

Headwaters of the Upper Mississippi River Reservoir Operations Plan Evaluation

ENVIRONMENTAL IMPACT STATEMENT (EIS) SCOPING

PROJECT: Headwaters Reservoirs, Upper Mississippi River, Minnesota

SCOPING: The National Environmental Policy Act of 1969 (NEPA) requires Federal agencies to carefully consider all environmental effects of their proposed actions. Federal actions likely to have a significant effect on the environment require an Environmental Impact Statement (EIS). An EIS has been determined to be necessary to document the planning and decision process for the Reservoir Operations Plan Evaluation of the Headwaters Reservoirs (ROPE). NEPA also requires a scoping process, which is conducted at the start of preparing an EIS and is used to focus the EIS and ensure adequate coverage of significant issues.

This information summarizes the scoping process conducted for the ROPE and will be sent to members of the public and agencies for review and comment.

PURPOSE AND NEED: The purpose of the ROPE is to identify an operating plan for the Corps of Engineers operated Headwaters reservoirs with consideration given to flood control, environmental concerns, water supply, Tribal Trust, recreation, navigation, hydropower, water quality, and other purposes to meet the objectives identified in the plan of study. This plan would then replace the existing operations plans that were last formulated about 40 years ago. This ROPE plan should protect the Tribal Trust relationship and provide the optimum benefit to the many interests affected by the operation of these dams -- for the greater public good.

In addition to the six Corps of Engineers Headwaters reservoirs and the Upper Mississippi River, the operation of U.S. Forest Service Knutson Dam at Cass Lake will be fully evaluated in this study. Partnering with the U.S. Forest Service will be accomplished to realize this purpose.

STUDY BACKGROUND: Construction of the Corps/Federal dams at each of the six Mississippi River Headwaters lakes was authorized by the River and Harbor Acts of June 14, 1880, and August 2, 1882. The primary purpose for the operation of these dams is to facilitate low flow augmentation for navigation consistent with Federal Tribal Trust responsibilities, but other purposes have since been added – including flood reduction, fish and wildlife conservation, recreation, and hydropower. In 1918, J. Neils Lumber Company constructed a small dam at the outlet of Cass Lake. After completion of its lumbering operations, Neils no longer needed the dam. In 1926, Public Law 270 gave the responsibility for operating and maintaining the dam to the U.S. Forest Service. Today, Knutson Dam is managed to maintain lake levels that allow for recreational navigation.

Each of the U.S. Army Corp-operated reservoirs is regulated for a recreational summer operating band, which, depending on the site, allows for water levels to fluctuate within a 3 to 6 inch range. The water levels in all of the reservoirs are lowered each winter below the summer bands (i.e. outflows are increased) to provide storage for the spring runoff. Depending on the conditions in a given year, all of the reservoirs can be regulated for flood control, which can raise water levels above the summer operating bands. A minimum-flow operating plan for the system provides for in-stream flow needs during both normal and dry conditions.

Much more information is available at any of the Headwaters Corps of Engineers field offices or at the Website for this study located on the Internet at:
http://www.mvp.usace.army.mil/fl_damage_reduct/default.asp?pageid=143.

OBJECTIVES: The overall objective of the ROPE Study is to define a system-wide operations plan that improves stewardship of the Headwater reservoirs, sustains the natural environment, fully considers Tribal interests, fairly balances public use of resources, and fully considers impacts associated with any changes in operations.

SCOPING PROCESS: Various planning team, agency task force, and lake group meetings have been held since the initiation of the ROPE study 2 years ago. These meetings were used to identify current problems and opportunities, to note significant resources in the study area, to begin identifying alternative operating plans, to identify the magnitude of the possible effects to significant resources, and to comment on alternative screening methods. A Notice of Intent to Prepare an EIS was published in the Federal Register on December 12, 2003.

The current series of public and agency meetings are being held to meet the same objectives as those held 2 years ago. Following the current series of meetings, all comments received will be organized and addressed in a scoping document. Information gathered during earlier efforts that is relevant to the scope of the EIS will also be included in the scoping document. The scoping document will be made available to the general public and agencies for review and comment.

