. While most of this space is contracted for irrigation purposes, some quantities are also assigned to environmental quality, other water supplies, and flood control purposes.

In 1995, the Bureau agreed to annually provide 427,000 AF of water to these efforts. Depending on water availability, half of this amount is derived from the Upper Snake River Rental Pool, the purchase of a small amount of natural flow water rights, and un-contracted storage space in the Bureau's extensive Snake River reservoir system and the other half from the Boise and Payette River basins. This initial commitment of water did not significantly impact the operations of Palisades or Jackson Lake Reservoirs, or the Snake River flow regime through Wyoming. However, the Bureau has reported that there have been some problems and concerns expressed by residents, irrigators, the states, tribes and elements of the federal government.

3.0 Million Acre-Feet Study

In 1997, the COE requested that the Bureau analyze the effects of providing flow augmentation for the listed species at a level of an additional one million (1,000,000) AF of water from the entire Snake River basin upstream of Lower Granite Dam. This is a commitment of water beyond the 427,000 AF already being provided for the recovery efforts. This study evaluated the possible effects of acquiring both natural flow water rights and reservoir storage space in Bureau facilities located in the Boise, Payette and Owyhee River basins, as well as the upper Snake River. The Bureau study developed new water demand schedules up to a total of 1,427,000 AF under several reservoir operation scenarios and then evaluated the environmental, economic,

social, cultural and recreational effects of meeting these new demands. Admittedly, due to limited time and study scope, the Bureau's analysis was theoretical and presented general results on a broad basin-wide basis. Indeed, the actual selection of any particular water right or source would have a direct bearing on the specific, and degree of, potential impacts.

The Bureau study identified a block of water coming from natural flow water rights in Wyoming (approx. 30,000 AF) as well as from other areas of the basin. The Bureau simply assumed for their study that they would be able to acquire certain quantities of water rights from existing appropriators in Wyoming, and from Nevada, Idaho, and Oregon, that would be a portion of the additional one million AF. These blocks of water would then be managed together with significant amounts of water from reservoir storage space in Bureau reservoirs that would also be acquired or re-assigned from irrigation to the new purposes under evaluation, pursuant to federal and state laws. The amount of actual water yield was then estimated and routed through the reservoir and river system using a computer simulation model over a 62-year period of historic streamflow conditions from 1928 to 1989. This period of record provided results that could be reviewed under wet (1983), dry (1977), and average hydrologic circumstances.

The results from the model were used to evaluate the potential effects or impacts upon other resources in the river basin. These included: 1) potential shortages to the irrigation of lands under Bureau projects, 2) the comparison to, or effect upon, the historic reservoir levels, minimum pools, and river flow regimes, 3) cultural resources at the reservoirs, 4) any impacts upon Tribal Trust assets, 5) water based recreation along the rivers and at the reservoirs, portions of which are located within or near national and state parks, national forests, wildlife refuges, and similar facilities, 6) other threatened and endangered species in the river basins, 7) the National Wild and Scenic Rivers system, and 8) a social/economic analysis particularly related to the local communities associated with irrigated agriculture and recreation activities. The study conclusions were varied depending upon the alternative operating scenario, but not surprising, the impacts were considered significant in many areas of the basin. Certainly not all of these resources were affected equally and indeed some modest tradeoffs of impacts and benefits were mentioned in the study, yet the overall sense of the concerns and conclusions presented, clearly identified the problems of implementing such a large and unprecedented water acquisition program.

Because of the abbreviated and broad basin-wide nature of the Bureau study, specific and definitive impacts on the resources within Wyoming are not provided. A summary of the general findings related to Jackson Lake and Palisades Reservoir are:

- 1) In the areas where natural flow water rights are acquired, the report indicated there would be job losses related to irrigated agriculture and the quality and character of rural communities would be irreversibly changed.
- 2) The recreation impacts, measured in terms of visitations, had predictable losses ranging between 6 and 14 percent for river recreation and between 1 and 11 percent for the reservoirs.
- 3) Negligible changes were identified between the current or base conditions and the additional one million AF conditions for the cultural, wild and scenic rivers and Indian trust asset resources.

- 4) Slightly adverse impacts were identified for the quality and amount of habitat for aquatic snails, bald eagles, plants and other general fish species. Slight decreases in water quality were also noted in the Wyoming river reaches.
- 5) Some improvements in streamside wildlife and riparian areas were anticipated.

The Bureau properly noted that the costs and degree of local opposition to an acquisition program such as this would be substantial. Even though the Bureau recommended willing buyer/willing seller types of water right transactions, it noted even those arrangements would require a lot of time, resources and state approval to provide proper protection of the water acquired and conveyed to the location of the new use. The Bureau also mentioned the high social and political price that could be paid if an aggressive and heavy-handed approach to water acquisitions was pursued, whether from federal storage space contractors or natural flow water rights. These less desirable options included those legally based on federal takings and prior and superior claims legal arguments. The Bureau noted that those approaches would be resisted strenuously by many water and power users and other constituents by all legal means.

The Bureau's "million acre-feet study" was submitted to the COE and since that time no further actions evaluating or implementing the options and alternatives presented have been pursued. Officials representing the State of Wyoming's interests were and continue to be involved in monitoring this study and other related ESA efforts downstream of the Wyoming/Idaho border.

4.0 Conclusion

The efforts to recover the salmon and steelhead fish and other habitats of threatened and endangered species continue. Indeed a huge variety of state, federal and private efforts continue to look for acceptable science based solutions to the declines of these species. Solutions based on the water and habitats located in the historic downstream areas of the Snake and Columbia River that do not affect the river regimes and water resources within Wyoming, would likely be supported. Since these are water based species, the State of Wyoming should continue to monitor the efforts of the federal agencies and others and to stay involved where necessary to assist with the recovery, all the while protecting the State's ability to reasonably develop and beneficially use the waters allocated to the state for use in the Snake/Salt River basin.

For further information, please go to:

www.bpa.gov/power/pg/columbia_river_inside_story.pdf

References

U.S. Department of Commerce, National Marine Fisheries Service, Northwest Regional Office, Federal Columbia River Power System (FCRPS) Biological Opinion, May 2008 (revised from March 1995)

https://pcts.nmfs.noaa.gov/pls/pcts-pub/pcts_upload.summary_list_biop?p_id=27149

U.S. Department of the Interior, Bureau of Reclamation, Pacific Northwest Region, Snake River Flow Augmentation Impact Analysis, February 1999

<http://www.usbr.gov/pn/programs/maf/pdf/1maf.pdf>