



US Army Corps of Engineers

# Upper Mississippi River - Illinois Waterway System Navigation Study

UMR-IWW System Navigation Study Newsletter

June 2007

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## New Study Web Site Unveiled

The first phase of an ambitious web site redesign project has been completed, allowing for easier access to updates and information about the Navigation and Ecosystem Sustainability Program for the Upper Mississippi River System. The new site will allow more ready access to program/project information and the more than 600 reports developed over 15 years as the project evolved from what originally was called the Navigation Study of the Upper Mississippi River and Illinois Waterway.

"The goal was to make the site friendlier and provide more accessibility to the hundreds and hundreds of documents that have been produced over the study period," said Kevin Bluhm, Public Involvement Technical Manager.

The site's look will be familiar to anyone who's looked at the study site for the Corps of Engineers' Everglades Restoration Project. That was used as a model for using color and design to create a more consistent theme throughout the site and make it easier to navigate.

"The look is trying to reflect the fact we're broadening our approach to a more systemic look at the river," Bluhm said. "It's been built so it can eventually be used more widely to cover all river activities, programs, projects and partnerships, with NESP as the starting point."

In addition, all files are now searchable not only by title but by individual words—a first step in making the site a central repository for research on all aspects of the river system. Prior to the April revamping of the web site, you'd get a single match of the larval fish report when you typed in "larval fish," for example. Today, you'd come up with several pages of reports in which

larval fish are mentioned, all sorted by relevance, Bluhm said.

The first phase of the web site revision involved creating the more effective, user-friendly search engine, Bluhm said. The second phase, now in progress and scheduled to be completed by mid-summer, involves expanding the project information available on the site.

More obvious changes should be completed by sometime this fall, Bluhm said. The third project phase will include additional search capabilities based on graphics. A GIS-based map of the region will allow searching by region and specific projects, he said. For example, a user will be able to click on a particular geographic location and easily find the desired level of detail on a specific pool or project. Theoretically, they'll be able to click on a specific pool, for example, and learn how accessible it is for boating on a given day, how many projects are targeting that pool, and how they're progressing, Bluhm said.

The final phase involves the evolution from a specific study site to one that provides a portal to a much wider range of Corps and partner programs and activities throughout the Upper Mississippi River System. Other Corps programs and partners would be included at that point, with their research findings and project information added to the site.

"We hope to make this a true Upper Mississippi River System site," Bluhm said. "Stakeholders and the public would have a central entry point to volumes of data and information concerning just about every area of interest on the Upper Mississippi River System."



A look at the new project website [www2.mvr.usace.army.mil/UMRS/NESP/](http://www2.mvr.usace.army.mil/UMRS/NESP/)

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## Interim Report checks economic justification of new locks

A review of the economic viability of new locks and other navigation improvements on the Upper Mississippi River System will for the first time take into account congestion and corresponding future growth projections on the nation's other transportation modes.

The review, requested by Assistant Secretary of the Army for Civil Works John Paul Woodley, Jr., also uses new economic forecasting tools and updated world trade demand forecasts for U.S. exports to better predict future demand for river transportation, study team members say.

Depending on the modeling results, the team could affirm a 2004 Feasibility Report recommendation that calls for \$2.4 billion in navigation improvements and \$5.3 billion in habitat restoration over the next 50 years or call for an alternative course of action. The evaluation is specifically focused on the economics and efficiencies of the existing navigation system within the context of the proposed large-scale improvements and their associated environmental impact, said Scott Whitney, Assistant Regional Project Manager.

Specifically, the assistant secretary asked the team to re-evaluate its economic findings using the Global Grain Model developed by the Navigation Economic Technologies Program of the Corps of Engineers' Institute for Water Resources. That model takes a systematic approach to forecasting future grain movements, which constitutes about half of the commodities carried on the river system. Other experts are providing updated predictions on movements of petroleum, coal, steel, cement, shipping containers and other goods.

The report also will address capacity constraints and congestion on the nation's other modes of freight transportation, Whitney said. That will include a look at what commodities may move from land-based transportation to the river, he said.

"We've got to attempt to tell a full story, and the connecting tissue that's going to be the most important is conveying

to the country's decision-makers the link between transportation congestion on roads and rails and the river system."

Technical reports coming out of the Department of Transportation indicate current and projected stress on the country's entire transportation system, says Rich Astrack, St. Louis District Project Manager and Team Leader for the economic re-evaluation portion of the study.

