



REPLY TO  
ATTENTION OF:

**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE CHIEF OF ENGINEERS**  
**WASHINGTON, D.C. 20314-1000**

15 December, 2004

CECW-MVD (1105-2-10a)

SUBJECT: Upper Mississippi River - Illinois Waterway System

THE SECRETARY OF THE ARMY

1. I submit for transmission to Congress my report on navigation and ecosystem improvements for the Upper Mississippi River - Illinois Waterway (UMR-IWW) System. It is accompanied by the report of the district and division engineers. These reports were prepared under the authority of Section 216 of the Flood Control Act of 1970. This authority provides for a review of completed U.S. Army Corps of Engineers projects that may have changed because of physical or economic reasons. Pre-construction engineering and design activities for the navigation and ecosystem improvements for the UMR-IWW System will continue under the authority provided by Section 216 of the Flood Control Act of 1970.
2. The existing UMR-IWW Navigation System was largely constructed in the 1930's and extends down the Upper Mississippi River (UMR) from Minneapolis-St. Paul downstream to its confluence with the Ohio River and up the Illinois Waterway (IWW) from Grafton, Illinois, through the Thomas J. O'Brien Lock in Chicago. It includes 37 locks (29 on the UMR and 8 on the IWW) and approximately 1,200 miles of navigable waterway within portions of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. The principal navigation problem addressed by this study is the potential within the 50-year planning horizon for significant traffic delays on the UMR-IWW Navigation System beyond the delays that currently exist.
3. The Upper Mississippi River System (UMRS) ecosystem includes the river reaches described above, as well as the floodplain habitats that are critically important to large river floodplain ecosystems. The total acreage of the river-floodplain system exceeds 2.5 million acres of aquatic, wetland, forest, grassland, and agricultural habitats. The Mississippi Flyway is used by more than 40 percent of the migratory waterfowl traversing the United States. These Trust Species and the threatened and endangered species in the region are the focus of considerable Federal wildlife management activities. In the middle and southern portions of the basin, the habitat provided by the mainstem rivers represents the most important and abundant habitat in the region for many species. The principal environmental problems addressed by this study are

CECW-MVD

SUBJECT: Upper Mississippi River – Illinois Waterway System

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changes to ecosystem structure and function that have occurred over many years from many causes, but especially since initiation of the operation and maintenance of the existing Nine-Foot Channel Navigation Project.

4. The reporting officers recommend that an integrated plan be approved as a 50-year framework for modifications and operational changes to the Upper Mississippi River and Illinois Waterway System to provide for navigation efficiency and environmental sustainability, and to add ecosystem restoration as an authorized project purpose. The integrated dual-purpose plan will provide better focus and flexibility to adaptively manage the operation and maintenance of the system for both navigation and the environment. The integrated dual-purpose plan will be implemented through an adaptive approach that will include an incremental implementation strategy paired with periodic checkpoints requiring future reporting to the Administration and Congress. The Corps of Engineers will administer the plan in full collaboration with the other Federal and State agencies involved in management of the UMRS.
  
5. The recommended navigation improvement 50-year framework plan includes small-scale structural and nonstructural measures, new 1,200-foot locks and lock extensions, and appropriate measures to avoid, minimize, and compensate for environmental impacts at a first cost of \$2.59 billion at October 2004 price levels plus annual switchboat operation costs of \$19.4 million. The initial increment of the recommended navigation improvement plan proposed for immediate authorization consists of the full complement of small-scale measures and the construction of seven new 1,200-foot locks with a first cost of \$2.03 billion at October 2004 price levels. Benefits for the navigation improvements were evaluated using a scenario-based analysis utilizing five traffic forecasts and three economic model conditions. This combination of scenarios and models reflects the uncertainty associated with projecting traffic and economic conditions over a 50-year planning period. For the navigation efficiency portion of the preferred framework plan, the benefit-to-cost ratios range from 0.3 to 2.0 depending on the scenario and model conditions and based on a discount rate of 5.625 percent and a 50-year period of analysis.
  
6. The recommended ecosystem restoration 50-year framework plan consists of an estimated 1009 individual projects with a combined first cost of about \$5.72 billion at October 2004 price levels. The initial increment of the recommended ecosystem restoration plan proposed for immediate authorization consists of an estimated 225 projects with a combined first cost of about \$1.58 billion at October 2004 price levels. The total estimated operation, maintenance, replacement, repair, and rehabilitation (OMRR&R) costs for these projects, over a 50-year project life is estimated at \$82 million. The first cost of the projects being proposed for implementation at full Federal expense is estimated at about \$1.28 billion. The first cost of the cost shared floodplain restoration projects is estimated at about \$299 million, with a Federal cost of about \$194 million and a non-Federal cost of about \$105 million. The costs of OMRR&R will be the responsibility of the agency with management responsibility for the land on which the project is located or with the operation and maintenance responsibility for the existing structure being modified. Since the majority of the land and water areas of the UMR-IWW are managed by either the U.S. Fish and

CECW-MVD

SUBJECT: Upper Mississippi River – Illinois Waterway System

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Wildlife Service or the five States involved, the Corps of Engineers operation and maintenance responsibility will be largely limited to fish passage facilities, operational costs of water level management, and operation and maintenance of dike and wing dam alterations. These costs are estimated at a total of \$13 million over a 50-year period. The remaining 50-year total operation and maintenance cost of \$69 million will be borne by the U.S. Fish and Wildlife Service and the States.

7. The UMR-IWW Navigation System is a segment of the inland waterway identified in Section 206 of the Inland Waterways Revenue Act of 1978, as amended. In accordance with the cost sharing principles described in Section 102 of the Water Resources Development Act of 1986, one-half of the cost of navigation improvement construction shall be paid from amounts appropriated from the general fund of the U.S. Treasury and one-half of the cost of construction shall be paid from amounts appropriated from the Inland Waterway Trust Fund.

