



WATER RESOURCES RESEARCH GRANT PROPOSAL

1. **Title:** Meeting Time Dependent Instream Flow Requirements in a Fully Appropriated Multi- State River Basin
2. **Focus Categories:** LIP, ECON, M&P, MOD, WS
3. **Keywords:** Institutional adjustments, economics, multiple-objective planning, decision models
4. **Duration:** September 1, 1998 – August 31, 2000
5. **Federal Funds Requested:** \$291,192
6. **Non-Federal (matching) funds Pledged:** \$610,022
7. **Principal Investigators:**

PI: Dr. Robert Young, economist (emeritus), Colorado State University

PI: Dr. Marshall Fraiser, economist, Colorado State University

CO PI: Dr. Ari Michelsen, economist, Washington State University-Vancouver

CO PI: Dr. James Booker, economist, Alfred University, NY

CO PI: Dr. Garth Taylor, economist, University of Nebraska

CO PI: Dr. Timothy Gates, hydrologist, Colorado State University

CO PI: Dr. Steve Gloss, biologist, University of Wyoming

CO PI: Dr. Mark Squallace, Lawyer, University of Wyoming

CO PI: Dr. Robert Ward, hydrologist, Colorado State University

CO PI: Dr. Ray Huffaker, economist, Washington State University

Consultant: Dr. Larry MacDonnell, natural resources attorney

8. **Congressional Districts:** (districts of universities where research is conducted)

Colorado State University, Ft. Collins, CO (CO District #4)

University of Nebraska, Lincoln, NE (NE District #1)

University of Wyoming, Laramie, WY (WY At Large)

Washington State University – Pullman, WA (WA District #5)

Washington State University – Vancouver, WA (WA District #3)

Alfred University, Alfred, NY (NY District #31)

9. Statement of critical regional or State water problems:

As is true for most rivers in the west, the Platte has been transformed into a highly regulated system designed to maximize use of its water resources for economic and direct human uses. A vast physical infrastructure captures, pumps, and delivers water for offstream uses, especially irrigated agriculture. The water laws of these states have evolved to protect past investments in water development of this type and define the management rules for water usage. Now this highly structured, extensively developed system faces a major challenge: integration of the aquatic ecological needs of native plant and animal species—especially those listed as threatened or endangered under the Endangered Species Act.

It is apparent that the institutions of these states are not prepared to easily accommodate a smooth reallocation of water to this type of use. The states of Wyoming, Nebraska, Colorado and the federal government (U.S. Dept. of the Interior) have entered into a three year cooperative agreement to further evaluate and identify options for a habitat recovery program for endangered species in the Platte River basin. To date there has been no comprehensive analysis conducted for providing information needed to reallocate water to instream uses with minimal economic disturbance. Increasing population and growing demands placed on land and water resources elsewhere in the system magnify the impact sustained in reallocating water resources. These forces are increasing the potential benefits that would result from a comprehensive analysis of alternative means to deliver water to these instream uses.

10. Statement of results or benefits:

This project will identify and evaluate potential means to reallocate water to the central Platte Basin and the capability of existing and potential infrastructural and institutional systems to respond in providing the desired flows. In particular, this research will develop a conceptual analytical framework in which to evaluate the feasibility, effectiveness, and economic and hydrologic impacts of alternative approaches for supplying additional instream flows to the central Platte River in Nebraska. The information gleaned from the project will help policy makers charged with determining the ultimate reallocation of surface flows, local water managers who are responsible for water supply contingency planning, and other researchers focusing on the issues of water allocation in complex institutional and hydrologic settings.

The methodologies employed by the study will be of interest to water managers and researchers addressing water allocation and a management in other over-appropriated

basins. Alternative water allocation strategies developed by this project will outline important management options for increasing coping capacities. Additionally, the project will identify important information that can be used by managers to best deal with opportunities presented as demands for water in competing uses continue to increase. Through this project, we will communicate and exchange information directly with those water managers and decision makers who are affected.