"If you have a system that can take more goods, you may help relieve some of that congestion that's predicted to happen on the rail or the highways," Astrack said. "The question is, 'Is it the right kinds of goods to move at the right time, and is it the right location?'"

The Interim Report will present results of the re-evaluation through four lenses or accounts. The National Economic Development or cost-benefit ratio of the initial lock construction and other navigation improvement recommendations will receive a great deal of attention. But the other three accounts also are important and will carry considerable weight in shaping a recommendation, said Chuck Spitzack, Regional Project Manager.

The other three accounts will outline regional economic benefits, environmental quality, and other social effects (international competitiveness, national security and quality of life factors) of the initial plan.

The Interim Report won't remove all the uncertainty that inevitably exists with a project that looks 50 years into the future, Spitzack said, but should provide better context for decision makers.

"I think we'll be able to bring more understanding to the project in relationship to the rest of the waterway system and the national transportation network," he said. "As far as removing economic uncertainty, we're talking about completing 7 locks over the next 15-20 years with a planning horizon of 50 years. No matter how sophisticated our models are, we won't get rid of all uncertainty."

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## Grain trends key to economic re-evaluation

Will much of the nation's corn supply go to domestic ethanol production—or export? Will the Panama Canal expand? Or not? Will some proportion of processed grains or consumer goods now carried mostly by truck or rail shift to the waterways?

Those are just a sampling of the policy uncertainties sure to dramatically affect how much grain (corn, soybeans and wheat) is carried on the Upper Mississippi River System in the years to come. They also are key variables in a newly-developed Global Grain Model that's being used to re-evaluate a recommendation that seven new 1,200-foot locks be constructed on the river system.

The Global Grain Model was developed by the Navigation Economics Technologies program of the Corps of Engineers' Institute for Water Resources. The Chief of Engineers' December 2004 feasibility report called for \$1.8 billion in navigation improvements and \$1.6 billion in ecosystem restoration as the first increment of a larger 50-year river sus-

tainability program. The recommendation calls for re-analysis as new information or modeling becomes available.

The Global Grain Model is being used to establish high and low bounds of potential future traffic through a complex look at hundreds of factors in dozens of countries. Grain makes up about half of the goods carried on the river system.

"The model looks at factors around the world relating to the main producers of grain and main consumers of grain, not just in the United States but around the world—China, Africa, India, South America, everywhere," said Richard Astrack, St. Louis District Project Manager and Economic Re-Evaluation Team leader. "You look at how much can be produced and how much can be consumed and balance that out, and then you can see how goods have to move to meet the demands."

The biggest improvement over prior models is that results are based on more standardized methodology and are

reproducible in multiple model runs, he said. The low and high traffic scenarios will differ based on six factors identified by experts as the most uncertain and also the most critical.

The low traffic scenario, for example, assumes that corn-based ethanol production will flourish and that little will need to be carried by river to export.

“Ethanol is something that will influence potentially in a very dramatic way the amount of grain exports we expect to have from the United States,” said Rich Manguno, Economics Technical Manager. “It’s something new, it’s emerging, and how that’s going to play out is still being decided, even as fundamentally as will it be corn or will it be something else that is the source of the ethanol product. Obviously, that makes a tremendous difference on what we might expect grain exports from the U.S. to be.”

Some other variables identified as critical include corn yields, U.S. rail capacity, potential improvement of the Panama Canal, and China’s trade disposition, Manguno said.

The varying estimates are being run through the grain model to produce the estimate of “potential” traffic that might move on the waterway at various points in the future. The model will use updated information from experts on what’s

likely to happen with other river commodities as well, such as coal, steel, construction materials and petroleum.

The model then is run assuming the recommended plan is in place for the water system, Manguno said. “For example, instead of 600-foot locks, maybe we have 1,200-foot locks in some locations, meaning we would get less delays for a given volume of traffic. We’d run the model again and get a different outcome. The difference is the effect we’d attribute to the project and the basis for the benefits we’d claim.

The team then compares the benefits in terms of reduced delays with the construction or other costs needed to achieve those benefits.

“Using the criteria we follow,” Manguno said, “you would generally have to have the benefits be at least equal to the cost to say something was economically justified.

