

Water Security Research...

and 13 new projects for drinking water. The new proposed needs are:

- Assessments of costs and benefits associated with various countermeasures and assistance in communicating the value of water; and
- Explicit understanding of the role of failure of the “human subsystem” and possible contingencies.

The report evaluates the focus of each of the proposed projects, and opportunities for cross-project coordination are presented. The report does not advocate deletion of any of the Action Plan projects, although some reprioritization is suggested. Some examples of suggested new projects include: examining spatial and temporal sampling requirements for water security events, refining distribution system models to consider decay rates of water contaminants, conducting an analysis of risk communication strategies for past disaster events, and developing a national training program on risk communication planning for water managers. Several recommendations are also provided to focus the EPA effort on more reasonable near-term goals and to clarify longer-term research objectives.

There are many health-related issues related to the security of the nation’s wastewater plants, since many surface water supplies for drinking water contain treated wastewater. The wastewater collection system also serves as a potential conduit to damage numerous structures in a region. Thus, the report concludes that it is appropriate to give consideration to the security of the nation’s wastewater systems, although the human health consequences may be somewhat more indirect than in the case of drinking water systems. Nevertheless, the Action Plan contains considerably less information on the security of the wastewater infrastructure than on drinking water systems. The report suggests that more thought should be given to the wastewater systems se-

NEW REPORT

Review of the U.S. Army Corps of Engineers Restructured Draft Feasibility Study for the Upper Mississippi River-Illinois Waterway System: Phase II

by Jeffrey Jacobs

In early 2001, the WSTB, in cooperation with the NRC’s Transportation Research Board, issued the report, *Inland Navigation System Planning: The upper Mississippi River-Illinois Waterway*, which reviewed the Corps of Engineers’ feasibility study of the Upper Mississippi River-Illinois Waterway (UMR-IWW). The Corps has since been restructuring its feasibility study. In March 2003, the Corps requested the WSTB to convene another committee to review the Corps’ restructured feasibility study. Like the 2001 report (Phase I), this study (Phase II) evaluates economics models used by the Corps for forecasting future commodity prices, demands, and levels of waterway traffic. The charge to the Phase II committee, however, is of a broader scope, as it includes review of the restructured study’s environmental analyses and efforts at integrating economic, environmental, and management considerations.

The first report from the Phase II study (issued in December 2003 and summarized below) commented upon

models for calculating benefits of waterway infrastructure improvements, future demands for waterway transportation, projections of future U.S. grain exports, waterway traffic management alternatives, the feasibility study schedule, and river science and ecology. Two more reports will be issued in this study, one in Summer 2004 and one in early 2005.

Waterway Transportation Demands

The Corps has been developing a spatial model that would calculate the benefits of infrastructure improvements on the Upper Mississippi River-Illinois Waterway and calculate variations in grain shipping costs and modes of grain transport. Toward this end, the Corps has applied a traditional Corps Tow Cost Model (TCM) and has been developing its “ESSENCE” model. The committee has not been presented with detailed information on the TCM but will learn more about it as it proceeds. Fundamental conceptual flaws in the ESSENCE model render it unfit for use in the feasibility

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curity and the interdependencies between drinking water and wastewater systems. The report concludes that ongoing wastewater security projects are appropriate to meet the most pressing needs for wastewater, but several additional projects are suggested, including management and disposal of contaminated waste and sludge and the adequacy of plant worker protection during potential water security attacks.

Implementation of the Action Plan involves communicating and disseminating results, building collaborative relationships, and coordinating responsibilities with other organizations and agencies. Several additional projects are suggested to improve implementation, including an analysis of the consequences of various levels of information security, an assessment of

the benefits and limitations of existing methods of dissemination (e.g., web pages, the Water Information Sharing and Analysis Center), and research on means to utilize pertinent information from the community.

The study was sponsored by the Environmental Protection Agency, and the Panel on Water System Security Research was chaired by Gary Westerhoff of Malcolm Pirnie, Inc. Copies of the report are available from the WSTB office at (202)334-3422 or sjohnson@nas.edu.

