

Missouri River Association of States and Tribes

Section 108 study, 1944 Flood Control Act
Potential questions and issues to be studied

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In the FY 2009 Omnibus Appropriations Act, Congress authorized and provided first year funding for a study of the Missouri River Projects to determine if changes to the authorized project purposes and existing federal water resource infrastructure may be warranted. Section 108, Division C of the Act reads as follows:

The Secretary is authorized to conduct a study of the Missouri River Projects located within the Missouri River basin at a total cost of \$25,000,000 with the express purpose to review the original project purposes based on the Flood Control Act of 1944, as amended, and other subsequent relevant legislation and judicial rulings to determine if changes to the authorized project purposes and existing Federal water resources infrastructure may be warranted: Provided, That this study shall be undertaken at full Federal expense.

This provision appears to be consistent with the action taken by the Missouri River Association of States and Tribes (MoRAST) at its February 25, 2008 meeting to request a study to determine whether changes are needed to the congressionally authorized purposes of the 1944 Flood Control Act (FCA) in order to best meet the contemporary needs of the Missouri River Basin. Ultimately, this study may allow a new comprehensive plan to be developed to meet those needs in the Missouri River Basin.

On April 27, 2009, MoRAST sent a letter to the Assistant Secretary of the Army (CW) to offer suggestions for inclusion in the implementation guidance for the Sec. 108, Missouri River Study. That letter focused on process issues related to the management of the study, but indicated that MoRAST expects to provide future recommendations regarding the scope of the study and issues that we believe should be reviewed as a part of the study.

Purpose: The purpose of this document is to outline a preliminary list of the issues and questions that should be addressed by the study in order to help determine the scope of the study and ultimately whether changes should be made to the 1944 FCA, as well as Federal water resources infrastructure in the basin.

Background: The Missouri River Basin includes parts or all of 10 states and 28 Tribal Nations. The mainstem of the river flows through seven states – Montana, North Dakota, South Dakota, Nebraska, Iowa, Kansas, Missouri, and the lands of many of the 28 Tribal Nations in the Missouri River Basin. The Missouri River runs 2300 miles from Three Forks Montana to its confluence with the Mississippi River near St. Louis, Missouri and the watershed covers approximately 50,000 square miles and one-sixth of the U.S. It is an extremely diverse basin in many respects. Its geography varies from the mountains of Colorado, Montana and Wyoming with some peaks as high as 14,000 feet above sea level to the low lands of Missouri of less than 500 feet. The climate varies from arid and semi-arid to sub-humid. There

are sparsely populated rural areas, major cities, grasslands and rich agricultural areas, valuable natural and environmental resources and significant cultural diversity among the basin's people.

Serious flooding and major droughts are a fact of life in the Missouri River Basin, the water source being plains snowpack, mountain snowpack, rain events or a combination of the three. Early flood events occurred in 1908, 1909, 1915, 1935, 1942 and multiple events in 1943 and 1944, several of which resulted in loss of life and large economic damages. The drought of the 1930's caused major economic losses and social disruption. It contributed to the hardships of the Great Depression, although other significant droughts have also occurred.

At the very time of these floods, Congressional debate occurred on the 1944 Flood Control Act legislation that would provide for installation of enormous dams on the Missouri River and other smaller dams on the tributaries. During the debates, the Congress recognized ongoing damage to various facilities as well as the loss of agricultural production caused by the flooding.

The Missouri River legislation started with the "Pick" plan proposed by the U.S. Army Corps of Engineers (USACE). H.R. Doc. No. 78-475 (1944). Named for its primary author, Col. Lewis Pick, the plan recommended five large mainstem dams on the river, 1500 miles of levees and many small reservoirs on the tributaries. The plan was to provide for the "most efficient" use of the river "for all purposes, including irrigation, navigation, power, domestic and sanitary purposes, wildlife, and recreation." On the other hand, the Bureau of Reclamation (USBR) presented a plan authored by William Sloan that proposed three dams and numerous tributary reservoirs. S. Doc. 78-191 (1944). The Sloan Plan was also for "multiple purposes.", but emphasized irrigation for economic stability and hydroelectric power for economic growth. The Secretary of the Interior also stated that "[s]ubstantial and material benefits would accrue through recreational use of the waters and facilities proposed."