As part of the analysis, however, the team is looking at what’s happening on other modes of transportation as well as the waterways and trying to factor in the ways in which congestion on other modes might influence future river traffic, he said.

Model runs are scheduled to be completed by mid-July and then compiled as part of an Interim Report which will be publicly released in mid-October.

## Global Grain Model - Scenarios

Two traffic scenarios are currently being considered for inclusion in the Interim Report, designed to represent the upper and lower bound limits of future grain traffic on the UMR-IWW navigation system. The scenarios will be translated into future traffic flows by executing the Global Grain Model (GGM.) Hundreds of variables are likely to affect how much grain is carried on the river in the future; the following are a few that have been determined to be the most significant. Grain represents about half of the commodities carried on the river. Other models will be used to determine the remaining 50 percent of traffic projections.

Grain Model Input Specification		
	Low Traffic	High Traffic
U.S. Corn-Based Ethanol Demand	U.S. Dept. of Energy forecasts: 11.2 billion gallons by 2012 and 13.4 by 2025; assumes total ethanol production is corn-based	Current ethanol production levels held constant (5 billion gallons); ethanol production assumed to include quick implementation of non-corn sources
U.S. Corn Yields	1.6 bushels/year Increase (National Average)	2.0 bushels/year Increase (25 percent increase over long-term national average)
Rest of the World Corn Yields	Global Grain Model “Base Case” determined by current trend analysis	25% increase in GGM base case – assumes same increase as above and assumes bio-tech advances not limited to U.S.
U.S. Area	107% of 2002-2004 average	107% of 2002-2004 average
U.S. Rail Capacity	169 million metric tons (or a 20% increase in 2000-2004 Maximum Car Loadings)	155 million metric tons (a 10 percent increase in 2004 Maximum Car Loadings)
China Corn	Exports = 8 million metric tons	Unconstrained Model Solution
Panama Canal	No Expansion	Expanded by 2020
UMR-IWW Navigation Infrastructure	Expanded by 12 1,200 foot locks	Expanded by 12 1,200 foot locks

Note: All other model inputs are assumed to be equal to the base case described in the December 2006 Global Grain Model report.

## WRDA Bill Heads to Conference

### *House/Senate earmark billions for Upper Mississippi River System improvements*

The Navigation and Ecosystem Sustainability Program for the Upper Mississippi River System is in what one river advocate calls “a best-case scenario” in the wake of House and Senate passage of the 2007 Water Resources Development Act.

The bill now will go to a conference committee, which will resolve differences between the two versions of the bill. However, observers say the differences are minimal.

“We’re closer than we’ve ever been,” said Paul Rohde, Midwest Vice President for Waterway Councils Inc., a water commerce advocacy group. “It’s pretty close to a best-case scenario. We’re only five months into the 110th Congress, and we already have in our pocket a House and Senate bill passed in both chambers.”

If authorized, however, getting the money appropriated still presents a formidable hurdle, best overcome by a cooperative effort between waterway commerce and environmental advocates, he said.

“The key question is, will the old paradigms of win-lose continue to prevail, or can the proponents of infrastructure and proponents of environmental restoration work collaboratively to promote this as a dual-purpose plan and frankly fight for the appropriations? If we do that, we’ll motivate our Upper Mississippi Basin to get behind this, and it will help both causes.”

The Senate version of the bill, passed in mid-May on a 91-4 vote, authorizes the spending of some \$3.7 billion on the Navigation and Ecosystem Sustainability Program (NESP). That translates to the amount recommended in the Chief of Engineers' Feasibility Report, adjusted to the October 2007 cost index value. Of that, \$1.95 billion is earmarked for construction of seven new 1,200-foot locks, and \$1.7 billion is earmarked for ecosystem restoration. A similar bill passed in the House, 394-25, in April.

The conference committee is being established, and con-

feres will work to resolve the differences between the bills. As the bills relate to NESP, there are only small differences, likely easy to resolve, says Holly Stoerker, Executive Director of the Upper Mississippi River Basin Association. The group is seeking minor changes in wording of the Senate version, wording that’s already part of the House bill, she said.

The UMRBA, for example, wants to be sure the bill adds a component of long-term resource monitoring, allows the Corps to enter into cooperative agreements with the five states and other federal agencies, and allows flexibility in the selection of mooring facility locations.

She said she's hopeful but not confident of the bill’s quick passage.

