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WATER RESOURCES

**Corps' Management of
Reservoirs in the Missouri
River Basin**

James Duffus III, Director,
Natural Resources Management Issues,
Resources, Community, and Economic
Development Division



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Mr. Chairman and Members of the Committee:

I am pleased to be here today for the Committee's hearing on the status of the revisions that the U.S. Army Corps of Engineers is making to its Missouri River Master Manual. As agreed, my remarks will be limited primarily to our January 27, 1992, report on the Corps' management of the Missouri River reservoir system under drought conditions in 1988, 1989, and 1990.¹

In summary, we reported the following:

- The Corps acted consistently with its drought contingency plan in releasing water from the reservoir system during the 3 years and all of the purposes served by the reservoirs were adversely affected except flood control.
- The plan does not reflect current economic conditions in the Missouri River basin, although the Corps' ongoing revisions to its Master Manual are expected to address this issue.
- Contrary to what the Corps believed, federal statutes do not require the Corps to give recreation a lower priority than other project purposes--flood control, navigation, irrigation, and the generation of hydroelectric power--in major decisions about water releases.
- The Congress should consider legislation requiring the Corps to establish priorities for operating its reservoir projects on the basis of the economic, environmental, social, and other benefits of all authorized purposes.

Background

The Corps operates six dams on the Missouri River--located above Sioux City, Iowa--as an integrated system. Water in the reservoirs makes possible commercial navigation between Sioux City and St. Louis, Missouri; generates hydroelectric power; provides municipal and industrial water supplies; and supports recreation industries in Montana, North Dakota, and South Dakota. The Corps manages the system according to its Master Manual, first published in 1960, and operating priorities established in 1952.

The Corps can fulfill all purposes of the Missouri River reservoir system under normal operating conditions. However, in 1988, 1989, and 1990, drought prevented the Corps from meeting all users' demands for water. Competition for the available

¹Water Resources: Corps' Management of Ongoing Drought in the Missouri River Basin (GAO/RCED-92-4, Jan. 27, 1992).

water supply increased, particularly between recreation interests in the upper basin and navigation interests in the lower basin below the reservoirs.

Corps Followed Its Drought Contingency Plan in 1988, 1989, and 1990

Declining water reserves in the Missouri River system triggered the Corps' drought contingency plan in July 1988. Following the plan, the Corps maintained normal water releases during a shortened 1988 navigation season to offset the lower-than-normal runoff into the river downstream of the reservoirs. The Corps then reduced water releases during the winters of 1988-89 and 1989-90, shortened the 1989 and 1990 navigation seasons, and reduced the 1989 and 1990 navigation streamflows.

We estimated that if the Corps had not reduced its service to navigation and hydroelectric power during the 1988-1990 drought period, it would have released about 61.2 million acre-feet² of water. Corps records show that the volume released was about 50.8 million acre-feet, or 17 percent less than under normal operations. As of December 31, 1990, operations in response to the drought had used about 42 percent of the water normally held in reserve for use during a drought. The Chief of the Corps' Reservoir Control Center in Omaha, Nebraska, estimated that as of September 1991, the reservoirs needed 4 to 6 years of normal runoff to return to normal operating levels.

Drought Adversely Affected All Purposes Except Flood Control

Data we obtained from the Corps, state officials, industry representatives, and private individuals indicated various impacts of the drought. Municipal, industrial, and rural water supplies above and below Sioux City experienced pumping and other problems because of the level of their intakes. Below Sioux City, commodity shipments on the river declined. Above Sioux City, hydroelectric power generation declined, private irrigators lost their water supplies, and receding shorelines left boating facilities at the upper three reservoirs on dry land and reduced the habitat for fish.

Some of the Corps' Assumptions About Demand for Water Are No Longer Valid

According to the Corps, the Congress approved the Missouri River reservoir system in 1944 to improve the basin's economic climate. At that time, the system's planners believed that they

²An acre-foot is about 326,000 gallons--the volume of water necessary to cover 1 acre to a depth of 1 foot.

could achieve this by (1) providing flood control, river transport for the lower basin's products, and irrigation for the upper basin's arid farmlands and (2) generating power for inhabitants throughout the basin.

Conditions supporting these assumptions have changed over time. In 1944, the Corps estimated the demand for river transport of goods at 12 million tons annually. Estimates developed in the 1950s reduced this projection to about 5 million tons by 1980. At the peak of commercial navigation in 1977, 3.3 million tons of goods were shipped on the Missouri River. As of 1988, the tonnage shipped on the river had declined further to 2.2 million tons. In addition, the federal government never constructed the massive irrigation projects anticipated in 1944; these projects would have used the reservoirs' water to irrigate 2.2 million acres of farmland. Conversely, other impacts were not anticipated in developing the plan, such as the impact of the recreational use of the reservoirs in terms of the revenues recreation industries could provide for North Dakota, South Dakota, and Montana.

The Corps is revising its Master Manual because information in the manual is outdated and because users of the Missouri River reservoir system have questioned the Corps' operation of it. In updating its manual, it is important that the Corps obtain the most complete and up-to-date information as possible about the demand for water. For example, information we obtained during our review showed that visitors to the reservoirs spent about \$65 million in 1988. On the other hand, gross revenues from barge companies were about \$17 million in 1988. Further, a June 1991 report which assumed a complete loss of navigation on the Missouri River estimated that Missouri's net farm income would decline by more than \$105 million in 1991. These are examples of the types of data the Corps should gather and use in reviewing various operating alternatives as it updates its manual.

Recreation is Considered Secondary To Other Authorized Purposes

At the time of our review, the Corps interpreted section 9 of the Flood Control Act of 1944, which authorized construction of the Missouri River reservoir system, to require that authorized purposes be categorized as either primary or secondary. The Corps also believed that secondary purposes, under which it included recreation, had to be relegated to a lower operating priority than primary purposes. As a result, according to the Corps, recreational use of the reservoirs was not a factor in the Corps' major decisions about water releases during the drought. Corps officials said they would not give priority to recreation over other purposes, even if their analysis showed that the change in priority could increase total benefits from the system, because of the Corps' position on

primary and secondary purposes. They said that congressional approval would be needed to change existing operating priorities.

In February 1991, three upper basin states--Montana, North Dakota, and South Dakota--filed a lawsuit in federal court challenging the Corps' policy of categorizing a project's authorized purposes as primary and secondary. In essence, the states argued that because recreation is an authorized purpose of the Missouri River reservoir system, it is not a secondary purpose for which water is available only if it is left over after other purposes have been satisfied.

As stated in our report, our review did not reveal a statutory scheme for categorizing project purposes as primary and secondary, and we see no appropriate statutory basis for precluding from consideration the economic and other benefits of any authorized purpose in establishing operating priorities for the reservoir system.

To ensure that the Corps maximizes the economic and other benefits of all authorized purposes of the Missouri River reservoir system and other Corps water projects, our report recommended that the Congress consider enacting legislation to require that the Corps establish operating priorities for its reservoir projects on the basis of the economic, environmental, social, and other benefits to be derived from all authorized purposes.

Several changes have occurred since we issued our report almost 2 years ago, including (1) the Corps' assurances that it will consider all authorized purposes equally as it revises its Master Manual and (2) the court dismissing the lawsuit without prejudice on the basis of the Corps' assurances. While we defer to the Corps concerning the specifics and status of their analysis and revisions, such a change in policy, if implemented, would be consistent with the thrust of our report.

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Mr. Chairman, this concludes my statement. I will be happy to answer any questions that you or other Members of the Committee may have.

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