The USACE and USBR reconciled their differing plans in a Joint Report. In the FCA44 Congress adopted the two plans "as revised and coordinated by [the Joint Report]." The Report states that the basin's development is to secure benefits for "flood control, irrigation, navigation, power, domestic and sanitary purposes, wildlife, and recreation."

The 1944 Flood Control Act, PL 534, Seventy-eighth Congress, Second Session, 58 Stat. 887 (December 22, 1944), 33 U.S.C.A 701 et seq., declared that it was "...the policy of the Congress to recognize the interests and rights of the States in determining the development of the watersheds within their borders and likewise their interests and rights in water utilization and control, as herein authorized to preserve and protect to the fullest possible extent established and potential uses, for all purposes, of the waters of the Nation's rivers; to facilitate the consideration of projects on a basis of comprehensive and coordinated development; and to limit the authorization and construction of navigation works to those in which a substantial benefit to navigation will be realized therefrom and which can be operated consistently with appropriate and economic use of the waters of such river by other users."

Adoption of the 2004 Master Water Control Manual by the USACE and Litigation regarding the operation of the reservoir system: The USACE operates the Missouri River Reservoir System in accordance with a Master Water Control Manual, which had not been modified since 1979 until 2004. Additional more limited changes to the Master Manual were made in 2006. After about 15 years of study,

process and consideration, the 2004 Master Manual was issued by the USACE on March 19, 2004, along with the 2004 Annual Operating Plan and Record of Decision (ROD).

During the Revised Master Manual review, the USACE calculated the National Economic Development (NED) values for the various uses of the Mainstem Reservoir System and determined that the total NED was \$1,782 million as of May of 2003. The largest value was for Hydropower at \$668 million, followed by Water Supply at \$610 million (including irrigation and water quality). Flood Control was valued at \$410 million, Recreation (reservoirs) at \$60 million, Recreation (river reaches) at \$25 million and Navigation at \$9 million. Some have noted the challenge in determining these values and comparing one use to another, and much could be said about the value of each and how they relate to each other the needs of the basin.

In *In re: Operation of the Missouri River System*, 363 F. Supp. 2d 1145 (D. Minn. 2004), Judge Magnuson issued his Memorandum and Order disposing of all issues in the consolidated cases. Judge Magnuson reviewed the cases cited above and reiterated that the FCA requires that the Corps must strike a balance among many interests, including flood control, navigation and recreation, but that the FCA “does not require a particular outcome but rather that the Corps consider all interests in its operations.” Judge Magnuson ruled that all river interests must be considered and evaluated to ‘secure the maximum benefits’ to river interests, that the Corps’ prioritization of river interests is discretionary, but that the Corps is not entitled to abandon these interests; it must consider and balance river interests to achieve maximum benefits.

In the second decision of the Eighth Circuit issued on appeal of Judge Magnuson’s decision, the Eighth Circuit noted that arguments based on the wisdom of priorities established by the FCA must be addressed to Congress. It held that even though the USACE 2004 Master Manual provided for decreased navigation flows during time of drought; it was adequate considering that it did not abandon navigation, but the Court noted that it did not rule out the possibility that more limited support for flood control or navigation could be held to be abandonment of these dominate functions. The Court quoted with approval its earlier decision in *South Dakota v. Ubbelohde* and generally affirmed the judgment of the Magnuson decision. *In re: Operation of the Missouri River System Litigation*, 421 F. 3d 618 (8th Cir. 2005).

Summary of changes since 1944: There have been many changes in the physical, economic and environmental conditions since 1944. The Missouri River Mainstem Reservoir System is operated in accordance with the 1944 FCA for various authorized purposes including flood control, water supply, irrigation, hydropower, navigation, recreation and fish and wildlife. About 65 years have now passed since the 1944 FCA was enacted. While the construction of the reservoir system and other works have resulted in large project benefits from some of the authorized purposes and much less for others, it has also created substantial impacts to Indian Tribes and others, as well as large environmental losses, including wetlands and habitat for a number of native species. As a result, two birds and one fish are now listed as threatened or endangered pursuant to the Endangered Species Act, and many other species have suffered major declines.