“Every time we have confidence, it alludes us,” she says, “But this year, we’re very, very close.”

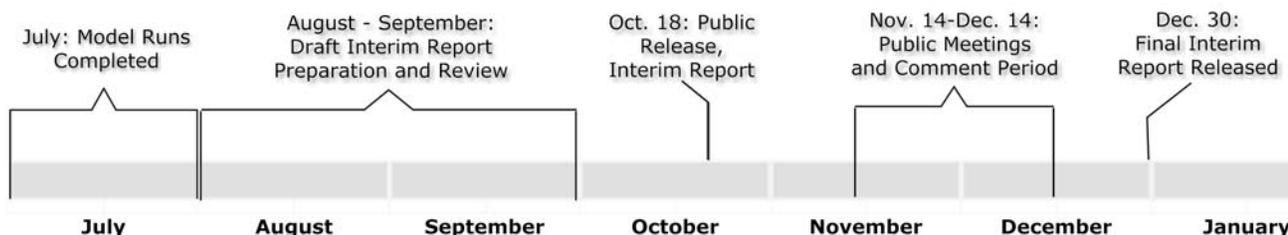
Though WRDA was intended as a biennial bill, Congress last approved WRDA legislation in 2000. Two prior attempts by Congress to approve enact NESP through a WRDA bill failed to pass,

Since 2004, however, Congress has provided NESP authorization through general investigations funding, which has allowed for continued progress but not for construction or implementation. Instead, teams have focused on extensive research and some detailed design work, team leaders said.

This year’s apparent momentum toward project passage is “very good news” and long overdue, says Chuck Spitzack, Regional Project Manager of NESP. Teams have made tremendous progress, he said, and many projects are ready for quick implementation.

“I just think the waterways are an important part of our national freight transportation system,” he said. “Decisions cannot continue to be made singularly for each transportation mode. Not making decisions on the waterways leads to decisions on other modes of transportation, and you may move away from a good balance.”

### 2007 NESP Timeline



## Ecosystem restoration projects advance

**R**estoration of an area once known as the “jewel of Illinois” for the wealth of plant and animal communities thriving there; a project designed to promote aquatic plants where there now are virtually none; and a plan to steer barge fleeing areas away from sensitive environmental habitats.

Those are all projects that have moved forward over the past year through transitional funding provided for NESP. Some 17 ecosystem restoration projects are currently active, while others recommended in the feasibility study have been put on hold pending full project authorization or additional funding. Here’s a status update of a few of the NESP ecosystem restoration efforts.

### Barge Fleeting Plan

One of the program's largest study teams, representing a broad collaboration of various river partners, is working toward the development of a comprehensive barge fleeing



plan for the Upper Mississippi River and Illinois Waterway.

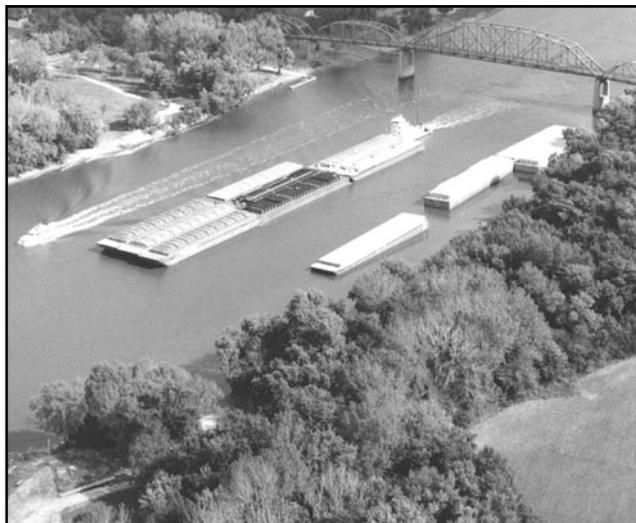
The 55-member barge fleeing team includes representatives from various Corps of Engineers specialties including real estate, environmental resources, GIS, operations (navigation and natural resource management) and regulatory. The project delivery team also includes representatives from the natural resource and transportation departments of the five study states, the Fish and Wildlife Service, the tow industry and river protection organizations.

This collaborative team is now selecting the matrix of topics to be addressed in a system-wide plan for fleeing areas that provide barge staging under some form of federal or state jurisdiction. Towing and barge companies, with a total of some 12,500 hopper barges, 1,300 tank barges and 500 towboats, now use the 160 fleeing areas on the Upper Mississippi River and 40-50 on the Illinois Waterway.