ALTERNATIVES: There are a number of possible alternative operating plans that will be integrated into the plan formulation and screening process. Each alternative operating plan will be created using combinations of different operational components at different reservoirs. It would not be possible to list all possible alternatives at this time, but it is possible to list the components that will later be combined to create alternatives. The operational components listed here have been identified as the result of past interagency/public inputs, recent coordination with stakeholders, and professional knowledge from the Corps of Engineers Project Team. Additional operational components will likely be identified as a result of the scoping process. The key operational components to be evaluated in different combinations for some or all reservoirs include the following:

- No Action or no change to current conditions (maintain the status quo).
- Reduce flood damages and balance upstream and downstream trade-offs to foster fairness.
- Continue to operate for flood control at Aitkin, Ball Club Lake, and other places.
- Do not operate for flood control at Aitkin, Ball Club Lake, and other places.
- Operate with different drawdown levels and/or eliminate the drawdown.
- Change the channel capacity restrictions between Winnibigoshish/Leech and Pokegama (restriction is currently 2,200 cubic feet per second).
- Operate to mimic nature (e.g., produce high flow in the spring and low flow in the fall) to enhance natural resources.
- Conduct periodic and selective drawdowns on reservoirs to enhance aquatic vegetation.
- Operate to improve and/or optimize recreation opportunities throughout the study area and minimize adverse effects to current recreation users.

STUDY AREA AND GEOGRAPHIC SCOPE: The Planning Team has identified the study area as the area and resources that may be affected by changes in the operation of the Headwaters reservoirs. In the broadest sense, this has been defined to include the Upper Mississippi River

Basin upstream of Lock and Dam 2 at Hastings, Minnesota (Figure 1). The effects of operation decrease as distance from the reservoirs and receiving rivers increases laterally. The effects of operation also decrease with increasing distance downstream of the reservoirs. These effects will be evaluated during the study to better define the affected project area.

TEMPORAL SCOPE: The Headwaters reservoirs will continue to operate into the foreseeable future. It is assumed that the operation plan developed here will be reevaluated in 25 years. Therefore, the EIS will address the effects of changes in the operation plan for 25 years into the future.

SIGNIFICANT RESOURCES: The Planning Team has identified the significant resources in the study area that will be addressed in the EIS. The aquatic ecosystems of the Headwaters reservoirs, lakes, and rivers have been identified as significant resources based on their scientific, institutional, social, and economic value. Human-based significant resources in the study area include houses, cottages, recreation, tribal resources, and culturally and historically significant properties/areas.

RESOURCES THAT WILL NOT BE ANALYZED IN DETAIL IN THE EIS: On the basis of the scoping process to date, the following environmental conditions have been determined to probably not be affected by changes in reservoir operation: climate, air quality, and mineral resources. These conditions will not be addressed in detail in the EIS.

EIS SCHEDULE: It is anticipated that the Draft EIS will be available for public review in the fall of 2005.

HOW TO COMMENT ON THIS SCOPING PROCESS: Please review this information and provide comments regarding the scope of the Draft EIS by July 31, 2004. Anyone interested in commenting on the scope of the Draft EIS is invited to send comments as follows:

