BIG PRICE — LITTLE BENEFIT:

Proposed Locks on the Upper Mississippi and Illinois Rivers Are Not Economically Viable

Prepared by the Nicollet Island Coalition

February 2010

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Dedicated to Mark Beorkrem

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EXECUTIVE SUMMARY

The Upper Midwest is in the midst of transformative change in its rural economic and transportation needs.

For decades, agricultural commodity exports originating from the Upper Midwest were a critical component of our nation's economy and foreign policy. Facilitating the export of agricultural commodities through the investment in and subsidization of transportation networks provided benefits to farmers, grain traders, and the agricultural economy and improved the U.S. balance of trade. However, these transportation networks interrupted and damaged natural river processes on the Upper Mississippi and Illinois Rivers. River ecosystems were radically altered when 29 dams with accompanying locks were built on the rivers and barge traffic commenced. The dams transformed the Upper Mississippi River System into a string of reservoirs, halting the flows and processes of rivers that for centuries produced a dynamic environment and vital wildlife habitat. The rivers are now dependent on further human intervention and investment to simulate and enable the necessary functions of the rivers.

The most promising of these restoration efforts is the Environmental Management Program (EMP), created by Congress in 1986 to bring together federal and state expertise to develop and – in essence – test restoration activities to determine the most effective methods to restore ecosystems on the Upper Mississippi River System. To combat the radical changes brought by the locks and dams, EMP has responded with a host of practices and technologies to support natural river functions. Water level management, side channel rehabilitation, and even manmade islands are examples of projects conducted through EMP to mimic the behavior of free-flowing rivers.

As the environmental functions of the rivers have shifted, so have the economic opportunities in agriculture in the Upper Midwest. From 1950 through the late 1970s, the Mississippi River experienced steady growth in agricultural commodities traffic moving down the river via barge. However, since 1980, Mississippi River barge traffic has fluctuated significantly and the overall trend has been less traffic. At one key lock at Alton, Illinois, for example, barge traffic has declined from its peak of 80.5 million tons in 1990 down to 56.3 million tons in 2008. The causes of this transition include significant growth in agricultural production in other parts of the world and less demand than expected from emerging markets like China. In addition, the demand for biofuels and locally grown foods has

skyrocketed, enabling growers to sell agricultural products much closer to home.

Since the early 1990s, despite flat or declining barge traffic, the U.S. Army Corps of Engineers (the Corps) has been developing a plan to increase barge capacity on the Upper Mississippi River-Illinois Waterway (UMR-IWW) by adding seven new 1,200-foot locks and extending five existing 600-foot locks. According to the Corps' Upper Mississippi River System Navigation and Ecosystem Sustainability Program (NESP) Web site, the Corps has prepared at least 253 detailed engineering, economic, and environmental reports to justify this UMR-IWW navigation expansion plan.[1] And taxpayers have paid the more than $50 million bill for the Corps to prepare reports pertaining to the new navigation projects and their environmental impacts.

The Corps developed NESP's navigation expansion plan – with an associated implementation cost of more than $2 billion – in response to industry claims of significant delays in passing barge tows through 600-foot locks on the UMR-IWW. Provisions to tie ecosystem restoration to the construction plans were later added through NESP to address the documented environmental degradation to river ecosystems resulting from barge navigation. Although delays do occur on the lock and dam system, and the need for environmental restoration actions are clearly known, the primary question is whether the heavily subsidized construction of new 1,200-foot locks to expand barge capacity on the UMR-IWW system is a justified investment of taxpayer money.

Multiple factors demonstrate that the proposed construction of the new locks is not justified:

- Barge traffic on the Upper Mississippi River-Illinois Waterway has been flat since 1980, and in recent years continued a trend of significant drops in volume. Locks currently in operation have excess capacity of more than 50 percent, which would accommodate any reasonable future increase in lock demand.

- Due to the lack of consistent funding, the Corps has been unable to keep current on necessary maintenance on the UMR-IWW lock and dam system. This large and growing backlog creates a perpetual problem that new construction does not solve. Because basic maintenance is necessary for any lock in use, new construction only adds another expense to existing unmet maintenance funding needs.

- Several non-structural and small-scale measures, including barge traffic appointment scheduling, have been identified by the Corps as measures that can reduce barge lockage delays. These measures need to be instituted and evaluated before the Corps proceeds with any new lock construction. An important step in that evaluation process is completing another Benefit-Cost Analysis for the new locks using conditions subsequent to full implementation of non-structural and small-scale measures.

> The dams transformed the Upper Mississippi River System into a string of reservoirs, halting the flows and processes of rivers that for centuries produced a dynamic environment and vital wildlife habitat.

- The barge industry asserts that shipping by barge is significantly more fuel efficient than rail transportation and therefore less polluting. More complete analysis of transportation fuel efficiency demonstrates that this claim is incorrect because it ignores the use of highly efficient rail systems and does not take into consideration that barges travel more miles following the course of the river than trains do to get to the same destination.

- The Corps' own economic analysis shows new construction of seven 1,200-foot locks will result in a negative return on investment. Based on two decades of flat or decreasing barge traffic, the proposed new locks will likely result in a loss of 80 cents for every dollar provided by taxpayers. Of additional concern is the fact that other Corps lock projects currently underway are exceeding their initial cost-estimates by double and even triple the estimated amounts.

[1] U.S. Army Corps of Engineers Navigation and Ecosystem Sustainability Program (NESP) Web site, *http://www2.mvr.usace.army.mil/UMRS/NESP/Projects/NESPProjects/default.cfm?cat=np&sec=documents&tid=3&sort=DOCUMENT_PUBLISH_DATE%20ASC*

> Based on two decades of flat or decreasing barge traffic, the proposed new locks will likely result in a loss of 80 cents for every dollar provided by taxpayers.

- Previous legislation[2] established a trust fund financed by barge industry contributions to pay 50 percent of the cost of new inland waterway navigation construction and major rehabilitation of existing navigation infrastructure. Today the fund is essentially bankrupt due largely to massive cost overruns on Corps construction projects on the Ohio River and the fact that the barge industry's mandated contribution is insufficient to support current project costs. This trust fund will be unable to provide significant funding for NESP projects for potentially 5 years. During this period, the cost of constructing the seven new 1,200-foot locks on the UMR-IWW will only continue to escalate, further worsening the already negative return on NESP construction investment.

[2] Section 1103 (g), Water Resources Development Act of 1986, P.L. 99–662, as amended

Because the proposed 1,200-foot locks contained in the Corps' Recommended Plan for NESP are not economically justified, we recommend the following:

- NESP be de-authorized, canceling the lock construction projects.
- The small-scale and non-structural measures presently included in the NESP Recommended Plan receive separate authorization so they may be implemented without delay.
- The increased funding for ecosystem restoration currently bound to the initial phase of NESP, any additional related restoration plans, and new and essential restoration components be formally transferred to the existing Environmental Management Program. Specifically, these new restoration components include an allowance to acquire at least 35,000 acres of land from willing landowners for the purposes of reconnecting floodplains isolated from the river by levees; new wetland and riparian habitat protection and restoration activities; construction of fish passages at up to four dams to improve species diversity; improved water level management capabilities that mimic the historic flood pulses lost with dam construction; adding the capability of project cost sharing with non-governmental organizations; and establishing an advisory panel of diverse stakeholder interests for project reporting and ranking.
- Congress authorize these recommendations and appropriate funds to support them, including initially increasing funding for the Environmental Management Program to at least equal the authorized funding level for restoration contained in NESP of $100 million annually with further increases as are deemed necessary to adequately restore the system.

INTRODUCTION

During the 1930s, a series of dams and locks were constructed by, and are still operated under the direction of, the U.S. Army Corps of Engineers (the Corps) on the Upper Mississippi and Illinois Rivers. The dams and locks stretch south from the Twin Cities of Minneapolis-St. Paul, Minnesota, to just above St. Louis, Missouri.

These 29 structures, including two locks and dams on the Illinois River at Peoria and La Grange, Illinois, constitute the Upper Mississippi River-Illinois Waterway (UMR-IWW) navigation system, which was developed to ease the transport of freight along the rivers' northerly incline. (See Figure 1) Barges carry agricultural commodities, petroleum products, and coal through this system. Farm products account for approximately half the tonnage shipped.

The Mississippi River corridor contains an ecosystem that is home to over 200 fish and mussel species and nearly 300 varieties of birds. It serves as the migratory path for 40 percent of North America's waterfowl. [3] More than 12 million people annually recreate on and along the Upper Mississippi River, spending $1.2 billion and supporting 18,000 jobs. Each year, more people use the Upper Mississippi than visit Yellowstone National Park.