While flood control and hydropower have provided substantial benefits as expected, much of the irrigation planned in the upper basin was not developed and the amount of commercial navigation

shipping has not met the expectations at the time the project was authorized. Recreation has grown far more than expected. Large benefits have occurred from municipal and industrial water supply, which has become increasingly important as the population has grown and multi-year droughts have occurred. Extended drought and low reservoir levels under current system operations, has caused serious impacts to various uses, including hydropower production, recreation, water supply and reduced navigation support. Drinking water supplies were directly impacted for several communities and expensive modifications were required to lower water supply intakes in the reservoirs and on the river downstream. Reductions in hydropower production resulted increased power rates. Ecosystem restoration and mitigation has become essential to recover the endangered species, avoid actions that jeopardize the continued existence of the endangered Pallid Sturgeon and allow other project purposes to continue to generate economic benefits. River degradation has threatened water supply intakes and other infrastructure at several locations. Increased sedimentation threatens the life of the mainstem and tributary reservoirs in the basin. In contrast, a reduction in the river sediment in the lower river has apparently negatively impacted the ecosystem.

Uncalculated or planned for was the economic devastation to the Tribal communities displaced by the placement of the Dams. The vast majority of lands flooded were Indian lands, including the displacement of entire communities. With the failure to fund irrigation projects to replace the bottomlands utilized for agricultural production, the failure to fund replacement infrastructure including but not limited to roads, water supply, schools, and hospitals inundated by dam construction, and the failure to provide funds for development of recreation based economies, unemployment rates of over 80% prevail in many Tribal Nations whose lands were inundated to this day. Calculations of the economic benefit of the Pick-Sloan Project do not account for these ongoing and unremedied economic losses.

The need for compliance with the National Historic Preservation Act and related laws to ensure that the historic and cultural sites impacted by Missouri River Operations are not damaged and destroyed is now well documented. The Tribes have identified thousands of sites that were not considered in 1944. There are many Tribal issues that have not been adequately addressed as a result of the impact to Indian Nations from the construction of the reservoirs on the Missouri River.

Potential questions to be addressed by the study:

A. Flood Risk Prevention:

1. How can flood prevention be improved?
2. How has the development of the Bank stabilization Navigation Project impacted floodplain development and management?
3. Can certain portions of the Missouri River Floodplain be utilized to serve both as a long-term flood water storage/conveyance area and at the same time these sections of the floodplain serve to benefit ecosystem restoration efforts? If so, how could this be implemented?
4. As reservoir storage is decreased over the long-term by sediment, how can flood water be better managed on the floodplain to both prevent damages and benefit restoration efforts?
5. Can we increase flood control downstream of the dams, especially below Gavins Point Dam, in order to provide a wider flow corridor for river sustainability and future flood control needs?
6. How can we make flood control work with ecosystem restoration?

7. If the river is given more of a floodplain, can it help reduce the stage of future floods?
8. What was the cost of the 1993 flood on the Missouri River to taxpayers?
9. Can the study include an analysis of the natural hydrologic regime and the relationship of current or potential flood prevention options to the health of the ecological system?
10. Is it feasible to develop a coordinated non-structural flood prevention system to supplement or modify the existing structural flood prevention system?
11. What is the value of flood prevention for the various river reaches and for the various components of flood plain development compared to the impact of flood control operations on other system purposes? How would these values change if the use of some portion of the floodplain is modified through ecosystem restoration?

B. Water Supply:

1. How can rural water supply (MR&I) needs be better met on Indian Reservations and throughout the basin?
2. How to best minimize water shortages and intake problems (reservoirs and river reaches) during drought?
3. How to meet water supply needs in urban areas, such as Kansas City in the face of major river degradation?
4. What will be the water quality impact to water supply systems as restoration efforts continue? If the river carries more sediment to become healthy, what adaptation will be required?
5. Are water supply systems designed to deal with more naturalized flows? If not, how will they need to be altered?
6. Water supply demands are increasing nationally. What role, if any, will the Missouri River have in meeting these demands?
7. How can operational, economic and public health impacts to water supply intakes for Tribes and major public water suppliers, and other users, due to low lake and river elevations, be resolved or improved?
8. How can operational impacts from sedimentation on intakes, as well as impacts to various other uses, such as power plants, industrial and irrigation uses and hydropower be resolved? Tribal and other communities removed from the River continue to have ongoing water access problems.