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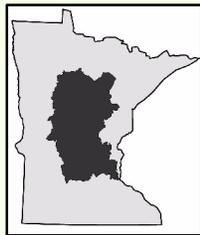
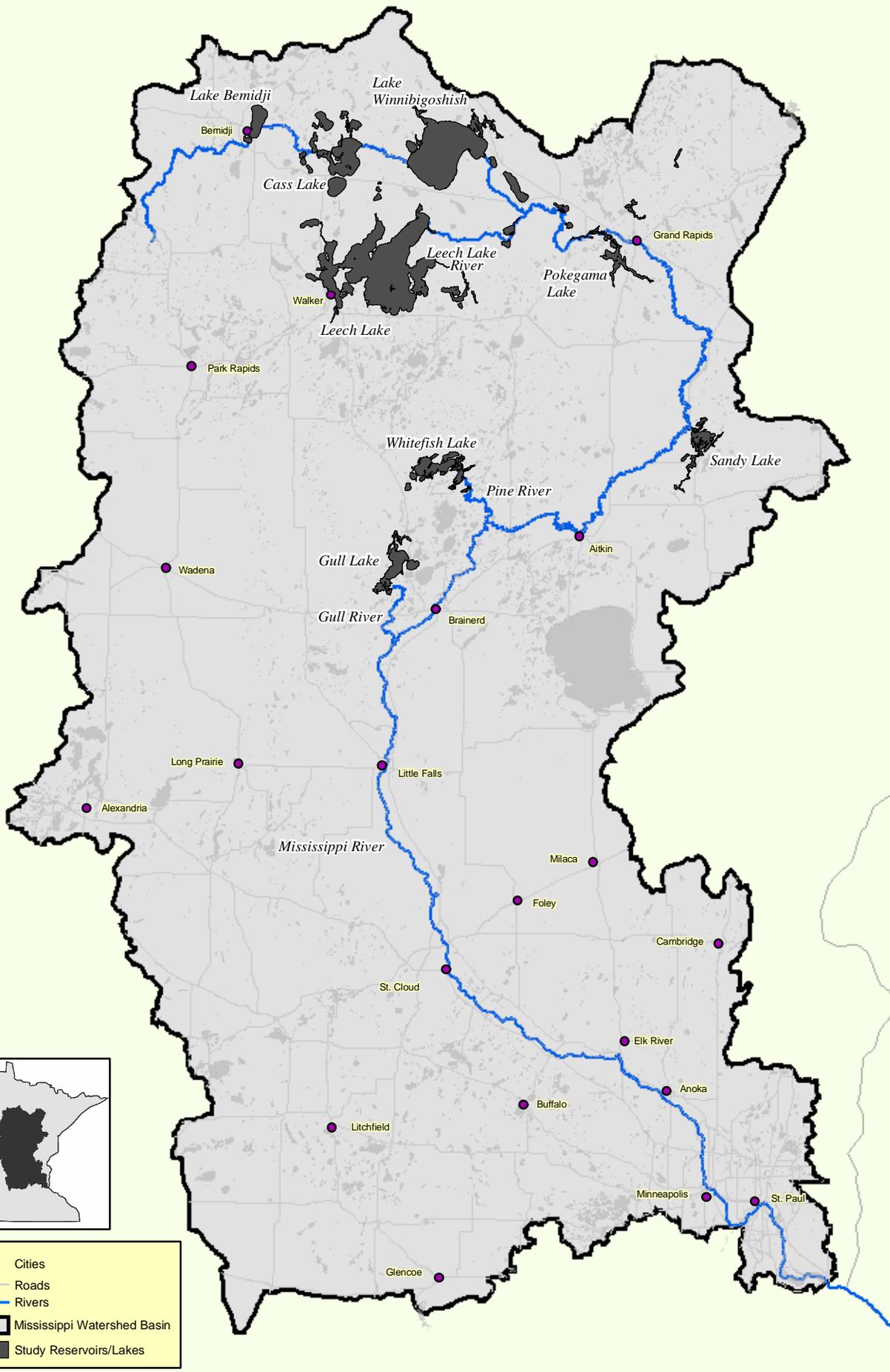
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PAPER PREPARED BY: St. Paul District, U.S. Army Corps of Engineers, June 2004

Figure 1 Study Area

Appendix A Problems and Opportunities

Appendix B Existing and Future Without Project Conditions



- Cities
- Roads
- Rivers
- Mississippi Watershed Basin
- Study Reservoirs/Lakes

Headwaters ROPE Study Basin

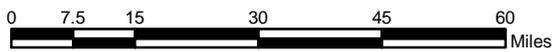


Figure 1

Appendix A: Problems and Opportunities

Through previous efforts, a great deal of information has been gathered regarding resources and how they are being affected by current reservoir operation. Specifically, information on current problems that need to be resolved and opportunities for improving conditions has been collected as a way to focus the study. Below is a summarized list of problems and opportunities found throughout the study basin.

Problems:

- There has been a loss of habitat diversity and littoral vegetation in the system.
- There is a reduction in channel complexity and a loss of functioning floodplain due to channel modifications.
- Due to the unnatural flow regime, there is an increased amount of lake and river erosion, increasing sedimentation and channeling in the system including tributaries.
- The unnatural flow regime impedes the restoration of aquatic and associated fish and wildlife habitat.
- The hydrologic cycle of the reservoirs affects fish spawning, rearing, and overwintering; mussels; meadows; and floating bogs; while the dams act as barriers to movement for aquatic species.
- The 7Q10 flows will need to be assessed in particular locations for wastewater treatment plants, along with the economic impacts on those effects.
- Changes to the total maximum daily load (TMDL) in affected rivers will need to be considered.
- The Headwaters reservoirs and the Mississippi River face degradation of water quality and supply, possibly linked to population growth and how the dams on the system are operated.
- Minneapolis and St. Cloud are dependent on the water supply and do not have emergency water supply plans. St. Paul and Brooklyn Center also use the water but have alternate sources to fill some of the capacity (but perhaps not?).
- Increases in water levels in the Headwaters could flood septic systems and destroy some infrastructure located within the flowage rights areas.
- It is not known if the Flood Control Guide Curves used to manage flooding which were last updated in the 1950's are a good representation of current conditions. However, due to significant changes in population distribution in the study area and greater public uses of the lake areas, it is likely that the guide curves need some revision.
- It is not known how the economic impact (including environmental) of storing water in the reservoirs compares to the damages prevented in Aitkin.
- It is not known how the effects (economic and environmental) of releasing water in the fall and winter (drawdown) compare to the damages prevented in Aitkin.
- Steam generation and nuclear power plants use the river water for cooling purposes; low flows or high water temperatures can limit the amount of power that can be generated, posing a potential problem for the Twin Cities metropolitan area.
- Changes to the drawdown plan will affect hydropower; the potential changes to flow duration (high and low) at particular locations will need to be evaluated, as well as the economic impacts on the hydropower plants.
- Changes to the water control plan will need to consider the impacts on the Whitewater Park, the lock and dam operations, and the aesthetics of flow over the spillway at Upper St. Anthony Falls Dam.

- The regulations regarding Congressional Notification water level limits (Water Resources Development Act of 1988, Public Law 100-676) need to be modified to account for errors in the language and dam safety modification.
- Obstructions and/or low water levels in connecting channels make navigation difficult.
- Ice damage is a common problem on reservoirs.

Opportunities:

- Due to the willingness of the Corps of Engineers, the U.S. Forest Service, Minnesota Department of Natural Resources, Minnesota Power, and Ottertail Power Company expressed desires to work together to implement system-wide operational improvements. There is an opportunity to operate all the dams in the Headwaters of the Upper Mississippi River (HUMR) as a system to more effectively manage water resources (i.e., There is an opportunity to improve the communication between Corps and non-Corps dam operators. These communications could be used to operate the system in a way that can better address and solve water resources problems).
- There is an opportunity to work with the Leech Lake and Mille Lacs Bands to clarify how the Government can meet its Tribal Trust responsibilities and, where possible, to identify Tribal interests that can be enhanced as part of reservoir operation.
- There is an opportunity to develop operating plans that could achieve more natural flows and flux of water levels, mimicking nature, while improving both lake and river habitats (i.e., Restoration of ecosystem function, structure, and dynamics could restore a more naturalistic, functioning, and self-regulating system that would protect critical resources from degradation.).
- Current understanding of instream low flow requirements and rate of change flow rates is now better than when they were last established by the managing agencies in the 1970's. As a result, refinements to the low flow and rate of change flows are possible.
- There is a better understanding of how drawing down the reservoirs affects shoreline ice damage, and this current understanding will be valuable in assessing drawdown requirements.
- There have been extensive studies done to evaluate how effective Headwater reservoir releases are managed during droughts to supplement water supplies in the Twin Cities. These studies clearly show that releases made from the Headwater lakes do not reach the Twin Cities during drought conditions and are not an effective means of supplementing the downstream water supplies. This new information will aid in evaluating alternatives for drought conditions.
- If this study recommends actions that would return the flow regime to a more natural condition, there is an opportunity to monitor the effects of such an operating plan in such a way as to research, demonstrate, and document effectiveness of such restoration actions.
- There is an opportunity to coordinate and institutionalize an adaptive management approach to water management and restoration efforts.
- There is an opportunity for improved public input and public education to create a learning laboratory for students and practitioners on issues related to how the reservoirs are to be operated, including best land management practices and water resource stewardship.

Appendix B: Existing and Future Without Project Conditions

The future without project condition is defined as the condition in the future 25 years from the present with the current reservoir operating plans remaining unchanged except for minor modifications as have been implemented in the past. With an increase in population and recreational use, there would likely be more demand for increasingly stable, and either higher or lower average, water levels at the reservoirs.

Socioeconomic Resources

The Corps of Engineers operating plans control the lake levels on more than 50 lakes within the northern portion of the basin and the related stream flows below the dams. The principal effects on land use and area economy, from the construction and operation of the reservoirs, have varied with the changing needs of the area and with the changing Congressional mandate governing the operation.

The emphasis of the study is to meet current and future needs for navigation; Tribal Trust resources; flood damage reduction; fish and wildlife habitat enhancement, restoration, and preservation; recreation and tourism; water quality and water supply; erosion and sedimentation; hydropower; and sustaining hydrologic function on the lakes and rivers.