8. The recommended cost sharing arrangement for the ecosystem improvements is for a combination of 100 percent Federal funding and cost-shared 65 percent Federal and 35 percent non-Federal funding. The 100 percent Federal funding is proposed for those ecosystem restoration projects involving the modification of the structures or operations of the existing navigation projects, measures on project lands and lands included in the National Refuge System, and measures in backwater areas connected to the main river and within the navigational servitude. These 100 percent federally funded projects would primarily address the ongoing impacts of the existing Nine-Foot Channel Navigation Project. The 65 percent Federal and 35 percent non-Federal cost sharing applies to ecosystem restoration on up to 35,000 acres of land for the purposes of floodplain connectivity and wetland and riparian habitat protection and restoration. It is recommended that eligible non-Federal interests include nonprofit entities. These 35,000 acres will be considered for acquisition on a willing seller basis to the maximum extent practicable. Incidental costs associated with land acquisition will be limited to those costs incurred within a 5-year period prior to the signing of any subsequent Project Cooperation Agreement (PCA). The value of the lands or interest in the lands acquired by non-Federal interests that exceed the non-Federal share of the land acquisition and restoration project costs will be reimbursed to the non-Federal sponsor. The costs of OMRR&R will be the responsibility of the agency with management responsibility for the land on which the project is located or with the operation and maintenance responsibility for the existing structure being modified. However, following a major flood event, the Corps of Engineers may undertake major rehabilitation of the project in accordance with the cost sharing for implementation of the project.

9. The recommended plan contemplates that for the cost-shared ecosystem restoration projects, the non-Federal sponsor may be eligible for credit toward its cost share for planning, engineering and design, or implementation work-in-kind (WIK) undertaken by the sponsor that is integral to the project. The non-Federal sponsor is not eligible for any WIK undertaken prior to project authorization. The non-Federal sponsor will not initiate WIK until a PCA is executed with the Corps of Engineers. In no event will such WIK result in a payment to the sponsor. The amount

CECW-MVD

SUBJECT: Upper Mississippi River – Illinois Waterway System

of credit to be afforded will be subject to an audit to determine reasonableness, allocability, and allowability of such costs. The credit afforded to the non-Federal sponsor will be limited to the lesser of the following: (1) actual costs that are auditable, allowable, and allocable to the project; or (2) the Corps of Engineers estimate of the cost of the work allocable to the project had the Corps of Engineers performed the work, but shall not exceed the non-Federal share. The non-Federal sponsor will undertake the WIK using its own funds and would not use funds originating from other Federal sources unless the Federal granting agency verifies in writing that the expenditure of such funds for this purpose is authorized.

10. The report of the district and division engineers was the subject of an Independent Technical Review (ITR) by experts within the Corps of Engineers who were not involved in the preparation of the report. This ITR resulted in numerous changes and additions to the report analysis and documentation. In a number of cases the ITR findings necessitated additional documentation and analysis that is ongoing. This additional effort includes evaluations to assure that the economic models are adequately calibrated and validated. The results of the additional ITR evaluation and model calibration will be incorporated into the adaptive implementation process for the recommended plan. This process includes a report to the Congress at the end of the design for the initial group of new locks and before initiation of construction. The report will present all new information from monitoring river traffic and markets and the results of application of any improved models and analysis.

11. The National Research Council (NRC) is conducting an independent review of the Restructured UMR-IWW Feasibility Study. The NRC Review Committee's Second Report, based primarily on a review of the Draft Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study, is attached as enclosure 1 to this report. The NRC's Report found that the UMR-IWW feasibility study integrating commercial navigation and ecological restoration plan represents an unprecedented analytical challenge. The Review Committee credited the Corps for broadening the scope of the study to include ecosystem restoration and noted that the study had made substantial progress during the past three years. Despite these efforts, the Review Committee found that the study contains flaws serious enough to limit its credibility and value within the policymaking process. The areas of concern addressed by the Review Committee included the economic models and traffic forecasts, the evaluation of nonstructural approaches, and the formulation and evaluation of ecological restoration alternatives. While identifying these problems, the NRC Review Committee found that the Preferred Plan (now the recommended plan), if carried out as described, provides for a program of incremental implementation, which is an excellent framework for comprehensive adaptive management. The Review Committee further found that if the Corps is provided the resources and if it commits to the needed data collection, improved modeling techniques, and evaluation, many of what they refer to as flaws and omissions in this study can be corrected in the course of implementation by the application of adaptive management principles.

CECW-MVD

SUBJECT: Upper Mississippi River – Illinois Waterway System

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(13) Provide the non-Federal share of that portion of the costs of archeological data recovery activities associated with historic preservation that are in excess of 1 percent of the total costs of the ecosystem restoration measures.

(14) Not use Federal funds from other Federal programs, including any non-Federal contribution required as a matching share, to meet any of the non-Federal sponsor's obligations for the ecosystem restoration measures unless the Federal agency providing the Federal portion of such funds verifies in writing that the expenditure of such funds is authorized.

16. The recommendation contained herein reflects the information available at this time and current departmental policies governing formulation of individual projects. It does not reflect program and budgeting priorities inherent in the formulation of a national civil works construction program or the perspective of higher review levels within the executive branch. Consequently, the recommendation may be modified before it is transmitted to the Congress as a proposal for authorization and implementation funding. However, prior to transmittal to the Congress, the States of Wisconsin, Iowa, Illinois, Missouri and Minnesota; interested Federal agencies; and other parties will be advised of any modifications and will be afforded an opportunity to comment further.

Encls



CARL A. STROCK  
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