Team members have provided feedback on what areas should be included in the plan, such as a graphic display of existing barge fleeing areas and lists of regulatory policies of the Corps and the five states regarding fleeing, says Dorie Bollman, the Team Leader.

The team also is working with industry groups to provide quality control of a GIS-based database of existing fleeing operations. Later, other layers of data will be added to the database.

Several industry managers of harbor and port facilities have invited team members to visit some port facilities to get



a better understanding of how fleeing is used as a component of the loading and unloading of commodities, Bollman said.

The plan would not necessarily increase formal regulation of the fleeing process. It would encourage placement away from important spawning habitats or mussel beds.

“The idea of a systemic barge fleeing plan is to try to find that sustainable balance between the necessity of having fleeing and protection of important environmental resources,” Bollman said.

### Emiquon West Reforestation

A planned floodplain restoration project at Emiquon West on the Illinois Waterway has evolved into a forestry management effort with the potential to create a continuous wooded corridor from the bluff to the river, said Team Leader Amy Moore.

Before it was converted to agricultural land, the site about an hour south of Peoria on the Illinois River was a hardwood bottomland forest that nurtured diverse communities of native plants and animals. After viewing historic photographs of the site and looking at other restoration efforts taking place nearby, the team determined the site should be converted to its historic usage, Moore said.

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It's now part of a broader systemic NESP forestry management plan that also includes a forest inventory, survey of sediment depth, and classification of more than 200,000 acres of vegetation on the Illinois River floodplain.

Emiquon is exciting because of its proximity to restoration projects being conducted by other groups, including an adjacent 7,000-acre Nature Conservancy preserve—one of the largest floodplain restoration projects in the country outside of the Florida Everglades, Moore said.

"It's an opportunity to do landscape-scale restoration instead of just parcel scale," she said.

The team is contracting with a consultant who will determine what trees should be planted on the site, and where, based on soil type, elevation, anticipated water levels and other conditions. It also will work with archeologists to determine whether or not there are significant cultural sites on the property, located a mile from the Dickson Mounds State Museum and near hundreds of sites found once to be Native American villages or ceremonial or burial grounds.

### **Pool Drawdown Successes Measured; Planning Continues**

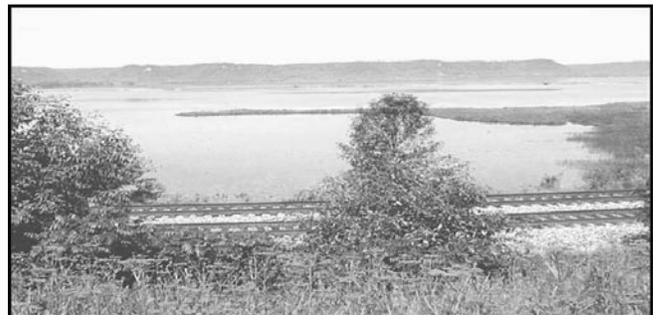
More than 50 species of plants flourished, the number of shorebirds doubled, and anecdotal evidence points to the best hunting and fishing in many years. Those were the initial results of two consecutive summers of drawdown (water level lowering) in the Mississippi River's Pool 5 near Buffalo City, Wisconsin, says Team Leader Jeff DeZellar. The Water Level Management program in the St. Paul District, conducted with Operations and Maintenance funding and augmented by monitoring funding through NESP, also earned the Minnesota Society of Professional Engineers' "Seven Wonders of Engineering" award for innovation and success.

Now, adaptive management is being applied to use lessons learned to evaluate potential benefits and risks associated with a similar drawdown in Pool 18, further down the river reach near Burlington, Iowa.

One area being carefully explored at both sites relates to the potential impact of water level lowering on mussel populations. A pool-wide survey of mussels was conducted in Pool 5 this past summer, after the 2005 drawdown resulted in some mussel mortality. "The survey found a very robust mussel population estimated at more than 180 million, and it puts into context what we found in previous years," DeZellar said. "Mussel mortality during drawdowns appears to be manageable, but further research is needed."