Environmental Decline

Since the completion of the UMR-IWW navigation system, the river ecosystems have declined significantly. As the Corps candidly stated in its study of expanding navigation construction on the river, the Upper Mississippi River ecosystem is "significantly altered, is currently degraded, and is expected to get worse." [4]

Rather than a natural, continuous river, the dams turned the Upper Mississippi into a series of pools, which age like reservoirs from sediment accumulation and are degrading further each year. Channelization of the lower open portion of the river, due to the construction

[3] U.S. Geological Survey – Upper Midwest Environmental Sciences Center, About the Upper Mississippi River System, *http://www.umesc.usgs.gov/umesc_about/about_umrs.html*

[4] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study," page 95

Figure 1: UMR-IWW Locks and Dams

Figure 1: The 29 dams and associated locks on the Upper Mississippi River–Illinois Waterway.

of levees and river training structures built to improve navigation, has separated the river from its floodplain. Barge traffic throughout the UMR-IWW system causes additional environmental damage to islands and river banks from wave action as well as from the long periods of storage, or "fleeting," of empty barges along the river banks. These combined conditions and the resultant erosion and disturbance creates a host of environmental consequences such as high turbidity, which undermines river ecosystems by choking off aquatic plants and destroying the river food chain at its foundation.

In sum, there is no denying that the natural functions of the river have been adversely affected by the presence of 29 dams and their associated locks and barge traffic. A river sub-divided into a string of lakes is simply not capable of functioning as a dynamic river ecosystem. Once it has been so significantly altered, it requires further intervention to sustain the diverse habitats and interdependent species that evolved with the river over many preceding centuries.

Environmental Management Program

Fortunately, there is currently a highly regarded ecosystem restoration program working in the Upper Mississippi River System. In 1986, Congress passed the Upper Mississippi River Management Act, which established what has become known as the Environmental Management Program (EMP). EMP receives about $20 million each year to develop and construct innovative ecosystem restoration projects within the UMR System and is managed through a partnership of the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the state governments of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. One-third of EMP's funding is used to scientifically evaluate restoration projects to improve restoration practices.

In the relatively short history of EMP, more than 70 major restoration projects have been pursued. Examples include shoreline protection, island building, backwater area restoration, and side channel rehabilitation. These projects are intended to enrich and expand fish and wildlife habitats, increase biodiversity, restore natural river hydrological functions, and improve water quality.

Since its inception, EMP has invested about $420 million toward the goal of restoring the Upper Mississippi River System environment. Even so, EMP was not established with the purpose or funding level to fully restore the UMR System. Rather, it was established to provide knowledge, tools, and methods that could be used to restore the rivers when joined with an adequate level of investment. In the future, however, this established institutional organization could be readily and most efficiently expanded to become a full-fledged UMR System restoration program.

> Rather than a natural, continuous river, the dams turned the Upper Mississippi into a series of pools, which age like reservoirs from sediment accumulation and are degrading further each year.

Navigation and Ecosystem Sustainability Program

Locks at 26 of the dams on the UMR-IWW are 600 feet long; three dams have 1,200-foot locks (see full list in Figure 1). Barge tows are commonly 1,100 feet long (three barges wide by five barges long) and must be locked through 600-foot locks in two steps. The tows are split into two sections and each is moved through the lock separately, a process called double lockage. (See Figure 2)

In response to industry claims of significant delays in passing barge tows through 600-foot locks on one section of the UMR-IWW, the Corps developed a

Figure 2: A helper boat prepared to pull the first section of a split tow out of the lock at Dam 16.

Table 1: Navigation and Ecosystem Sustainability Program Recommended Plan Details

The initial 15-year phase of NESP is broken into two components: A set of Navigation Projects and a set of Ecosystem Restoration Projects.

Navigation Projects: Capital costs of more than $2.2 billion

- Large-Scale Projects:
  - Seven new 1,200 foot-long locks (see Figure 1 for locations)
- Small-Scale Projects (defined by the Corps as projects "less costly than constructing a new lock"):
  - Up to seven new mooring cells
  - Up to eight new switchboats
- Non-Structural Projects:
  - Barge appointment scheduling system

Ecosystem Restoration Projects: $1.7 billion for approximately 225 projects (approximately $100 million annually)

- Island building
- Construction of fish passages
- Floodplain restoration
- Water level management (including water drawdown)
- Backwater restoration
- Side channel restoration
- Wing dam and dike restoration and modification
- Island and shoreline protection
- Topographical diversity
- Dam point control
- Use of dredged material for environmental purposes
- Tributary confluence restoration
- Spillway, dam, and levee modification to benefit the environment
- Land and easement acquisition for floodplain restoration

Source: Sections 8003 and 8004, Water Resources Development Act of 2007

navigation expansion plan within the Navigation and Ecosystem Sustainability Program (NESP) – which comes with an estimated capital cost of more than $2.2 billion. Of this total, more than $1.9 billion is for the construction of seven new 1,200-foot locks (see Table 1 for program details). In addition, it includes $1.7 billion for approximately 225 ecosystem restoration projects. The program was formally developed over more than 15 years, culminating in the "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study."[5]

The UMR-IWW navigation expansion planning process has, since its inception, been replete with problems associated with the proposed new and extended locks. In early 2000, the Inspector General for the Department of the Army confirmed that the Corps had manipulated the economic justification for the proposed locks, and the resultant controversy delayed the navigation expansion process for more than a year. After selecting a plan from the developed alternatives in NESP in late 2004, the Corps was then required to undertake a lengthy economic re-evaluation of the proposed navigation plan. In January 2006, the Assistant Secretary of the Army (Civil Works) responded to the Corps' Recommended Plan for NESP, stating that he did not believe the seven new locks were demonstrated to be economically justified. In response, the Corps provided an Economic Reevaluation Report in March 2008.

After all of this effort, in July 2008 the Assistant Secretary of the Army declared, "My office has completed its review and I have determined that the recommended project cannot yet be supported by the reevaluation report …." The Assistant Secretary of the Army further determined that, "There are too many uncertainties documented by the [External Review Panel] to warrant conclusions that the project is economically justified."[6]

[5] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study"

[6] John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works), July 24, 2008, Memorandum for the Deputy Commanding General for Civil and Emergency Operations, "Re-evaluation of the Recommended Plan: Upper Mississippi River and Illinois Waterway System Navigation Study," Interim Report

Construction Criticized, Restoration Supported

An outcome of the economic manipulation controversy that occurred in 2000 was that the National Research Council (NRC) – which functions under the auspices of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine – was engaged to independently review the Corps' UMR-IWW Navigation Feasibility Studies. The NRC was tasked with evaluating both the navigation and ecosystem restoration aspects of the studies.

> Since its inception, EMP has invested about $420 million toward the goal of restoring the Upper Mississippi River System environment.

The National Research Council subsequently issued four separate reports during the course of the Corps' UMR-IWW Navigation Feasibility Studies development, all of which consistently support the need for improved ecosystem restoration efforts. In a 2001[7] report, the NRC discussed the need for research on the impacts of navigation on the environment:

> "Congress should continue to provide support for EMP-based research on the links between the navigation system and river ecology. The EMP research effort should be enhanced to improve assessment of the current navigation system's cumulative effects on the environment, and broadened to include studies of the impacts of barge traffic on river ecology."

NRC also stated the need to restore the natural functions of the river in an October 2004 report.[8]

> "The ecological dimensions of the [navigation feasibility] study could be strengthened by focusing efforts on restoring system-level hydrology and by broadening efforts to reestablish connectivity between the floodplain and river channel (or increasing the number of acres that

[7] National Research Council (NRC), 2001, "Inland Navigation System Planning: The Upper Mississippi River-Illinois Waterway," page 6

[8] National Research Council (NRC), 2004, "Review of the U.S. Army Corps of Engineers Restructured Upper Mississippi River-Illinois Waterway Feasibility Study: Second Report," page 5

can receive floodwaters during high flows) in areas where these connections have been disrupted by flood management projects and where there is support for alternative approaches (including willing sellers of leveed lands)."

But continuing throughout the NRC review process was serious criticism of the economic case the Corps presented in support of constructing the seven new 1,200-foot locks. In the October 2004 report evaluating the Corps' final navigation expansion plan, the National Research Council declared that the Corps' plan, "contains flaws serious enough to limit its credibility and value within the policy-making process."

Restoration Held Captive to Construction

In developing NESP, the Corps combined needed ecosystem restoration work with large-scale navigation projects. The Corps' final recommended plan for NESP in 2004 reflected an evolving process in which the proposed but much-criticized 1,200-foot lock construction projects became joined with a plan for much-supported ecosystem restoration efforts. Unfortunately, this endeavor to create a single combined program has held efforts to improve and expand ecosystem restoration on the UMR System hostage for nearly a decade while the Corps attempted to justify the large-scale navigation projects contained in NESP. Combining these divergent projects, especially with the acknowledgement that navigation has had a dramatic negative impact on the river environments, creates an inherent conflict within NESP.

Although the ecosystem restoration portion of NESP contains many essential new projects and developments (see Table 1), experts dispute whether its approximately $100 million annual investment will be sufficient to fully address the rivers' environmental problems. The Upper Mississippi River Conservation Committee (UMRCC), an organization of 200 wildlife resource professionals, was established in 1943 out of concern for wildlife conservation issues within the UMR System. In 2002, UMRCC prepared a report[9] in which the organization estimated that an annual investment of about $900 million over 50 years may be necessary to restore the river and its ecosystems as well as address the continuing impacts on the river from barge navigation.

