Upper Mississippi River Restoration Program
Coordinating Committee
Quarterly Meeting

November 19, 2014

Highlights and Action Items

Program Management

- Diane Ford and Barry Johnson will be retiring in December. The UMRR Coordinating Committee expressed their appreciation to Ford and Johnson for their extraordinary contributions to the program.
- UMRR obligated 99 percent of its FY 14 funding of $31.968 million.
- **UMRR is currently operating under a continuing resolution authority (CRA) until December 11, 2014.** The President's FY 15 budget request, House's FY 15 energy and water appropriations measure, and Senate Energy and Water Subcommittee's FY 15 appropriations markup include $33.17 million for UMRR, which is the program's full annual authorized amount. Congressional action following the FY 15 CRA's expiration is unknown. In the interim, Corps Headquarters has directed UMRR to execute based on last year's funding, which is $31.968 million. Under this assumption, the FY 15 program allocations would include:
    - Regional Management – $1,000,000
    - Long Term Monitoring and Evaluation Effort – $5,500,000
    - Habitat Restoration – $26,670,000
        - Regional science support – $1,800,000
        - MVP – $7,491,000
        - MVR – $9,888,000
        - MVS – $7,491,000
- FY 15 proposals for science analyses that support restoration and management will be evaluated and prioritized based on their relationship to the program's mission, ability to advance program goals, level of partner coordination, and transparency. Additional criteria related to partnership priorities and administrative factors will also be considered. **Twenty nine proposals totaling $4,012,513 were submitted for FY 15. There is between $1.5 million and $1.9 million available for this work.**
- USACE staff have increased resources to enhancing the program database and inputting program information. **A presentation on the database's content and outputs will be provided at the February 11, 2015 UMRR Coordinating Committee meeting.**
- Col. Mark Deschenes hosted a September 18, 2014 UMRR agency leadership summit to gather the program's implementing partners' leaders and staff and discuss the program's history, achievements, and implementation issues that require higher-level policy considerations. Implementation issues discussed include a) maximizing opportunities for increased ecological and economic benefits at authorized funding levels while maintaining and enhancing states' ongoing, active participation; b) working within the context of a multi-use river system; and c) issues facing non-federal partners in executing project partnership agreements (PPAs). **Per agency leaders' recommendations,**

UMRR Coordinating Committee members will consider implementing continuous improvement evaluations. USACE staff will give a presentation at the February 11, 2015 UMRR Coordinating Committee meeting on continuous process improvement techniques. In addition, Col. Deschenes and UMRR candidate non-federal sponsors will work together to resolve PPA challenges.

- Following the September 18 leadership summit, UMRR state staff and candidate nonprofit groups (i.e., The Nature Conservancy and Audubon) developed a summary of the issues facing non-federal sponsors in executing habitat project PPAs and recommendations for resolving those issues. Tim Schlagenhaft presented the summary. **On behalf of UMRR's non-federal sponsors, UMRBA will transmit the summary to Col. Mark Deschenes and seek his preference for how to work together in addressing the issues.**
- **The Nature Conservancy withdrew the Emiquon East habitat project due to requirements of the existing NRCS Wetlands Reserve Program lands on the site as well as responsibilities and obligations as stipulated in the PPA.**

Long Term Resource Monitoring Element

- A completion report was published describing the recent ecological shift in Pool 4. Two manuscripts were published regarding 1) how Asian carp might be increasing nutrient-rich food resources for benthic feeders and 2) characteristics of American Eel populations.
- UMESC staff convened an October 27, 2014 webinar to describe UMRR's long term monitoring database structure, applications, and visualization tools as well as how to access the information.
- Barry Johnson presented a draft FY 2015-2017 UMRR Science Plan, which outlines the program's science priorities as provided in the FY 2015-2025 UMRR Strategic Plan, research frameworks for various monitoring components, and other partnership planning documents. **Johnson will distribute the draft plan to the UMRR Coordinating Committee for input.**
- **Karen Hagerty presented a draft UMRR Invasive Species Policy Paper and asked that partners send her input by January 15, 2015. An updated draft based on feedback will be presented to the UMRR Coordinating Committee for consideration at its February 11, 2015 meeting.**
- The A-Team met in-person on November 6, 2014 in Rock Island. The team discussed the FY 2015-2025 UMRR Strategic Plan and FY 15 proposals for research and analysis in support of restoration and management (as discussed above). **The A-Team is in the process of ranking those proposals and will send a recommended prioritized list to the UMRR Coordinating Committee for its consideration. Top-ranked proposals will then be developed into full proposals and evaluated for funding.**
- Jeff Houser presented on the concepts of ecosystem resilience and its application to the UMRS, including what factors define and contribute to the UMRS's ecological resilience. This information provides a context partners to define restoration goals and objectives as well as metrics to monitor progress related to the river's ecological resilience.