Mussel surveys have been conducted in "impact" or most shallow areas of Pool 18, said Kevin Landwehr, the Team Leader for that water level management effort. No federally endangered mussel species were found there, and the results led the team to recommend a drawdown in 2008, pending authorization. Pool-wide mussel surveys will be completed to provide more informed estimates of potential project impacts.

The study team also has been addressing other challenges, particularly relating to the need to maintain recreational access during the drawdown, by meeting individually with people who run marinas and private recreational boating facilities in lower Pool 18 and finding ways to maintain pool access during the drawdown. In Pool 5, surveys during weekends and holidays indicated strong recreational use of the pool during the drawdown; surveys of barge operators indicated some additional difficulty in navigation during the drawdown, but nothing that prevented use of the 9-Foot Channel, DeZellar said.



*Pool 5 before drawdown*



*Pool 5 after drawdown*

The Pool 18 team also is analyzing sediment compaction to better document the linkage to improved water clarity and quality. Another area under study is how long vegetative growth success from a drawdown is likely to persist and therefore when and if it would need to be repeated.

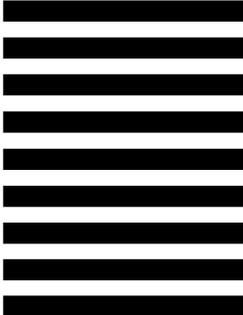
Both in Pool 5 and Pool 8, where a drawdown was conducted five years ago, plant growth continued after the initial drawdown years. However, at the river's lower reaches near St. Louis, plant production tends to be annual versus perennial in nature due to the types of vegetation growing there; plant growth doesn't return unless a drawdown is repeated, Landwehr said.

"Being in the center of the system, we're trying to figure out where we are in the continuum."

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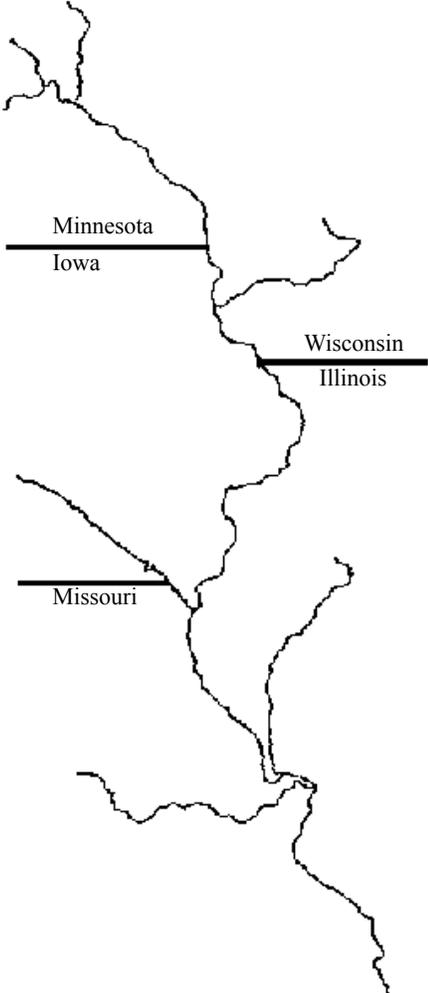
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US Army Corps  
of Engineers

June 2007

UPPER MISSISSIPPI RIVER - ILLINOIS WATERWAY SYSTEM NAVIGATION STUDY  
COMMENT SHEET

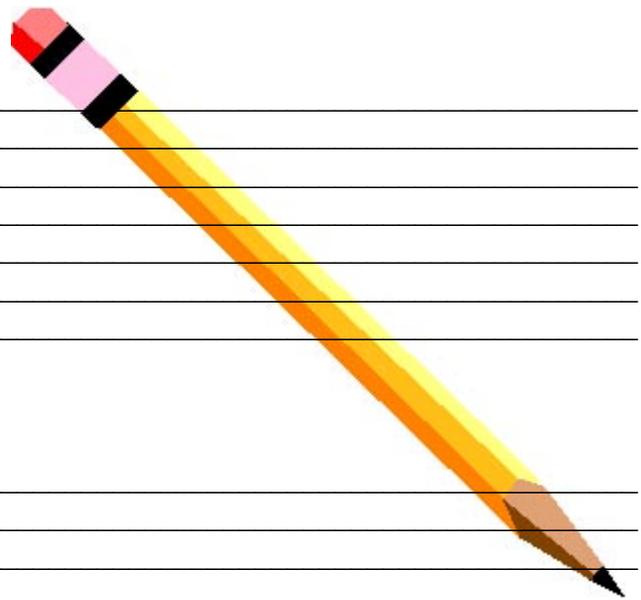
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# Logistics and Locations Studied for Switchboats, Moorings, Traffic Management

Several small-scale ways to reduce waterway congestion are being more fully developed, some of which could be used as a temporary solution during construction of new locks or as a stand-alone measure for relieving traffic congestion.