C. Navigation:

1. What is the cost benefit analysis to maintain navigation from several perspectives: a) cost to maintain the navigation channel structurally, b) cost in water usage, i.e. water unavailable for other uses such as recreation, lost head for hydropower generation and c) cost to restore the ecosystem with and without navigation.
2. What is the navigation benefit in a reach by reach analysis? How does the value and tonnage compare to other river systems in the Inland Waterways System in the United States?
3. What are the tonnage and value trends over multiple years?
4. What alternative avenues are available to haul commerce along the Missouri River? How do they compare and what are the impacts among alternatives?
5. Review other studies and recommendations regarding Missouri River navigation.

6. Within the rivers making up the Inland Waterways system, how many have lock and dams and how many have no locks and dams like the Missouri?
7. Is there technology for navigation which would require a shallower draft? Has it been used in other areas, if it is available?

D. Recreation:

1. What are the current recreation uses, the demands for water based recreation and the demand for better functioning recreation of a restored Missouri River in different sections of the basin? How can the demands be better served?
2. If the ecosystem is restored, how much increase in recreation can be expected in the future?
3. What are the different outdoor recreational activities currently being utilized throughout the system? Can any of them be increased when the ecosystem is restored?
4. How can impacts to reservoir fisheries and recreation uses, including reduced boat ramp access, and lack of replacement infrastructure in tribal communities to ensure river access as a result of dam construction be resolved?

E. Fish and Wildlife:

1. How will the Missouri River Ecosystem Restoration Plan be integrated with the Sec. 108 restudy?
2. What is the best way to create sandbar complexes in the channelized reach of the Missouri River?
3. What threatened or endangered species are on State lists, Federal lists, or both?
4. What are the 51 fish species the National Research Council reported as being rare, uncommon, and/or decreasing across all or a part of their ranges? What is the status of these species?

F. Hydropower:

1. What is the economic impact of drought on hydropower generation?
2. What is the decrease in generating capacity as reservoir levels are drawn down and what is the economic cost?
3. What is the economic and environmental benefit or impact if the operation of the reservoirs maximizes hydropower generation?
4. Can hydrokinetic turbines replace dams to generate power some day?
5. How can the detrimental effects of hydropeaking be ameliorated so downstream fluctuations can be diminished?
6. Can low level hydropower releases be modified to bring river temperatures up to normal historical river temperatures?
7. Are there new ways to supplement hydropower during droughts when very little water is being released from the dams, besides purchasing power from other producers?
8. How will additional development of other sources of energy affect hydropower production and other uses of the reservoir system?
9. How can lack of hydropower compensation to affected communities originally envisioned in the 1944 FCA cost-benefit analysis be considered?

G. Power Plants and cooling water:

1. What are the future water demands from the Missouri River for power plants and cooling?
2. A reassessment of thermal discharge criteria should be done.
3. What flows are needed for cooling with and without potential changes to thermal discharge criteria?

H. Irrigation:

1. How will climate change impact irrigation needs/water availability?
2. What opportunities are there for future irrigation development on Indian reservations and what role would the federal government play?
3. How does current irrigation development, both private and Reclamation projects, compare to the irrigation development planned in the Pick-Sloan Program? How much additional land is now considered suitable and economically feasible for irrigation?
4. What are the current and future potential impacts of irrigation development on depletions to the water supply?
5. How can losses to agricultural production from lack of irrigation project funding originally envisioned in the 1944 FCA cost-benefit analysis be considered?

I. Cultural Resources:

1. How can the historic and cultural sites impacted by Missouri River Operations be best protected from damage or destruction to ensure compliance with the National Historic Preservation Act and related laws?
2. How can damage and/or destruction to irreplaceable historical and cultural sites be avoided?
3. How can environmental, historic and cultural site mitigation, recovery and restoration as a result of the passage of the 1944 FCA, including consideration of vital wildlife habitat, medicinal resources, and River ecosystems vital to native species be remedied?

J. Social, economic and other impacts from construction of the mainstem reservoir system:

1. How can the social, economic and cultural impacts of various alternatives for potential changes to the authorized purposes best be considered?