UMRR Strategic Planning

- **The UMRR Coordinating Committee endorsed the draft 2015-2025 UMRR Strategic Plan with additional language explaining next steps to develop a follow-on implementation document and inclusion of Col. Mark Deschenes' introduction letter. Kirsten Mickelsen will send an updated version to the UMRR Coordinating Committee for approval.**
- **The UMRR Coordinating Committee will set up an *ad hoc* group to make recommendations to the Committee of actions for implementing the 2015-2025 UMRR Strategic Plan. The group will report to the Committee at its February 11, 2015 meeting.**

Habitat Rehabilitation and Enhancement Projects

- MVS completed plans for Rip Rap Landing and design work on the project is pending sponsor support letters. MVS's planning priorities are Piasa and Eagles Nest Islands and Harlow and Wilkinson Islands. Clarence Cannon is the District's primary design effort. Final construction on Batchtown and Pools 25 and 26 Islands is nearing completion.
- MVP awarded a $12.3 million construction contract for Harpers Slough, with the $6 million base contract awarded in the last weeks of FY 14 and two options totaling $5.9 million awarded in October. Construction on Capoli Slough is wrapping up. The District's planning priorities include North and Sturgeon Lakes and Conway Lake.
- MVR is accelerating its planning efforts on Keithsburg and Beaver Island. Design work continues on Pool 12 Overwintering Stage II and Huron Island Stage II. The District is also continuing construction work on several habitat projects.
- In the second quarter of FY 15, UMRR will initiate a "data-driven" process for selecting new starts that will be informed by partners' expertise and experience, the strategic plan and other program documents, and decision support tools. **Marv Hubbell will provide a more detailed process scope and timeline at the UMRR Coordinating Committee's February 11, 2015 meeting.**
- Jon Hendrickson presented on content and lessons learned described in the 2012 Environmental Design Handbook.
- Tom Novak presented on the selected project features for Harpers Slough habitat project and explained how they will work towards advancing ecological goals and objectives for the site.
- MVD reallocated $50,000 in FY 14 funds to NESP for the purposes of developing a plan to update cost estimates and economics of constructing the navigation improvements. **Michael Tarpey asked partners to contact him with any questions and suggestions to consider in updating cost estimates and economic evaluation.**

Other Business

- **Upcoming quarterly meetings are as follows:**
  - **February 2015 — Rock Island**
    - UMRBA meeting — February 10
    - **UMRR Coordinating Committee — February 11**
  - **May 2015 — St. Louis**
    - UMRBA meeting — May 5
    - **UMRR Coordinating Committee — May 6**
  - **August 2015 — La Crosse**
    - UMRBA meeting — August 4
    - **UMRR Coordinating Committee — August 5**

UMRR EMP CC Quarterly Meeting
November 19, 2014

Marvin E. Hubbell - MVR
UMRR Regional Program Manager

Mississippi Valley – Rock Island District (MVR)
Mississippi Valley – St. Louis District (MVS)
Mississippi Valley – St. Paul District (MVP)

US Army Corps of Engineers
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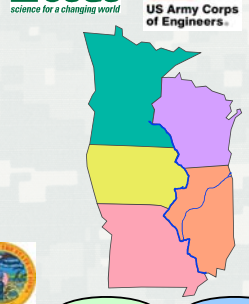
UMRR-EMP PARTNERS



PUBLIC NGO's

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FY14 Work Plan

TOTAL FY 13 Program	**$30,370,000**	**$31,968,000**
Regional Administrative Amount	**$ 902,000**	**$ 1,000,000**
Regional Management (Regional EMP & LTRM)	$ 511,000	$ 529,000
Program Database	$ 45,000	$ 55,000
Regional Project Sequencing	$ 50,000	$ 75,000
UMRR-EMP Strategic Plan	$ 65,000	$ 85,000
UMRBA	$ 76,000	$ 76,000
HREP/LTRM Integration	$ 60,000	$ 60,000
Public Outreach	$ 45,000	$ 70,000
2016 Report to Congress	$ 50,000	$ 50,000
LTRM	**$ 5,225,000**	**$ 5,225,000**
HREP	**$24,243,000**	**$25,677,300**
UMRR Regional Science Support	$ 1,000,000	$ 1,065,700
St. Louis District	$ 6,516,000	$ 6,980,400
Rock Island District	$ 9,961,000	$10,532,200
St. Paul District	$ 6,766,000	$ 7,230,400