In any case, abundant research and analysis affirms that an annual investment of $20 million, as is typical for the current EMP program, is clearly insufficient – and far short of the $100 million proposed in NESP. Additionally, continuing the historical prioritization of navigation construction projects ahead of projects to support and enhance ecosystem health will squander much-needed and increasingly less available taxpayer funds, ultimately leaving less for essential ecosystem restoration projects.

Taxpayers paid the entire bill for the original UMR-IWW lock and dam system, valued today at between $15 and $30 billion. The public also pays for the operation and maintenance of the system (more than $100 million per year), at least half of the major rehabilitation work (approaching $1 billion dollars to date), and all of the costs of repairing the environmental damage caused by the navigation system (estimated to be in the tens of billions of dollars). For taxpayers to assume responsibility for potentially billions of dollars more to construct seven new locks, the economic justification for that construction must be firmly established.

NESP Authorization not Justified

The Upper Mississippi and Illinois Rivers have been profoundly changed by the establishment of the UMR-IWW navigation system. The rivers' ecosystems continue to degrade further, outpacing all current attempts to slow their decline. Experts both outside of, and within, the U.S. Army Corps of Engineers have expressed a consensus of opinion that ecosystem restoration is required on the UMR System. This report examines and details the lock construction plan that is the principal obstacle preventing the uncompromised pursuit and implementation of science-based solutions to ecosystem degradation. The NESP program authorized in the 2007 Water Resources Development Act is a conflicted and misguided plan ultimately undermined by its unjustified authorization for new large-scale navigation construction on the UMR-IWW.

The following six overarching issues detail the lack of justification for the construction of the seven new locks on the UMR-IWW.

[9] The Upper Mississippi River Conservation Committee (UMRCC), 2002, "A Preliminary Description of Habitat Objectives (And Estimated Costs) Needed to Achieve a Desired Level of Ecosystem Integrity on the Upper Mississippi River System"

Figure 3: UMR-IWW Locks and Dams in Confluence Area

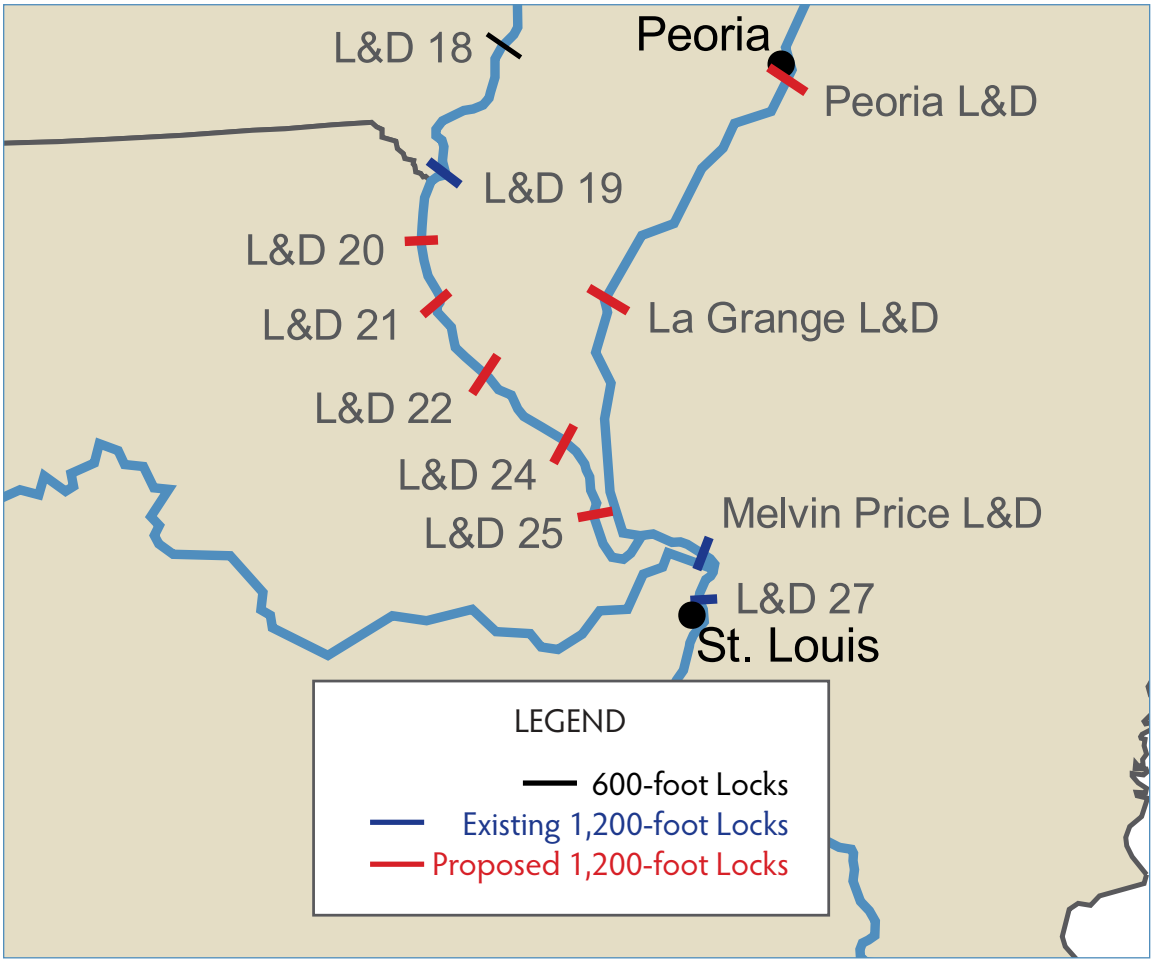


Figure 3: The seven 600-foot locks to be replaced by 1,200-foot locks consist of five on the UMR (20, 21, 22, 24, 25) and two on the IWW (Peoria and La Grange).

SECTION 1: Barge Traffic Is Decreasing

The UMR-IWW system is loosely shaped like a "Y," with the UMR and Illinois River converging just west of Melvin Price Locks and Dam. (See Figure 3) Barge traffic flowing downstream from both rivers converges at the locks at Melvin Price Dam, also designated as Locks and Dam 26. The existing 600-foot locks at Locks and Dams 20-25, Peoria, and La Grange are designed for a nominal 50 million tons in annual barge traffic, and the three existing 1,200-foot locks at Dam 19, Melvin Price Dam, and the Chain of Rocks Channel (Lock 27) near St. Louis are designed for approximately a nominal capacity of 100 million tons annually.

In 1982, the Corps[10] projected total combined upstream and downstream traffic volume traversing the locks at Dam 26 (replaced by Melvin Price Locks and Dam) would reach 123 million tons by 1998. This estimated volume was used to justify the construction of the 1,200-foot lock at the site of the new Melvin Price Dam,

[10] U.S. Army Corps of Engineers, 1982, Technical Report A, "Navigation and Transportation, Comprehensive Master Plan for the Management of the Upper Mississippi River System," prepared for the Upper Mississippi River Basin Commission

Figure 4: Melvin Price Locks Statistics

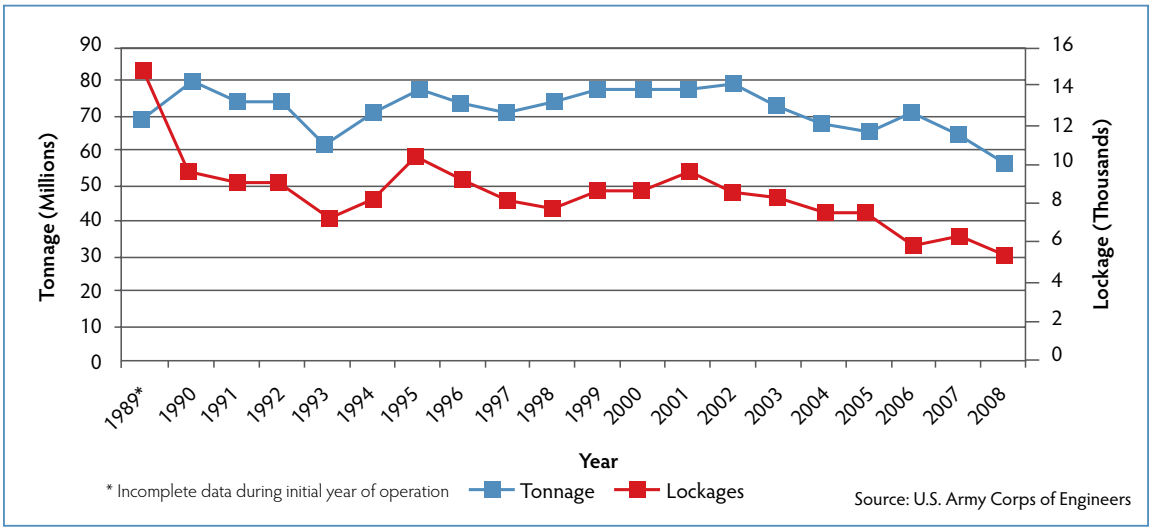


Figure 4: The Melvin Price Locks, the first locks downstream of the convergence of the Upper Mississippi River and Illinois River, have maintained a clearly declining traffic trendline.

built to replace the failing original Dam 26.[11] However, barge traffic has never increased to the Corps' projected level, even with record corn production in 2007.[12]

In fact, 2008 traffic levels on the UMR-IWW, taken from the Corps' Internet barge traffic reporting system, continued a two decades long flat-to-declining trend with recent dramatic declines. Historic barge traffic for the Melvin Price Locks (see Figure 4) shows a steady decline from a peak of 80.5 million tons in 1990 down to 56.3 million tons in 2008. Preliminary data indicate that barge traffic for 2009 at the Melvin Price Locks will be close to the 2008 tonnage.