Some possible outcomes could be lake level changes, winter drawdown changes, restoration of some sections of river systems, a more natural flow release for downstream river reaches and, in some lake areas, changes in flood control concerns for differing sections of the total system and possibly even the purchase of some land for maximizing efficient operation.

Natural Resources

In general, the aquatic habitat of the Headwaters of the Upper Mississippi River (HUMR) is of good quality, but increasing pressure from development and recreation could lead to a decrease in habitat quality. In general, the lakes have good aquatic plant communities, which act as a base for other forms of aquatic life. There is concern, though, that vegetation is declining due to the impacts of shoreline development.

The lakes and rivers of the HUMR generally have healthy fisheries. Walleye tend to be the most important game fish for most anglers. In general, game fish populations are stable; however, increased fishing pressure has led to decreased individual fishing success. Declines in aquatic plant beds would likely lead to decreases in the numbers of game and non-game fish.

Zebra mussels have recently been discovered in Lake Ossawinnamakee near Cross Lake, which is drained by Pelican Brook, a tributary of the Mississippi River near Pine River. This species colonizes native mussels and impedes their movement, reduces their ability to feed and eliminate wastes, and competes for food and space, often resulting in significant native mussel mortality. Zebra mussels are a lake species that thrive in many reservoirs and lakes in the Midwest. Zebra mussels feed on algae zooplankton and, in great numbers, can have a major impact on the ecosystem by competing with larval fishes for food.

Approximately 240 species of birds can be found in the HUMR. Some groups of birds are likely to be affected by water level management through impacts to vegetation. Surface-feeding ducks such as mallards and wood ducks depend on emergent and submersed vegetation for

food and cover. Bay ducks, such as lesser scaup, depend on submersed vegetation and invertebrates for food. The common loon is found throughout the northern portion of the study area and nests on the water's edge, thus making it vulnerable to water level changes.

Many species of mammals inhabit the HUMR; however, aquatic mammal species such as beaver and muskrat would be most likely to be affected by the outcome of the ROPE study. These mammal species require access to open water as a source of food and as a source of shelter. Water level management can have a major impact on aquatic mammals by inundating or exposing their shelters at times of the year when the animals are vulnerable to the elements or predators.

Three species found in the HUMR are on the Federal threatened and endangered species list. The Canada lynx, listed as a threatened species, may be found in the far northern portion of the study area. The gray wolf, also listed as a threatened species, can be found throughout the northern half of the study area. The bald eagle is listed as threatened and is found throughout the project area. The possible impacts to these species will be coordinated with the U.S. Fish and Wildlife Service.

Water quality in the study area is generally good; however, mercury and PCB's are two pollutants of interest within the study area. They are listed as bioaccumulative toxics by the MPCA, which means they accumulate in organisms up the food chain. MPCA has developed a map of the Headwaters basin that shows impaired water bodies and the contaminant responsible for that listing. Most impaired waters are listed as such for mercury, and a few near the southern portion of the study area are listed for PCB's. Low dissolved oxygen levels occur in the Mississippi River, which is likely the result of water exchange with riparian wetlands. Changing the operation of the reservoirs could modify the volume and seasonal timing of water movement into and out of riparian wetlands, which could have an effect on dissolved oxygen and mercury levels in the receiving waters.

Cultural Resources

The study area has been a focus for human occupation and activity for 10,000 years or more. Hundreds of archaeological sites are known to exist along reservoir shorelines and downstream river reaches, which are affected by reservoir operation. Most of these sites have been adversely affected to some extent by reservoir operations. The extent of the damage to these resources by reservoir operations has not been assessed, but along the reservoir shorelines, considerable erosion and inundation of archaeological sites have occurred.

As part of the cultural resources review for the EIS, the Corps will assess the status of cultural resource work in the Headwaters and the Corps' compliance with Federal law and regulation. The present operation is adversely affecting historic properties, and any reasonably foreseeable change in operations may also adversely affect historic properties.

Tribal Trust is driven by a set of principles, legal concepts, laws, memoranda, and executive orders that outline the responsibilities of the Federal Government to protect Indian property and lands, rights, and resources. The ROPE study is addressing Tribal Trust through consultation and contracts with the Leech Lake Band and the Mille Lacs Band of Ojibwe to obtain general descriptions of the natural resources traditionally used by the Tribe/s or cultural resources that could be adversely affected, or benefited, by changes in lake or river management in the study area.