NESP study teams are working out implementation details for switchboats, determining the best locations for mooring cells, and further studying the viability of a new traffic management system.

## Switchboats

One or two switchboats could be contracted as early as 2008, depending on authorization such as would be provided by the pending WRDA bill, to start helping tows move more



quickly and safely through congested locks. The Recommended Plan calls for the progressive use of a maximum of 10 switchboats at Locks 20-25, working to reduce delays in the near term and throughout the construction process.

Early analysis indicates switchboats could save an average of eight minutes per double lockage, a process that occurs when a 1,200-foot tow goes through a 600-foot lock in two parts. But the study team now is working on a position paper that more fully examines the related safety, legal, logistical and policy issues. The team also is watching switchboats in action at the Mel Price Lock and Dam. While the main chamber is closed for repairs, switchboats are helping to pull unpowered cuts from the auxiliary lock chamber.

"It's a good case where we can watch and see what happens," said Dave Gordon, the Switchboat Team Leader.

The team is hoping the observation and further research will help answer more specific implementation questions. Many issues need to be resolved, he said, including acquisition strategies, timing and duration of switchboats, liability concerns, whether government or private contractors should provide the service, and more. A detailed monitoring plan

also is being developed so that efficiency and time-savings can be more accurately measured, he said.

## Moorings

Construction plans are being finalized for an initial three mooring cells on the Upper Mississippi River System. If authorized, construction would begin on the first three cells as early as 2008 (pending WRDA approval and subsequent appropriations) at LaGrange Lock and Dam on the Illinois Waterway and Locks and Dam 14 and 24 on the Upper Mis-



issippi, said Tim Grundhoffer, the Moorings Team Leader.

Those sites were identified as the highest priority because of the approach problems tows face there, he said. Plans call for a total of 10 mooring cells that allow for quicker times in and out.

The team originally was looking at a combination of mooring cells and buoys. In coordination with industry, the team decided buoys were not feasible due to safety reasons. There was also less time savings when tows tried to tie to these moving, unstable targets, Grundhoffer said.

## Traffic Management

A variety of plans to more efficiently move tows through crowded locks are being examined by a traffic management project team; those include scheduling systems, new traffic processing rules, even newly-developed technology that could help tows with their approach to the locks.

One system being explored would provide tow pilots more information regarding their lockage data needs. That would increase confidence in the approach to and use of the lock but would require that equipment be installed on each

participating tow and at the locks, team members said. Potential benefits could include safety and better performance.

A localized management system for processing traffic through crowded locks also remains under study.

“Basically, we’re looking at rules for processing traffic,” said Rich Manguno, Team Leader of the Navigation Traffic Management Team. “We’re seeing if there are efficiency gains that could be realized just by employing different rules regarding the sequence by which you process vessels when



you have a queue built up.”

The effort piggybacks on vessel resequencing work already done by the Navigation Economic Technologies Program at the U.S. Army Corps of Engineers’ Institute for Water Resources.

“One conclusion is that at current traffic volumes, some schemes are not warranted,” he said, “but at higher levels of traffic, there are more gains to be realized.” Employing policies that send fastest tows through crowded locks, for first example, could potentially bring benefits during lock construction, when the ability to process traffic is impacted and results in longer wait times, he said.

# Ancient Site Protection Begins

Research teams are looking at ways to protect the integrity of numerous archeological sites, some of which show evidence of human habitation dating back as far as 4,000 years.

“We picked the sites at the most risk of complete destruction through erosion and also at which there was enough of the site left to preserve,” said Brad Perkl, the St. Paul District Archeologist for the U.S. Army Corps of Engineers.

Three of the NESP archeological sites—Indian Isle, Upper Folsum Bay and Lower Folsum Bay are located in Pool 10 near Prairie du Chien, Wisconsin. The other two project sites, Bailey Village in Carroll County and Crooked Slough in Jo Daviess County, are within the Rock Island District in Illinois. All five are located on federally-owned lands.