K. Ecosystem Restoration:

1. How would a change in authorized purposes impact recovery and mitigation projects?
2. What will be the impact on ecosystem goods and services when the ecosystem is restored?
3. What additional alternatives would be available for ecosystem restoration if navigation was either totally de-authorized or limited to selected reaches? What would be the economic impact without these constraints?
4. Approximately how many acres of wetlands could be created in the channelized river if navigation were de-authorized?

5. If a significant amount of additional wetlands were restored on the floodplain, what impact would occur on water quality? Would this result in the absorption of significant nitrogen and phosphorus before it arrives in the Gulf of Mexico?
6. It is recognized that an extensive Missouri River Recovery Program is being implemented, but it may not be able to consider all options under the current laws and programs.

L. Geographic Scope of Study:

1. The entire Missouri River Basin should be studied
2. How should tributary reservoirs that are currently operated in conjunction with the mainstem be operated in the future?
3. Consider whether the study should include the impacts of operation of the Missouri River Reservoirs on Mississippi navigation. If included in the study: a) is it feasible to provide emergency flow support during major drought/low flow conditions on the Mississippi River given the distance and travel time? b) What would be the economic impact and potential tradeoffs be for Missouri River navigation, and c) what would the impact be on other uses in the Missouri River Basin, including additional flood risks on the Missouri River.

M. Sedimentation:

1. What impact is sedimentation having on hydropower generation and what is the economic cost?
2. Water management has long been considered critical in the Missouri River Basin. However, sediment management may rival water management in the future. How can Missouri River sediment be managed in a more sustainable fashion?
3. Is it feasible to construct/install low level sluice gates in dams on the Missouri River, especially at Gavins Point Dam?
4. How crucial is sediment to coastal wetland areas?
5. What are the impacts of changes in sediment load in the Missouri River on coastal wetland restoration in the Gulf of Mexico?
6. How can solutions be developed for erosion and sedimentation impacts, including the repeated exposure of contaminants buried in sediment, such as mining tailings which present risks and dangers to public health?

N. Future Development:

1. What is the level of water development that has occurred to date compared to what was envisioned in the Pick-Sloan Plan?
2. What potential opportunities, needs and impacts would occur to address the development that did not occur? What changes in the nature of future development should be considered?
3. What are the current and future domestic and public water supply needs in the basin? What are the water needs for energy, irrigation and other uses?
4. What role should the U. S. Bureau of Reclamation play in the study and future water development?
5. With regard to the floodplain:
 - a. What is the best way to implement the recommendations of the Galloway Report?

- b. What are the current floodplain widths compared to the minimum of 5000 feet below Kansas City and a minimum of 3000 feet above Kansas City stated in the 1944 FCA? Why were federal levees constructed at the current locations compared the minimum distances specified in the 1944 FCA?
- c. What is or can be done to engage county zoning authorities so that there is not undo floodplain development in order to minimize the costs and other consequences of future flood events

O. Tribal water rights:

1. How can the potential impact of the Federal Reserved Water Rights held by the American Indian Tribes in the Missouri River Basin be considered in the study?
2. What is an estimate of the amount of water claimed for these rights? Which Tribal water rights have been quantified?

P. Impact of climate change on the basins water supply:

1. What does the current modeling predict about the impacts of climate change on the inflows into the Missouri River?
2. What would the impacts of an earlier snowmelt have on the operation of the reservoirs?
3. Do the impacts of climate change affect the ability to provide flood control?
4. How will climate change effect water supply in the Missouri River basin, e.g. in terms of quantity and timing of runoff? What measures need to be taken to meet water supply needs in light of the potential impacts from climate change?

Q. Analysis of economic and other costs and benefits:

1. How would system operations look if benefits were maximized for each authorized purpose?
2. Will the role of irrigated agriculture with respect to the ultimate development plan be assessed?
3. Will the pricing and marketing of system hydropower be explored?
4. Will benefits and costs be estimated consistent with the National Economic Development framework and the other three accounts described in the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies?
5. What methods will be used to estimate benefits for recreation?
6. What methods will be used to estimate benefits for navigation?
7. Will the study address surplus water and water marketing?
8. How can economic losses to Tribal Nations and damage to tribal economies from River Operations be remedied?