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FY14 Funding for science and monitoring

TOTAL FY 14 Program	**$31,968,000**		
Regional Administrative Amount	**$ 1,000,000**	**31.4%**	**$314,000**
Regional Management (Regional EMP & LTRM)	$ 529,000		
Program Database	$ 55,000		
Regional Project Sequencing	$ 75,000		
UMRR-EMP Strategic Plan	$ 85,000		
UMRBA	$ 76,000		
HREP/LTRM Integration	$ 60,000		
Public Outreach	$ 70,000		
2016 Report to Congress	$ 50,000		
LTRM	**$ 5,225,000**	**($175,000)**	**$5,400,000**
HREP	**$25,677,300**		
UMRR Regional Science Support	$ 1,065,700		**$1,065,000**
St. Louis District	$ 6,980,400		**$ 325,000**
Rock Island District	$10,532,200		**$ 325,000**
St. Paul District	$ 7,230,400		**$ 325,000**
			$7,754,000

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FY14 Program Execution

- UMRR Spreadsheets
  - Pages B-1 to B-5
- Obligation of 99% Available funds.

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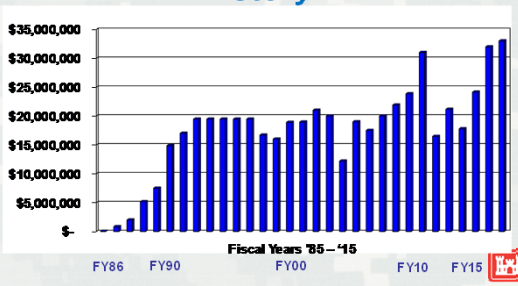
UMRR Appropriation/Budget History



Fiscal Years 1985 through 2015

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FY 15 Budget Request

- President's Budget $33,170,000
- House $
- Senate $

- CR until January 31, 2015
- Hoping for an Appropriations Bill in the second quarter of FY15.

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FY15 Work Plan

TOTAL FY15 Program	**$33,170,000**
Regional Administrative Amount	**$ 1,000,000**
Regional Management (Regional EMP & LTRM)	$ 524,000
Program Database	**$ 95,000**
Regional Project Sequencing	$ 70,000
UMRR-EMP Strategic Plan	$ 25,000
UMRBA	$ 76,000
HREP/LTRM Integration	$ 90,000
Public Outreach	$ 35,000
2016 Report to Congress	**$ 85,000**
LTRM (Base Monitoring)	**$ 5,500,000**
HREP	**$26,670,000**
UMRR Regional Science In Support Rehabilitation/Mgmt.	$ 1,800,000
St. Louis District	$ 7,491,000
Rock Island District	$ 9,888,000
St. Paul District	$ 7,491,000

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ROCK ISLAND DISTRICT (MVR)
FY14 HREP Work Plan (Nov 2014)

PLANNING
- Keithsburg Division, Pool 18, IL **($196K)**
- Emiquon East, LaGrange Pool, IL **($60K)**
- Snyder Slough Backwater, Pool 11, WI **($20K)**
- Beaver Island, Pool 14, IA **($540K)**

DESIGN
- Pool 12 Overwintering Stage II, Pool 12 IL **($280K)**
- Huron Island Stage II, Pool 18, IA **($220K)**

CONSTRUCTION
- Lake Odessa Flood Recovery, IA Pools 17 and 18, IA **($350K + L $410K)**
- Pool 12 Overwintering Stage I, Pool 12 IL **(L $140K)**
- Fox Island, Pool 20, MO **(L $100K)**
- Rice Lake Stage I, IL LaGrange Pool
  - **($130K + L $85K)**
- Huron Island Stage I, Pool 18, IA **(L $360K)**
- Pool 12 Overwintering Stage II, Pool 12 IL **($3.5M - $9M)**

