MISSOURI RIVER

Master Water Control Manual Review and Update Study

FACT SHEET

Water Supply/ Water Quality

This Fact Sheet provides a brief overview of a specific topic important to the Master Water Control Manual Review and Update Study process. Information contained in this Fact Sheet is summarized from technical reports and the preliminary Revised Draft Environmental Impact Statement.

Water Supply

Summary

There are approximately 1,600 water intakes of widely varying size on the Mainstem Reservoir System and the Lower River. Access to water rather than quantity of water available is the main concern of the intake operators. For the 100-year period of record, alternative C44 has the highest total water supply benefits, at $544.7 million per year, while alternatives C31 and M66 have the lowest benefits, at $540.3 million per year. Alternative C44 results in a positive change from the CWCP of 1 percent. All of the other alternatives result in less than a 1 percent change from the CWCP.

Existing Conditions

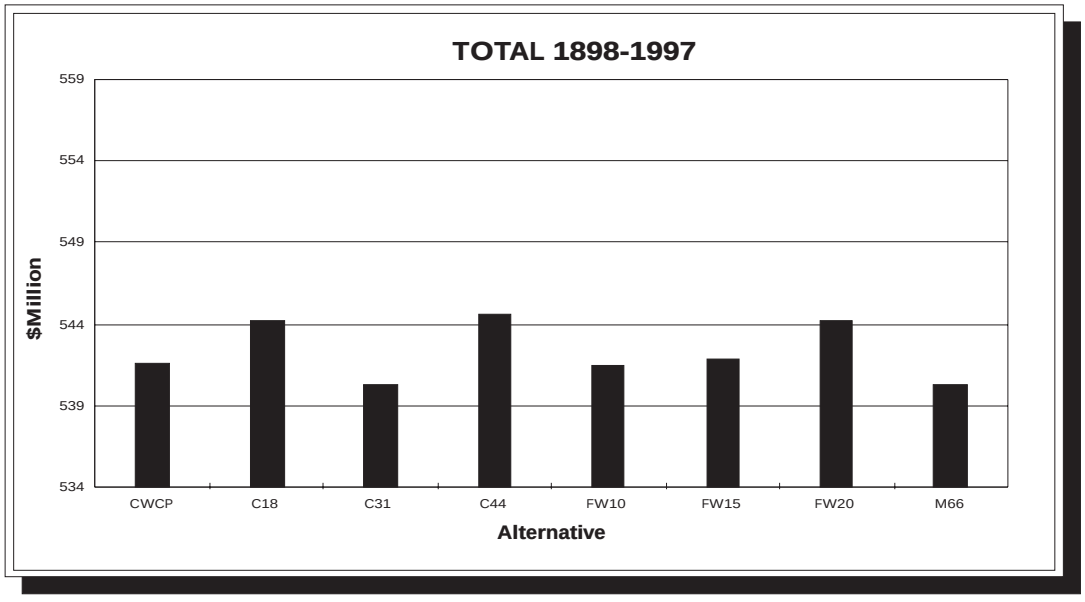
The Missouri River and its mainstem lakes are a source of water for municipal water supply; irrigation; cooling water; and commercial, industrial, and domestic uses. There are approximately 1,600 water intakes of widely varying size on the Mainstem Reservoir System and the Lower River. In addition, certain Missouri River Basin Indian Tribes are entitled to water rights in streams running through and along their reservations under the Winters Doctrine. The standard for the amount of water granted under of tribal water rights is still evolving.

Access to the water rather than quantity of water available is the main concern of the intake operators because changes in river flows and reservoir pool elevations affect the cost of operating intake facilities. Low lake and river levels may increase day-to-day operating costs, lead to capital costs for intake modification or location of an alternative water source, or even cause a shutdown.