{ 2008 traffic levels on the UMR-IWW continued a two decades long flat-to-declining trend with recent dramatic declines. }

A 2009 report by Dr. Donald Sweeney[13] (former lead economist on the Corps' UMR-IWW proposed 1,200-foot locks feasibility study) evaluates the Corps' 2008 Economic Reevaluation Report. Dr. Sweeney compares the lock service status in four usage categories for the seven 600-foot locks at which new 1,200-foot locks are proposed. (See Figure 5) The graph vividly shows the steady decrease in lock traffic and associated growth in available lock capacity. In 1999, these seven locks were processing river traffic approximately 60 percent of the time and sat idle without traffic more than 35 percent of the time. By 2008, the same seven locks were processing traffic less than 35 percent of the time and sat idle without traffic more than 60 percent of the time.

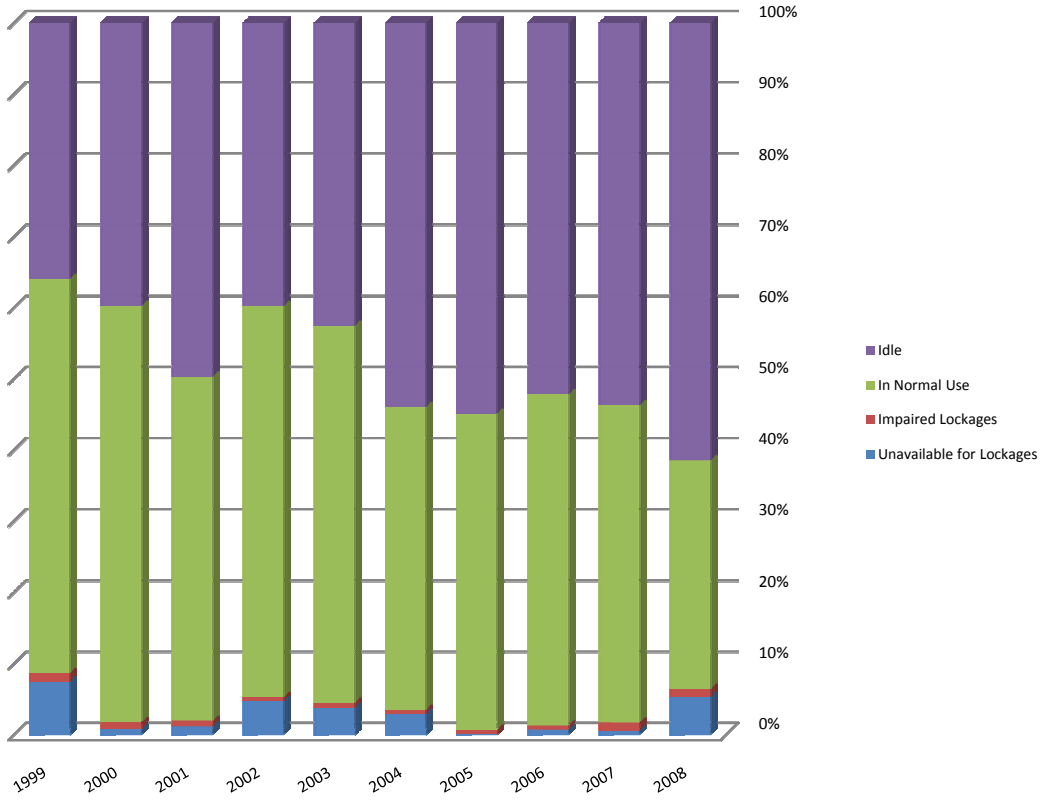
The existing seven 600-foot locks have had excess capacity of well more than 50 percent of their annual carrying capacity over the last five years and could accommodate significant increases in barge traffic. With lockage "supply" already outstripping "demand," there is no justification for spending more than $2 billion to construct new 1,200-foot locks.

[11] Report on Replacement – Locks & Dam 26, Mississippi River, Alton, Illinois, 1968. This report by the Corps proposed the replacement of Locks and Dam 26, which contained a 600-foot and a 360-foot lock, with a new dam and two 1,200-foot locks. The reason for replacing the dam was concerns over the dam's structural integrity. The dam condition is described on pages 13 – 14 of the report: "Major scour of the riverbed has developed immediately downstream of the dam and extends almost the full length of the structure and, in some cases, is deeper than pile tips supporting the dam. The overall present condition of the existing structure raises serious questions as to its stability." This report also contained projected increases in barge traffic to justify the construction of the new 1,200-foot locks.

[12] Scott Kilman, 2008, "U.S. Corn Production Seen Dropping, Though More to Be Used for Ethanol," *Wall Street Journal*

[13] Dr. Donald Sweeney II, 2009, "A Critique of 'Final Re-Evaluation of the Recommended Plan: UMR-IWW System Navigation Study: Interim Study'"

Figure 5: Distribution of Lock Service Status
UMR Locks 20–25, Peoria and La Grange 1999–2008



Source: Dr. Donald Sweeney II, 2009, "A Critique of 'Final Re-Evaluation of the Recommended Plan: UMR-IWW System Navigtion Study: Interim Study'"

Figure 5: The existing seven 600-foot locks slated for replacement with 1,200-foot locks are processing significantly less traffic than they were 20 years ago. The locks currently sit idle without traffic more than 60 percent of the time.

SECTION 2: Regular Maintenance Can Significantly Extend Lock and Dam Usability

Consistent and timely maintenance of any kind of equipment – including a river lock – is essential to its long-term reliability and cost-effective operation, allowing the equipment to efficiently last through its design life. When the equipment is rehabilitated, as has been the case with locks on the UMR-IWW, the original design life can be significantly extended. The distinction between maintenance and rehabilitation is formalized in the Corps' operation of the UMR-IWW system by the establishment of separate categorization and funding sources for ongoing maintenance needs and the major rehabilitation projects.

{When the equipment is rehabilitated, as has been the case with locks on the UMR-IWW, the original design life can be significantly extended.}

The value of dam maintenance and the separate role of rehabilitation were noted by the Corps in its 2004 Final UMR-IWW System Navigation Feasibility Study, now incorporated as the Congressionally-authorized NESP. In particular, the Corps confirmed that building new locks would only equal the 50-year useable life of rehabilitated locks:

> "The study concluded that the life of existing locks and dams and their components can be extended with normal periodic rehabilitation for another 50 years and match the design life of any new construction being considered as part of the 'with-project' condition."[14]

Over the past two decades, all of the locks on the UMR-IWW have received major rehabilitation investments. Table 2 shows the rehabilitation investments made to the existing seven locks where new 1,200-foot locks are proposed.

However, when lock maintenance is not performed adequately, equipment can fail sooner than it should and rehabilitation work may be required earlier and be more expensive than it would be on properly maintained locks. By the Corps' own admission, maintenance activities on the UMR navigation system have been lacking:

> "Operations and Maintenance (O&M) costs include funding for lock and dam personnel, maintenance crews, dredging, utilities, minor repairs, and the maintenance of training structures south of St. Louis. These routine costs are incurred annually, but historically they have not been sufficient to maintain an acceptable level of performance, leaving a need for additional

[14] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study," page 85

monies to maintain a system that otherwise will deteriorate over time. Appropriations for the O&M budget have been nearly "flat-lined" in recent years when compared with the necessary repairs and other demands. This has resulted in the deferring of many maintenance-type items.... This will result in an increase in the unscheduled closures in the future."[15]

Current Corps documentation shows it is likely that the UMR-IWW system's maintenance backlog is near $1 billion today.[16] This lack of lock maintenance increases the possibility of major breakdowns throughout the entire UMR-IWW system, contributing to barge tow delays. It also further increases the cost of operating and maintaining the entire UMR-IWW system because components must be replaced more frequently than they would with proper maintenance and often require expensive emergency repairs. For example, Congress had to allocate $20.7 million through the 2009 American Recovery and Reinvestment Act (ARRA) to repair Lock 27.[17]

NESP seeks new 1,200-foot locks at UMR dams 20-25 and Illinois River dams at Peoria and La Grange, each of which will add to the annual operation and maintenance costs of the UMR-IWW navigation system. The Corps' growing maintenance backlog of $1 billion is equal to half of the appropriations sought for new NESP construction projects above and beyond – or effectively in competition with – existing maintenance demands.

The new construction projects in NESP do nothing to diminish the maintenance backlog on the UMR-IWW system. Maintenance activities and construction projects are separately funded. Maintenance needs are a constant while the construction of new 1,200-foot locks is a choice. Currently, system maintenance is severely under-funded, while at the same time seven expensive new construction projects have been authorized to replace already rehabilitated locks. The focus of efforts in the UMR-IWW navigation system should be on properly funding the maintenance and periodic rehabilitation of the existing lock and dam system, not constructing seven new locks and increasing the system's maintenance obligations.