“We went out and did some Phase II evaluations to see if the sites were eligible for listing on the National Register of Historic Places,” Perkl said. “In fact it looks like they are because the integrity is there. . . They’re significant, and they’re threatened.”



“We picked the sites at the most risk of complete destruction through erosion”

Eligibility for listing on the National Register is determined by whether or not the site is likely to yield information important in history or pre-history, says James Ross, the Rock Island District Archeologist and Team Leader for the Systemic Cultural Stewardship Project. Priority for project sites that were selected was based on current and predicted levels of erosion.

“The goal is to preserve the sites for the public good and for future generations of researchers,” Ross said. “Right now, we’ve recovered enough information to know these sites are significant based in part on the types of artifacts that were

recovered and the prehistoric cultures they represent.”

At the sites within the St. Paul District, archeologists found Late Archaic materials, approximately 3,000 to 4,000 years old, confirmed by the types of projectile (spear or dart) points recovered there. Indian Isle, for example, offers evi-



*Bankline erosion at a site once home to an ancient Woodland village.*

dence from both the Archaic period and all three Woodland periods—Early (300 BC-100 AD), Middle (100-600 AD) and Late (approximately 600-1650 AD).

Significant artifacts and features, including decorated ceramics, were found at the sites. But some 145 feet of shoreline and artifacts likely contained there have been lost through erosion in the past 70 or so years, Perkl said. The sites also have been targets for looters.

Both Bailey Village and the Crooked Slough sites include artifacts from the Middle and Late Woodland periods, Ross said. In addition, researchers found evidence of old houses, hearths, and storage pits along with artifacts related to horticulture, hunting, and food processing. Other intriguing items were located, though, adding to the site’s historical significance.

Items like obsidian from Montana and shells from the Gulf of Mexico indicated the villagers traded with others for goods not locally produced or indigenous to the region, Ross said. This site also is located alongside a group of mounds likely used as burial sites.

Evaluations of the sites’ historic significance were completed over the past year. This year, teams are continuing to research the best methods to control erosion with the least

amount of impact to the environment or site integrity. Some erosion control measures under consideration include shoreline riprap, offshore rock mounds or wedges, dredge material, and/or natural vegetation like willow trees.

The evaluation and protection of the five sites is just part of an overall Corps effort to document and preserve significant archeological sites threatened by shoreline erosion. To date, more than 7,000 sites have been documented on the Upper Mississippi River floodplain.

These sites range across the gamut of documented human prehistory in North America and include a wide array of site types such as mound groups, historic trading sites, encampments and even shipwrecks.

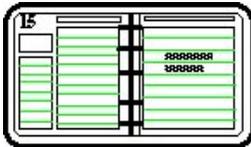
“Another key component, and this I feel strongly about, is to gather the information and put it into a format that’ll be meaningful to the public,” Ross said. “That could be a curriculum for education or a film or some other learning tool that creates more awareness of cultural heritage along the river.”

The Corps also is required under federal law to assess the historic significance of sites on Corps land if those are threatened by shoreline erosion. And preservation is a critical first step, Perkl added.

“Each site is unique on the planet. Once it’s gone, it’s gone forever.”



*Ancient ceramics and shells at Folsom Bay.*



### Upcoming Meetings

Aug. 21  
*Upper Mississippi River Basin Association*

Aug. 22  
*Environmental Management Program Coordinating Committee*

Aug. 23  
*Navigation Environmental Coordination Committee Economics Coordinating Committee*

Radisson Hotel Plaza  
200 Harbor View Plaza  
LaCrosse, Wisconsin  
608-784-6680

For more information:  
[www.umrba.org/meetings.htm](http://www.umrba.org/meetings.htm)

### Questions?

- For general study information, call Chuck Spitzack, Regional Project Manager, at 309/794-5340 or Scott Whitney, Assistant Regional Project Manager, at 309-794-5386. Or visit our home page at: <http://www2.mvr.usace.army.mil/NESP/>.
- For information on Public Involvement meetings, check our website (address above) or call Kevin Bluhm, public involvement team leader, at 651/290-5247. You also can write to the address below, ATTN: CEMVR-PM-A.
- To be added to the mailing list for future newsletters, study updates, and meeting announcements, write to the address below, ATTN: CEMVR-PM-A.

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