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study. The Corps should either accelerate the development of a full spatial price model or adopt an alternative modeling approach that avoids the limitations of the ESSENCE model.

Demand Forecasts

Five scenarios of future U.S. grain forecasts were presented to the Corps in a study conducted by the Sparks Company of Memphis, TN. Of these five scenarios, four of them forecast substantial increases in future U.S. grain exports. The committee reserved judgment on the plausibility of these forecasts, discussed these projections with the Corps' consultants at its December 2003 meeting in St. Louis, and is likely to issue further comments on them in its future reports.

Managing Waterway Congestion

The current system for managing UMR-IWW traffic operates primarily on a first-come, first-serve basis. But alternative, nonstructural waterway traffic management measures could provide cost-effective means for reducing congestion. Measures such as scheduling systems, systems of tradable arrival slots, or a contingent fee—as challenging as their implementation may be—could be implemented as alternatives to extending locks, or could be used in combination with lock extensions. Furthermore, such traffic management measures would be needed to address reductions in capacity that would occur in the event that lock extensions were constructed. The Corps should proceed as soon as practicable toward developing and implementing nonstructural measures to help alleviate waterway traffic congestion.

Integrated Systems Planning

The Upper Mississippi and Illinois rivers and their floodplains support a variety of activities other than navigation, including boating, recreational and commercial fishing, hunting, camping, and sightseeing. The Corps should thus, to the extent feasible, consider

these and other factors such as water quality, flood damage reduction, and sediment transport in order to reflect a more holistic approach to dealing with the diverse management issues in the UMR-IWW. The Corps should also implement adaptive management concepts and approaches throughout the planning process.

Decisions, Implementation, and Institutions

The Corps is on an aggressive timetable for completing the feasibility study. Although there is a need to move forward with the study, several of this first report's recommendations that point toward a more thorough and credible analysis would require additional time. The Corps should extend its schedule for completing the feasibility study and issuing a Chief's Report.

There are literally hundreds of prospective projects within the UMR-IWW study aimed toward ecological enhancements. Not all of these projects can be implemented simultaneously, because of both financial and practical limitations. Priority should be given to those projects based upon their promise of restoring natural processes, and to those that aim to achieve multiple objectives.

Ecological restoration projects in downstream states, which have small-

er federal land holdings than states in the upper basin, require greater cost-sharing responsibilities from local sponsors. If prospective restoration projects do not receive funding, it will alter the study's benefit calculations. The Corps should, therefore, identify specific instances in which federal cost-sharing rules are likely to restrict or preclude implementation of environmental restoration projects and nonstructural measures.

The committee is chaired by John Boland, Johns Hopkins University. Members are: Patrick Brezonik, University of Minnesota; Robert Davis, consultant; Leo Eisel, Brown and Caldwell; Stephen Fuller, Texas A&M University; Gerald Galloway, Titan Corporation; Lester Lave, Carnegie Mellon University (also chaired the Phase I study); Karin Lamburg, Syracuse University; Elizabeth Rieke, Lahotan Bay Area Office, Nevada; Richard Sparks, University of Illinois at Urbana-Champaign; and Soroosh Sorooshian, University of California at Irvine. For more information on this study, contact Jeffrey Jacobs at (202) 334-3422 or jjacobs@nas.edu.

Jeffrey Jacobs is a senior staff officer with the Water Science and Technology Board.

NRC MEETINGS

Texas Instream Flows

January 12-14, 2004, San Antonio, Texas

Water Science and Technology Board Meeting

January 26-27, 2004, Washington, DC

13th Abel Wolman Lecture

January 26, 2004, Washington, DC

Water Quality Improvement in Pittsburgh Region

February 5-6, 2004, Washington, DC

Source Removal of Contaminants in Subsurface

February 23-24, 2004, Sedona, Arizona

Comprehensive Restoration of the Greater Everglades Ecosystem

February 26-27, 2004, Washington, DC