Table 2: UMR-IWW Lock Rehabilitation

L&D System	Cost (in millions)	Year Completed
20	$44	1994
21	$15	1990
22	$15	1990
24	$70	2007
25	$26	2001
La Grange	$22	1991
Peoria	$23	1991

Source: U.S. Army Corps of Engineers

Table 2: The seven locks to be replaced with new 1,200-foot locks have already been rehabilitated at significant cost, and with proper maintenance can operate effectively for another 30-50 years.

[15] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study," page 60

[16] U.S. Army Corps of Engineers, 2009, "Project Fact Sheet for: Backlog of Maintenance – Major Rehabilitation and Major Maintenance – Mississippi River & Illinois Waterway Locks And Dams," *http://www2.mvr.usace.army.mil/projects/dsp_factsheet.cfm?ProjID=F59D2E51-A71C-990C-95ED99F6C88F23CA*

[17] Senator Durbin, 2009, Press Release: Durbin Announces $300 Million in Recovery Act Funding for Army Corps Projects in Illinois, *http://durbin.senate.gov/showRelease.cfm?releaseId=312201*

SECTION 3: Simple Measures Can Cut Lock Traffic Delays

At 600-foot locks, barge tows longer than 600 feet in length must be split into two segments and placed through the locks separately (this is called double lockage). When compared with locking through at a 1,200-foot lock, double lockage increases the lock transit time for a tow that is more than 600 feet long.

Lock transit time consists of two components: The time awaiting lockage (termed wait time, queue time, or delay time) and the time to process the vessel through the lock (termed lock processing time). Lock processing time consists of the time it takes for the vessel to approach and enter the lock chamber, the water level to raise or lower, and the vessel to exit and clear the lock. When a barge requires a double lockage, the time to break and remake the tow as well as the additional lockage required for the second segment all add to the lock processing time.

The Corps' 2008 Interim Economic Reevaluation Report[18] predicts delays within a "High Traffic Scenario" of 58.4 hours at lock 25, and 34.2 hours at the La Grange Lock, by the year 2060 if new 1,200-foot locks are not constructed. The Corps then estimates that delays will be reduced to 1.9 hours and 4.5 hours respectively with the addition of new 1,200-foot locks.

As detailed in Section 1, barge traffic has been flat or declining for two decades. Based upon this extended traffic trend, it is highly unlikely that the large increases in barge traffic projected in the Corps' High Traffic Scenario (HTS) will occur. Without the HTS level of traffic, these estimated delays obviously will not occur.

Additionally, a critical element of delay estimation is how much of the delay at a lock will be directly attributable to double lockages (lock processing time) versus how much delay may be caused by the lack of an effective traffic management system (queue time). New 1,200-foot locks may directly impact lock processing time, but in and of themselves do nothing to affect the number of barges on the river and whether they arrive at a given lock at the same time. This aspect of lock delays is acknowledged within the Corps' report, which states, "Completion of the Corps' recommended navigation improvements are not expected to completely eliminate all delays since a portion of delays are attributable to variability in demand – more than one boat arriving at the same time results in delay.… Corps data suggest that Locks 26 and 27 experience some of the largest delays despite having undergone fairly recent renovation and having 1,200-ft. lock capacity."[19]

[18] U.S. Army Corps of Engineers, 2008, "Final Economic Reevaluation of the Recommended Plan," Interim Report

[19] U.S. Army Corps of Engineers, 2008, "Final Economic Reevaluation of the Recommended Plan," Interim Report, page 8

In effect, with the NESP 1,200-foot lock construction the Corps is attempting to optimize the entire UMR-IWW system for the limited occasions when a spike in barge traffic or the localized bunching of barge arrivals at a lock creates temporary congestion.

Alternative means of mitigating delays have been identified

The Upper Mississippi River Management Act of 1986[20] directed the Corps to look into incorporating small-scale (SS) and non-structural[21] (NS) improvements at locks to increase lock capacity. In 2000, the Corps redefined small scale structural measures as "lower cost measures requiring construction that can reduce traffic delays and congestion at the system locks without the major construction and expense involved with extending the existing lock chamber or building new locks."

In 2001, the National Research Council determined that UMR-IWW lockage delays could be reduced without constructing new 1,200-foot locks if the Corps initiated SS and NS measures, including traffic scheduling.[22]

> "The committee noted that only a narrow range of alternatives for addressing waterway congestion on the UMR–IWW was assessed in the feasibility study. Several relatively inexpensive, non-structural options exist for reducing UMR–IWW traffic congestion, including better scheduling, tradable lockage permits, and congestion fees.
>
> Congress should instruct the Corps to explore fully these nonstructural options for improving traffic management as the baseline condition for the National Economic Development alternative and environmental evaluation of any proposal for lock extensions. A comprehensive review and assessment of the benefits and costs of nonstructural options for improving traffic management should be conducted. The benefits and costs of lock extensions should not be calculated until nonstructural measures for waterway traffic management have been carefully assessed."

{ No formalized appointment scheduling of any kind is practiced on the UMR-IWW system. }

By 2004, the Corps had added the scheduling of barges to the list of potential non-structural measures on the UMR-IWW. The Corps' 2004 Final Report[23] includes the recommendation to add mooring cells[24] and switchboats[25] to assist barge tows at locks and develop an appointment scheduling system.

Adopting alternative means for mitigating delays has been ordered, but not implemented

No formalized appointment scheduling of any kind is practiced on the UMR-IWW system. This shortcoming persists despite the use of scheduling on other waterways, and the nearly ubiquitous presence of GPS and other tracking and locating technologies throughout other public, personal, and corporate transportation modes.

The Corps was directed in 2006 by the Assistant Secretary of the Army for Civil Works [26] to implement SS and NS measures, including scheduling capability, "to determine their impact on total project benefits." However, in implementing NESP the Corps has not employed or reported on any SS and NS measures on the UMR-IWW.

[20] Section 1103 (g), Water Resources Development Act of 1986, P.L. 99–662, as amended

[21] Non-structural measures are measures to reduce barge traffic congestion, such as appointment scheduling, that do not require construction of physical structures

[22] National Research Council (NRC), 2001, "Inland Navigation System Planning: The Upper Mississippi River-Illinois Waterway," page 4

[23] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study"

[24] Mooring cell: A large circular sheet pile cell 20 feet or more in diameter, constructed in the river near a lock and filled with soil, rock, or concrete to provide stability. Barge towboats tie off to the cell while awaiting lockage through a lock.

[25] Switchboats are used as "assist boats" at locks, primarily to extract and help to secure the first section of a double lockage tow.

[26] John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works), 2006, Transmittal of 2004 Chief of Engineers Report and Assistant Secretary of the Army draft recommendations to Congress sent to the White House Office of Management and Budget (OMB)

Analysis of implemented alternative means has been required

NESP includes the requirement to prepare two reports to Congress: A Notification Report within the initial three years and an Evaluation Report within the initial seven years of NESP implementation. These reports are mandated to provide an evaluation of SS and NS measures in improving the lockage delays and subsequently an updated economic analysis of the UMR-IWW barge traffic system. Construction of the seven new locks is specifically prohibited until the Evaluation Report is submitted and authorization by Congress is provided.[27]

To date, no SS or NS measures have been incorporated into the UMR-IWW system and the NESP planning schedules do not accommodate supplying the Notification and Evaluation Report requirements in accordance with the Recommended Plan.

The Corps provided a work schedule for the construction of NESP projects in February 2009 showing planned start and completion dates for the navigation components of NESP. The schedule included four scenarios based on potential annual funding for NESP. Under all four of the scenarios, the construction schedule shows completion dates for the 1,200-foot locks at Dams 22 and 25 ranging from 2016 to 2020. This aggressive schedule does not take into account the time required to prepare and assess the Notification and Evaluation Reports for a decision to pursue construction of the locks. By the time these reports would be completed – between the third and seventh year of the project implementation – this schedule indicates that new lock construction will be proceeding, despite the specific stipulation to evaluate SS and NS measures before starting lock construction.

Without a significant increase in traffic, constructing new, larger locks will not alleviate lockage delays. Further, both the Corps and independent experts have identified existing, viable small-scale and non-structural measures to combat and relieve existing delays, but the Corps is presently resisting specific requirements to employ and report on the effectiveness of these measures prior to committing to the construction of new locks.

[27] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study," pages 501–502

SECTION 4: Superior Barge Fuel Efficiency Claims Are Questionable

The barge industry asserts that inland waterways barge traffic is more fuel efficient than other modes of transportation. Industry representatives cite a 2007 Texas Transportation Institute report[28] to support this claim. The report includes the data in Table 3 portraying the superior fuel efficiency of barges in shipping cargo compared with trains and trucks.

However, these comparisons do not take into account the variation in miles traveled to get from one point to another by water, rail, or road. The comparison between the distance of two modes of transportation both leaving one destination and going to the same final destination is called circuity. The Texas report acknowledges that nationally, barges have a 1.3 to 1 circuity factor when compared with trains,[29] which means that a barge must travel 30 percent farther than a rail car to reach the same destination.

