



Mississippi River Impacts

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.



Summary

The Corps analyzed potential impacts of the eight representative alternatives on the Mississippi River in addition to evaluating effects on the Missouri River. No differences are anticipated among impacts of the alternatives for some study categories, such as environmental and saltwater intrusion. There was substantial variation among the impacts of the alternatives for other study categories, such as cost of dredging, navigation, and water intakes. Total average annual Mississippi River costs for the 60-year study period ranged from a low of \$36.5 million under alternative M66, to a high of \$75.1 million under alternative FW20. M66 would result in a positive impact of 47 percent and FW20 would result in a negative impact of 9 percent compared to the CWCP.



Overview

Changes in operating criteria for each of the eight alternatives affect Missouri River release patterns from Gavins Point Dam. Under some alternatives, the changes in release patterns are dramatic enough to affect flows at Hermann, Missouri, which is the last location modeled on the Missouri River before it flows into the Mississippi River at St. Louis. Because of the effects at Hermann which indicate potential impacts on the Mississippi River, the Corps studied potential Mississippi River impacts in the following categories:

- **Hydraulics and hydrology**—For this analysis, simulations were completed using the flows at Hermann for the eight alternatives as the only changeable variable. Results from these simulations were used to conduct the impact analyses for the other six categories.
- **Environmental**—To establish a basis for potential detailed environmental analysis, river stages for the CWCP and other seven alternatives were compared for each month of the

year. The analysis determined that the magnitude of the differences was small relative to the natural variability in river stages. The analysis essentially showed that environmental effects on the Mississippi River could not be attributable to Missouri River Mainstem Reservoir operations.

- **Water intakes**—A list of existing intakes was compiled as a first step in the water intakes analysis, and operators were surveyed to determine critical water intake elevations and the costs that would occur at stages below these levels (or to modify the intakes to operate at the lower levels). The average annual cost for the CWCP are \$3.3 million per year. Alternative FW20 has the greatest adverse effect, as the water intake costs increase by \$240,000 per year relative to the costs for the CWCP. Finally, alternative M66 has the lowest costs, which are \$80,000 less than the costs for the CWCP (\$110,000 per year less than costs for alternative C18, the base alternative for M66).
- **Saltwater intrusion**—Occasionally, during long periods of low flow, the freshwater supply of communities along the lower Mississippi River is threatened by the intrusion of saltwater from the Gulf. A cost analysis was conducted to quantify the economic impacts associated with any movement. This analysis concluded that there was no change in economic impacts from the alternatives.
- **Flood damage**—The CWCP has the lowest average annual agricultural crop damages at \$2.09 million per year. Modifying intrasystem regulation appears to have had an impact on the damages. Increasing spring service levels to benefit fish and wildlife on the Lower Missouri River has an adverse impact on flood damages on the Mississippi River. The damages for alternative FW10 increase by \$100,000 per



year over the damages for alternative C31 (\$220,000 per year over the damages for the CWCP).

- Dredging—Average annual dredging costs were determined based on the dredging requirements to keep barges moving on the Mississippi River under every condition. The CWCP had one of the highest dredging costs at almost \$18 million. Six of the alternatives were within 1 percent of the average annual dredging costs of the CWCP, but alternative M66, the navigation alternative, was significantly different at \$16.3 million.
- Navigation—The navigation economic impact analysis was conducted for both deep draft and shallow draft shipping. The total average navigation cost for the CWCP is \$45.7 million. The annual costs of six of the alternatives are within \$5.0 million of the CWCP's costs. Alternative M66, which is designed to maximize navigation benefits, has substantially lower costs at \$14.6 million.



Total Mississippi River Costs

The figure presents the total average annual Mississippi River costs for the uses analyzed. Three of the alternatives have less than a 2 percent effect on the total average annual costs for the CWCP—alternatives C18, FW10, and FW20. This result indicates that adding intrasystem regulation and adding the higher summer nonnavigation service level has relatively no effect on the costs. It also indicates that the increased spring/summer releases under FW10 and FW15 have essentially no net effect. Increasing releases from the C31 baseline under alternatives FW10 and FW15 seems to offset much of the negative effect (increased costs of \$2.63 million per year) of increasing water conservation during a drought. Three alternatives result in noticeably increased costs—C31 (+3.8 percent), C44 (+6.1 percent), and FW20 (+8.6 percent). In sharp contrast, the Mississippi River costs (M66) would be \$36.5 million, or a 47 percent decrease compared to the CWCP.

Mississippi River total average annual costs