Comparison of the Alternatives

Impacts of the eight alternatives on water supply were measured by determining the annual water supply benefits in millions of dollars per year for intake facilities along the

Total average annual Missouri River water supply benefits



Mainstem Reservoir System and the Lower River from 1898 to 1997 (100-year period). In addition to the intake of water, benefits associated with powerplant heated-water discharges were considered. Total average annual water supply benefits were calculated by estimating the capital and operating costs that would result from electricity generating capability when heated-water discharges are constrained. The study did not address potential tribal water rights associated with uses and depletions.

The bar chart presents the average annual Missouri River water supply benefits in millions of dollars per year for each of the alternatives for the 100-year study period. The representative alternatives have both greater and lesser benefits than the CWCP. The highest total water supply benefits occur for alternative C44, at $544.7 million per year. This alternative has the highest permanent pool, the highest navigation guide curves, and produces the highest overall conservation values in drought periods. The lowest benefits occur for alternatives C31 and M66, at $540.3 for the 100-year study period. Increasing spring/ summer releases and changing service levels on the Lower River to further benefit fish and wildlife under alternatives FW10, FW15, and FW20 has mixed results. Alternatives FW10 and FW15 provide minor increases relative to the benefits of alternative C31. This is because both FW10 and FW15 increase benefits along the Lower River and FW15 also increases benefits along the Upper River reaches. Alternative FW20 reduces benefits on the lake reaches, increases benefits on the Upper River reaches, and has no effect on the benefits along the Lower River.

Water Quality

Summary

Water quality in the Mainstem Reservoir System of the Missouri River basin is generally good. Changes in storage regimes and river flow alter water quality--chemistry, suspended solids, dissolved oxygen, and temperature. Increased amounts of water in storage and average river flows generally result in better water quality. Alternative C44 would likely result in the highest water quality among the alternatives due to the high permanent pool. The CWCP and alternatives C18 and M66 would likely result in lower lake water quality because they have the lowest conservation in a drought. Non-navitgation flow criteria would not affect river reach water qulity. Minimum 18 kcfs summer flows would limit warm-water discharge restrictions in summers without navigation in all alternatives except the CWCP.

Existing Conditions

Water quality in the Mainstem Reservoir System is generally good with only minor or suspected problems. These problems are due to many factors including diffuse contaminants; agricultural practices; mining, coal, and oil development; sewage treatment problems; and sediment and nutrient inputs into the lakes. Changes in storage regimes and river flows may lead to changes in water quality parameters such as water temperature, dissolved oxygen, suspended sediments (water clarity), water purity, and toxic chemicals. Water quality is important because Missouri River water is used extensively for water supply and is essential habitat for fish and wildlife.

Water temperature is a concern in the river reaches, particularly in the Lower River, where the water used for cooling by many powerplants is controlled under discharge water temperature standards. Lower river flows provide less dilution for the warmwater discharges from the powerplants, and thus lead to higher river water temperatures.

Increased amounts of water in storage and average flows on the river reaches are generally expected to result in better water quality. High flows may be accompanied with high pollutant loads, and low flows may result in a very low assimilative capacity for normal pollutant loads.

Comparison of the Alternatives

The preliminary RDEIS discusses the water quality impacts of the eight representative alternatives qualitatively. Criteria that increase the likelihood for lower lake levels are the intrasystem regulation modification, providing additional spring/summer flows to benefit fish and wildlife and increase navigation service levels, and adding a St. Louis flow target. Criteria that decrease the likelihood of lower lake levels, particularly in drought periods, are higher permanent pool levels.

Alternative C44 would likely result in the highest lake water quality among the alternatives due to the high permanent pool. The CWCP and alternatives C18 and M66 would likely result in lower lake water quality because they would provide the lowest conservation in a drought. Intrasystem regulation may also impact water quality, depending on the level and timing of the drawdown. Conversely, conservation of water generally would lower river reach water quality. During the 1987 to 1991 drought, non-navigation flow criteria were not a factor on the Lower River. In a very severe drought, however, water quality would be affected, especially during summers without navigation. The minimum 18 kcfs summer flow requirement on all of the alternatives except the CWCP would limit warm-water discharge restrictions.