Table 3: Fuel Efficiency Comparison of Transportation Modes

Mode	Tons-Miles/Gallon
Inland Towing	576
Western Railroads	413
Eastern Railroads	413
Truck	155

Table 3: Texas Transportation Institute's fuel efficiency comparison.

Any comparison of barge and rail efficiencies on the UMR-IWW must include the geographic realities of rivers. Rivers do not flow directly in straight lines; there are many turns that increase the distance a barge must travel. The rail system is not constrained by the flow of the river and follows a much straighter path to the Gulf of Mexico at New Orleans. But instead of comparing rail miles to barge miles on the Mississippi River using the acknowledged national 1.3 to 1 circuity factor, the Texas report uses a barge to truck comparison to establish a 1 to 1 circuity factor. (For comparison, a researcher at the University of Illinois[30] estimated a 1.38 to 1 circuity factor for barges specifically on the Upper Mississippi River.)

[28] Texas Transportation Institute – Center for Ports & Waterways, December 2007 (Amended March 2009), "A Modal Comparison of Domestic Freight Transportation Effects on the General Public Final Report," prepared for the U.S. Maritime Administration and the National Waterways Foundation, *http://www.americanwaterways.com/press_room/news_releases/NWFSTudy.pdf*

[29] Cambridge Systematics, 1999, "NCHRP Report 388: A guidebook for forecasting freight transportation demand," Transportation Research Board, National Research Council, Exhibit A.2, page 51, supports the statement that overall barge circuity relative to unit rail is approximately 1.30

[30] Anthony V. Sebald, 1974, "Energy Intensity of Barge and Rail Freight Hauling," CAC Document No. 27, University of Illinois

Table 4: Revised Fuel Efficiency Comparison of Transportation Modes	
Mode	**Tons-Miles/Gallon**
Inland Towing (1.3 circuity)	443
Inland Towing (1.38 circuity)	417
Average Railroad	413
Unit Grain Train	640

Table 4: Revised fuel efficiency comparison incorporating actual course-traveled factors.

Also ignored in this report was the use by rail companies of "unit trains" for shipping grain long distances. Unit trains are made up of cars going to the same final destination carrying one type of commodity. A 2008 study by researchers at Iowa State University[31] shows that unit grain trains moving from Iowa to New Orleans have a much better fuel efficiency – 640 versus 413 ton-miles per gallon – than an average train.

Incorporating both the rail circuity factor and unit grain trains into a revision of the Texas Transportation Institute's table (see Table 4) shows that barges have virtually no fuel efficiency advantage over an average train and are far less fuel efficient than unit grain trains.

The primary grain commodity used in the NESP studies to support the construction of new locks is corn, which is also shipped by unit grain trains. The barge industry, as stated above, asserts that shipping commodities on barges is more efficient than rail, saving fuel and therefore emitting fewer pollutants. However, normal rail shipping is nearly equivalent to the fuel efficiency of barge shipping, and unit grain trains are significantly more efficient than barges.

[31] Baumel, C. Philip, Charles R. Hurburgh, and Tenpao Lee, 2008, "Estimates of Total Fuel Consumption in Transporting Grain from Iowa to Major Grain Countries by Alternatives Modes and Routes," Iowa State University, *http://www.extension.iastate.edu/Grain/Topics/EstimatesofTotalFuelConsumption.htm*

SECTION 5: Cost Benefits of New Locks Are Unsubstantiated

Public projects are reviewed for their benefit to the public in relationship to their cost – the project's Benefit-Cost (B-C) ratio. A Benefit-Cost ratio is used to compare the estimated future benefits derived from a project with the estimated cost of the project. If the project's future benefits equal the cost of the project, the B-C ratio would be 1.0. A Benefit-Cost ratio of less than 1.0 means the project's costs are higher than its potential benefits, and a B-C ratio of more than 1.0 means the benefits are greater than the costs.

A B-C ratio of at least 1.5 has been a long standing policy at the Department of the Army and the White House for decades and is preferred for public projects, as indicated by Department of the Army budget guidelines submitted to Congress for the 2009 Fiscal Year.[32] The need to formalize a 1.5 B-C ratio was highlighted in a 2008 proposed change by the Bush Administration to the Federal Principles and Guidelines for water resources projects, in order to provide a reasonable return on taxpayer dollars.[33]

In December 2007, the Corps provided for the first time three Benefit-Cost ratios for the navigation projects in NESP based on various levels of barge traffic. A High Traffic Scenario (HTS) scored a B-C ratio of 1.3, a Low Traffic Scenario (LTS) scored 0.4, and Flat or Falling Traffic scored 0.2. These ratios are shown in Figure 6.

Despite the fact that UMR-IWW barge traffic has been flat or declining in recent decades and clearly declining for the past 10 years (see Figure 7), the Corps chose to make the "Reasonable Range" for barge traffic a significant increase over the last two decades' trend and placed that range between their Low Traffic and High Traffic Scenarios. Even in assuming an increase in barge traffic, the Benefit-Cost ratios estimated in the Corps' Reasonable Range start with a negative-return 0.4 B-C ratio for the Low Traffic Scenario and range up to a high of a 1.3 B-C ratio for the High Traffic Scenario.

[32] Testimony of Honorable John Paul Woodley, Jr., Assistant Secretary of the Army (Civil Works), Enclosure 3, Hearings on Energy and Water Development Appropriations, Subcommittee on Energy and Water Development Appropriations, U.S. House of Representatives, Part 5A U.S. Corps of Engineers, U.S. Government Printing Office, Washington, DC, p 17 ("Projects funded on the basis of their economic and environmental returns. Ongoing flood and storm damage reduction, commercial navigation, and hydropower construction projects with a BCR of 1.5 or higher . . . ")

[33] Brenda S. Bowen, Army Federal Register Liaison Officer [FR Doc. 2008-21294 Filed 09/11/2008 at 8:45 am; Publication Date: 09/12/2008], Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies; Availability of Proposed Principles and Request for Comments

Figure 6: NESP Range of Possible Traffic Forecasts and Associated Benefit-Cost Ratios

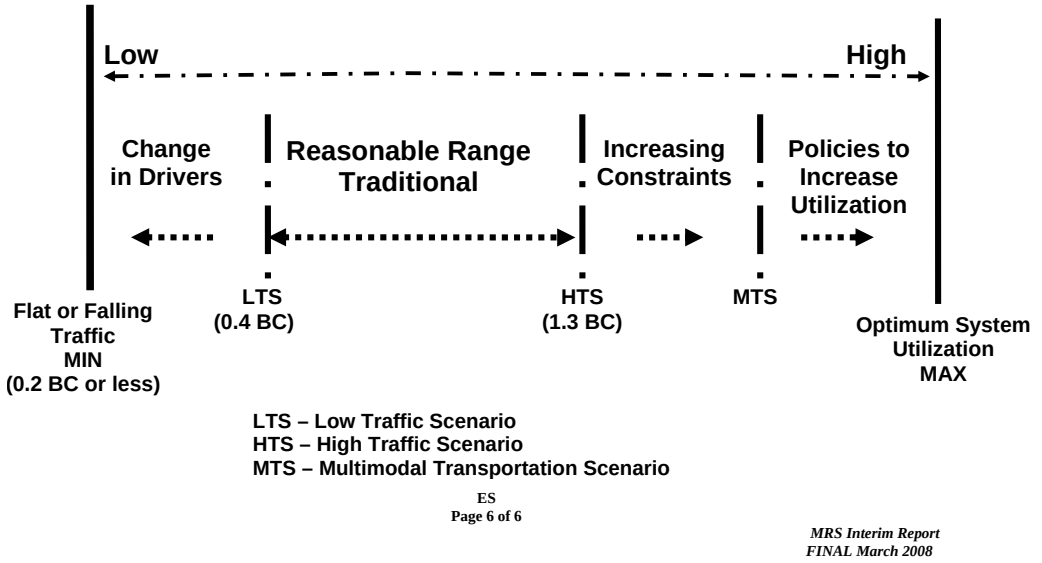
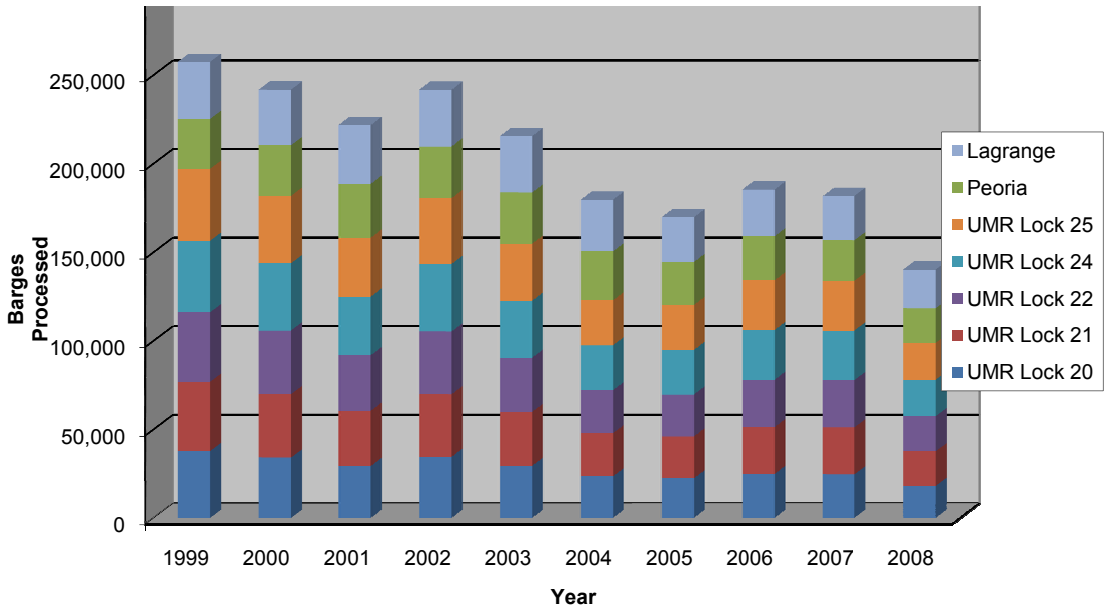


Figure 6: The existing decades-long trend of flat-or-declining UMR-IWW barge traffic receives a B-C ratio of 0.2. The projected "Reasonable Range" for NESP simply rejects any possibility other than increasing traffic.

Figure 7: Total Barges Processed at Proposed New Locks Locations



Source: Dr. Donald Sweeney II, 2009, "A Critique of 'Final Re-Evaluation of the Recommended Plan: UMR-IWW System Navigation Study: Interim Study'"

Figure 7: The total number of barges processed annually for the past ten years at the seven locks to be replaced. The total number of barges processed in 2008 is 22 percent lower than the number of barges processed in 2004 and nearly 46 percent less than the number processed in 1999.

The high end B-C ratio of 1.3 for the HTS is still below the minimum 1.5 Benefit-Cost Ratio for public projects recommended by the Bush administration and relies on a growth in barge traffic that is unsubstantiated. Using the Corps[34] average annual costs and the LTS annual benefits for the proposed NESP navigation projects, the 0.4 B-C ratio for the LTS would result in a cumulative net loss of almost $5 billion to the U.S. economy over the 50 year design life of the NESP project if the lock expansions are constructed, or roughly twice the estimated cost of NESP lock construction. Similarly, though the Corps did not include an annual benefit number for the now decades-long flat or falling traffic condition (0.2), calculations indicate that it would result in a negative return of $7 billion over 50 years, or about three times the cost of the locks.

[34] U.S. Army Corps of Engineers, 2008, "Final Economic Reevaluation of the Recommended Plan," Interim Report, Chapter 3, page 42: The Corps did not include the estimated average annual benefits for the 0.2 Flat or Falling scenario, which required an extrapolation calculation to produce.

{ The past two decades of recorded UMR-IWW barge traffic shows flat-or-declining traffic levels, significantly different from the projected increasing-traffic "Reasonable Range" asserted by the Corps. }

The past two decades of recorded UMR-IWW barge traffic shows flat-or-declining traffic levels, significantly different from the projected increasing-traffic "Reasonable Range" asserted by the Corps. The established trend of flat or falling barge traffic equates to a Benefit-Cost ratio of 0.2 for the NESP projects and constitutes a negative return of $0.80 for every $1.00 of taxpayer investment in the seven proposed new 1,200-foot locks. Even the analysis assembled by the Corps using the current traffic levels determines NESP construction would incur a major financial loss on investment.

Source: U.S. Army Corps of Engineers

SECTION 6: The Inland Waterways Trust Fund Is Severely Under-Funded

Not only will taxpayer dollars be spent for a negative Benefit-Cost ratio on the NESP navigation expansion projects, but industry contributions are inadequate to properly fund the Inland Waterways Trust Fund's projects backlog, which includes NESP.

Inland Waterways Trust Fund

The Inland Waterways Trust Fund (IWTF) was established by Congress in 1978 to fund construction of major inland navigation-related projects. IWTF receives its funding entirely from the barge industry, the primary benefactors of the inland waterways navigation system, and is used to provide a 50-percent cost share for inland waterways construction projects. The fund has supported, but is not exclusively for, construction projects on the UMR. The Water Resources Development Act of 1986 stipulates that the 50 percent cost share from the barge industry is derived from a tax on inland waterways commercial transportation fuel use. Since 1994, the fuel tax has been set at $0.20 per gallon.

> Without increased funding, the backlog of legitimate IWTF projects cannot proceed in an economical manner.

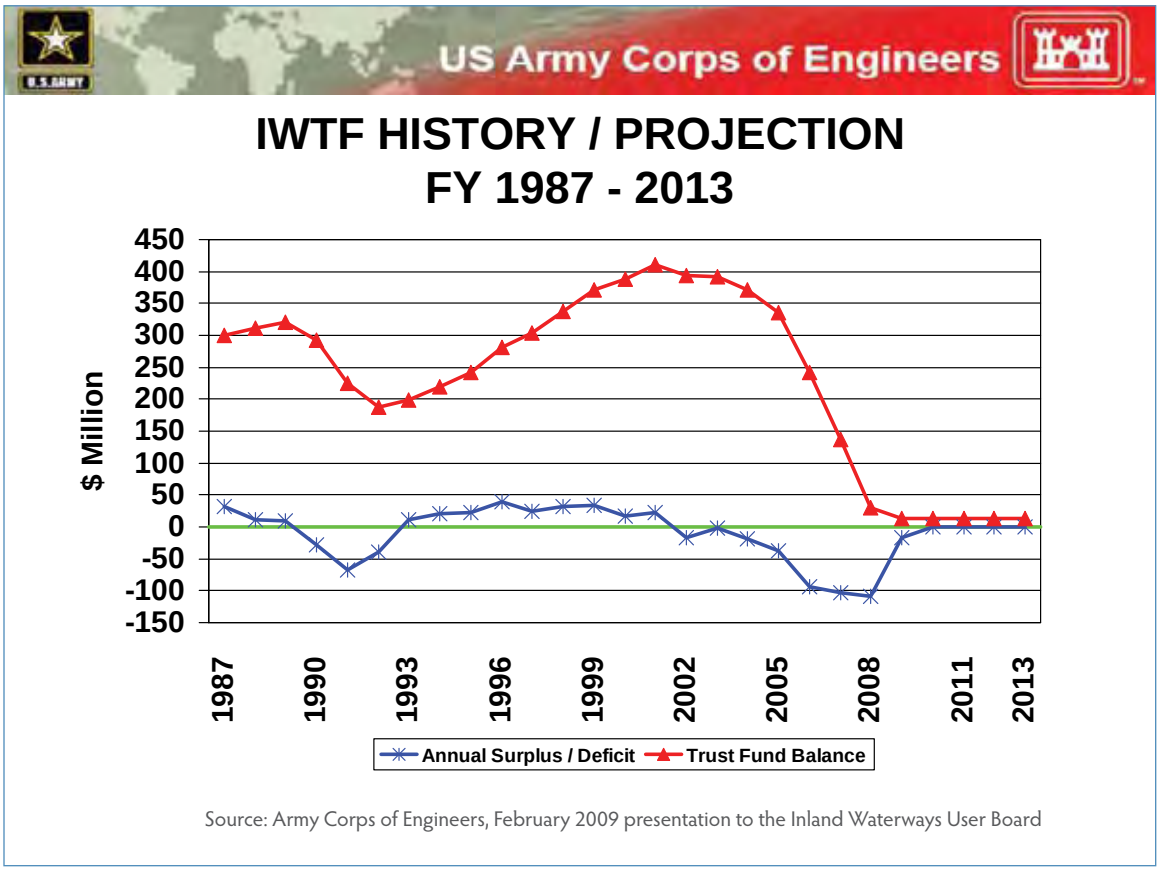
IWTF-designated construction projects include rehabilitation of navigation structures, but the legislation that established IWTF expressly excludes any funding for operation and maintenance (O&M) of the inland waterways system. This means that taxpayers must fully fund all O&M work. According to the Corps, O&M costs more than $100 million per year on the UMR-IWW navigation system[35] alone – effectively a taxpayer-provided subsidy to the navigation industry. This raises questions when contrasted with the rail industry, which fully funds the maintenance of its transportation systems.

Figure 8 was taken from a February 2009 Corps presentation to the Inland Waterways User Board on the status of the Inland Waterways Trust Fund. As of 2009, the IWTF had essentially no available surplus funds, and the Corps projects a fund balance near zero through 2013.

The Corps-authorized project backlog for IWTF obligated projects is about $17 billion.[36] The proposed new navigation projects for NESP total $2.2 billion, all of which are subject to IWTF funding.

[35] U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study"

[36] Jeff Stamper, August 6, 2009, Draft Meeting Minutes of the Upper Mississippi River System Navigation Environmental Coordination Committee, page A-5



Source: Army Corps of Engineers, February 2009 presentation to the Inland Waterways User Board

Figure 8: Inland Waterways Trust Fund contributions to construction projects are at present essentially unavailable through 2013.

Although IWTF is currently unable to make significant contributions to an efficient, long-term schedule for constructing inland waterways navigation projects, barge industry interests have proposed a *reduction* of their contribution to the IWTF-funded projects from 50 percent to 25 percent.[37] And in the recent American Recovery and Reinvestment Act, Congress completely eliminated the IWTF obligation on UMR rehabilitation projects at Lock and Dam 3 and Lock 27. If the industry obligation is reduced, taxpayers would have to fund all or nearly all navigation operations – including maintenance, construction, and rehabilitation – on the U.S. inland waterways system.[38]

The first step in establishing an economically viable inland waterways system is for the barge industry to meet its existing requirement to fund at least 50 percent of the cost of infrastructure construction. Without increased funding, the backlog of legitimate IWTF projects cannot proceed in an economical manner. Any solution to this funding shortfall must be resolved in the best interests of the taxpayers. Next, Congress should increase required funding in the IWTF to also cover at least 50 percent of the operation and maintenance costs for the inland waterways navigation system currently shouldered entirely by taxpayers.

Corps Cost Estimations

One major reason IWTF is depleted is cost overruns on several large lock and dam projects the Corps has been constructing on the Ohio River.[39]

The cost estimates and annual escalation factors for the Ohio River projects, as indicated in Table 5, have fallen

[37] Waterways Council Inc., 2008, Press Release: Stephen D. Little Testifies on Behalf of Waterways Council, Inc. Opposing (Bush) Administration's New User Fee Proposal Offers Alternate Proposal to Finance Inland Waterways Trust Fund

[38] U.S. Army Corps of Engineers, 2009, Inland Marine Transportation System Capital Investment Strategy presentation by Jeanine Hoey, December 15, 2009, slide 14: The discussed proposal would increase the taxpayer cost share for rehabilitation work for projects less than $100 million from 50% to 100% and increase the current barge industry diesel fuel tax an additional $0.6 to $0.9 per gallon. The overall result would be an increase in the taxpayers cost share for IWTF obligated projects from 50% to about 71%.

[39] There are other reasons for the depleted IWTF including decreasing total annual revenues due to flat or declining tonnages and a substantial increase in overall rates of spending on construction and rehabilitation projects.

Table 5: Major cost overruns in current inland waterways construction projects confirm the inaccuracy of the Corps' cost estimates for such projects.

Table 5: Inland Waterways Current Projects Costs (in millions)

	Estimate			
Facility	**Original**	**Current**	**Overrun**	**% Overrun**
Marmet Lock	$223	$406	$183	82%
Lower Monongahela River Locks & Dam	$556	$1,700	$1,144	206%
Olmsted Lock and Dam	$775	$2,124	$1,349	174%
McAlpine	$220	$427	$207	94%
Totals:	**$1,774**	**$4,657**	**$2,883**	

Source: Original Costs – Various, Current Costs – IWTF Meetings, 2-09 and 10-09

Table 6: Costs of NESP Proposed New Locks

Lock	Estimated Cost (millions)			Percent Increase, 2003 – 2008	Average Annual Cost Increase	Construction Duration (Years)
	2003*	2006**	2008**			
20	$167	$221.4	$237	41.9%	8.4%	8
21	$238	$322.5	$346	45.4%	9.1%	8
22	$170	$232.3	$267	57.1%	11.4%	8
24	$230	$309.9	$333	44.8%	9.0%	8
25	$240	$324.4	$348	45.0%	9.0%	8
Peoria	$206	$262.6	$283	37.4%	7.5%	7
La Grange	$209	$261.3	$281	34.4%	6.9%	9
Totals	**$1,460**	**$1,934.4**	**$2,095**	**43.5%**	**8.7%**	

Sources: *U.S. Army Corps of Engineers, 2004, "Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study," page 165 – Table 6.6

**From Corps Presentations

Table 6: Annual increases in Corps estimates for NESP construction costs are already significant.

far short. Actual cost overruns range from 82 percent to more than 205 percent.

Similar to the Ohio River projects, Table 6 shows a dramatic increase in estimated costs for the seven new UMR-IWW locks proposed in the Corps' 2004 NESP Final Report. In just five years, estimates have increased from 34 to 57 percent, an overall average of more than 43 percent. On an annual basis, the average cost estimate increase has been 8.7 percent.

Due to inadequate IWTF funding levels and escalating navigation project costs, IWTF is not expected to be able to provide significant funding for NESP projects for at least the next 5 years. During this period, the cost of constructing the seven new 1,200-foot locks on the UMR-IWW will only continue to escalate, further undermining the economic justification of NESP because higher costs will decrease the projects' Benefit-Cost ratios (assuming the value of benefits remain the same). Alternatively, should Congress act to reduce or eliminate the IWTF contribution to NESP construction, the projects' costs for taxpayers could as much as double.

{ Due to inadequate IWTF funding levels and escalating navigation project costs, IWTF is not expected be able to provide significant funding for NESP projects for at least the next 5 years. }

CONCLUSION

Expanding locks is the wrong response to degraded habitat and declining barge traffic.

According to the Corps' Upper Mississippi River System Navigation and Ecosystem Sustainability Program (NESP) Web site,[40] the agency has prepared at least 253 detailed engineering, economic, and environmental reports to justify the NESP navigation expansion plans. Taxpayers have paid more than $50 million for the cost of Corps reports pertaining just to the new NESP navigation projects and their direct environmental impacts. The time and expense spent to validate the NESP proposal lack justification, constitute a misdirected effort, and are holding the necessary expansion of ecosystem restoration efforts hostage.

The multiple factors we have detailed demonstrate that the proposed construction of the new locks is not justified because:

1. Barge traffic is decreasing.
2. Regular maintenance can significantly extend lock and dam usability.
3. Simple measures can cut lock traffic delays.
4. Superior barge fuel efficiency claims are questionable.
5. Cost benefits of new locks are unsubstantiated.
6. The Inland Waterways Trust Fund is severely underfunded.

The inland waterways navigation system is recognized as the most subsidized transportation sector in this country.[41] Further, this taxpayer-provided support is consistently regarded as a poor investment. As Dr. Sweeney concluded in the report, "A Critique of 'Final Re-Evaluation of the Recommended Plan: UMR-IWW System Navigation Study: Interim Study'," published in 2009, "The re-evaluation completed by the Corps of the National Economic Development (NED) benefits of the navigation-related components of the recommended plan originally identified in their 2004 feasibility report

[40] U.S. Army Corps of Engineers, Navigation and Ecosystem Sustainability Program (NESP) Web site, *http://www2.mvr.usace.army.mil/UMRS/NESP/Projects/NESPProjects/default.cfm?cat=np&sec=documents&tid=3&sort=DOCUMENT_PUBLISH_DATE%20ASC*

[41] Institute for Agriculture and Trade Policy, 2002, "Myths: Barges are the Most Fuel Efficient Mode of Transportation for Agriculture Commodities," page 2; National Wildlife Federation and Taxpayers for Common Sense, 2004, Crossroads, page 46; Calvin Fremling, 2005, "Immortal River: The Upper Mississippi in Ancient and Modern Times," page 382

…does not support funding the costly construction of new lock chambers in the near future."[42]

In addition, the annual ecosystem restoration needs of the Upper Mississippi River System have never been adequately funded. The great potential of the Environmental Management Program described in the Introduction will never be realized if the average annual investment continues at a $20 million level. Research from resource professionals suggests that the average annual restoration investment of $100 million contained in NESP is also inadequate. As previously cited, the 200 wildlife resource professionals that make up the Upper Mississippi River Conservation Committee estimated in 2002 that an annual investment as high as $900 million for 50 years may be necessary to restore the river ecosystems and address the impacts from ongoing barge navigation.

[42] Dr. Donald Sweeney II, 2009, "A Critique of 'Final Re-Evaluation of the Recommended Plan: UMR-IWW System Navigation Study: Interim Study'," page 1 (commissioned by the Nicollet Island Coalition)

{ Achieving adequate ecosystem restoration on the Upper Mississippi River System is currently obstructed by the misguided and unjustified large-scale navigation construction projects proposed in NESP. }

However, the necessity of achieving adequate ecosystem restoration on the Upper Mississippi River System is currently obstructed by the misguided and unjustified large-scale navigation construction projects proposed in NESP. This report details the verified shortcomings and faulty rationale for building seven new 1,200-foot locks on the UMR-IWW.

Therefore, we recommend the following:

- NESP be de-authorized, canceling the lock construction projects.
- The small-scale and non-structural measures presently included in the NESP Recommended Plan receive separate authorization so that they may be implemented without delay.
- The increased funding for ecosystem restoration currently bound to the initial phase of NESP, any additional related restoration plans, and new and essential restoration components be formally transferred to the existing Environmental Management Program. Specifically, these new restoration components include an allowance to acquire at least 35,000 acres of land from willing landowners for the purposes of reconnecting floodplains isolated from the river by levees; new wetland and riparian habitat protection and restoration activities; construction of fish passages at up to four dams to improve species diversity; improved water level management capabilities that mimic the historic flood pulses lost with dam construction; adding the capability of project cost sharing with non-governmental organizations; and establishing an advisory panel of diverse stakeholder interests for project reporting and ranking.
- Congress authorize these recommendations and appropriate funds to support them, including initially increasing funding for the Environmental Management Program to at least equal the authorized funding level for restoration contained in NESP of $100 million annually with further increases as are deemed necessary to adequately restore the system.

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