EVALUATION
- FWS **(L $150K)**
- Baseline Monitoring
- Adaptive Mgmt. Pool 12
- Post Project Monitoring
- Performance Evaluations **($250K)**
  - Bertom and McCartney
  - Pool 11 Overwintering
  - Chautauqua NWF

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FY15 UMRR
Science in Support of Restoration and Management

- Show continuity between proposals and UMRR Program mission
- Objectives:
  - Meet UMRR Program needs
  - coordination
  - transparency

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FY15 UMRR
Science in Support of Restoration and Management

Corps' Identified Priorities

- High
  - Projects still underway (from FY14 SOW)
  - Indicators of ecosystem health and resiliency
  - Complete seamless data (LiDAR+bathymetry)
  - In FY15 UMRR LTRM SOW
    - Complete land cover / land use
    - High priority equipment refresh

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FY15 UMRR
Science in Support of Restoration and Management

Corps' Priorities

- Medium
  - Questions from Research Frameworks (native mussels, landscape patterns, aquatic vegetation, aquatic overwintering)
  - Developing plan formulation models
  - Standardized project monitoring protocols
  - Proposals from draft Science Plan

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FY15 UMRR
Science in Support of Restoration and Management

Selection Criteria

- Step 1: Does proposal address priority needs?
- Step 2: Is the proposal…
  - Important?
  - Measurable and achievable?
  - With clear methods?
  - Local, regional or systemic?

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FY15 UMRR
Science in Support of Restoration and Management

29 Science Proposals for FY15

- 2.5 highest priority proposals funded in Sept 2014
  - Seamless data (finishes LiDAR + bathymetry) ($420,343)
  - Producing NED-Ready LiDAR Products (QA/QC, national serving) ($93,063)
  - Radio-telemetry tags (fish) Pool 12 Adaptive Management continuation ($27,130)

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FY15 UMRR
Science in Support of Restoration and Management

27 Science Proposals for Evaluation

- Initial review by A-Team (November 6)
  - Objectives: transparency and coordination
  - Ranking process by A-Team, USGS, and Corps almost complete
  - Highest priority proposals with detailed SOWs, budgets
    - To UMRR CC for endorsement early December
    - Funding anticipated ~February 2015 (awaiting appropriation)

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FY15 UMRR
Science in Support of Restoration and Management

- All proposals $3,379,208
- Already funded $ 540,536
- Remaining budget* $1.0 - $1.4 million
- **TOTAL* ~$1.5-1.9 million**

*dependent upon appropriation and high quality proposals

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FY 16 Budget Request

- President's Budget $???
- House $
- Senate $

- Expecting a FY16 Pass back in late December to January.
- Presidents FY16 budget scheduled for Feb.
- FY17 Guidance in December

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Agency Leadership Event

- Key Program Issues
- Date – September 18, 2014
- Location –Dubuque, IA

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Meeting with Senior Leaders

- Format – Meeting in AM, Field trip in PM
- Meeting Organizer – COL Deschenes
- Topics of interest to your Senior Leaders
  - Funding
  - Staffing
  - Strategic Plan
  - Navigation and Ecosystem Restoration
  - Emerging Issues
  - Other

Meeting in morning

Field Trip In the Afternoon

Senior Leaders Field Trip

- Topics of interest
  - Selection of Projects
  - Monitoring Project Outcomes
  - Field Coordination

Public Outreach

UMRR Strategic Plan

- Initiated to:
  - Articulate a Partnership Vision to guide the Program over the next decade
  - Ensure that we continue to deliver products and services that are nationally significant and regionally relevant

UMRR Strategic Plan

- Initiated to:
  - Need to have a plan that reflected the entire range of activities carried out by the Program
  - Reinforced the commitment to the regional Partnership and collaboration with others

Plan Development and Review

- Broad representation of the UMRR Partners
- Initiated in April 2013
- Held 7 Committee meetings
- Plan review:
  - Each member agency held internal meetings and there was an open public comment period.

Key Points

- First formal Program Vision
- First formal Mission Statement
- Four Goal Statements
  - Enhance Habitat for Restoring and Maintaining a Healthier and More Resilient UMRS.
  - Advance Knowledge for Restoring and Maintaining a Healthier and More Resilient UMRS
  - Engage and Collaborate with Others
  - Utilize a Strong, Integrated Partnership

Remaining Steps

- UMRR EMP-CC concurrence in August
- Conducted a public review period in September
- UMRR EMP-CC Adoption Nov. 19
- Operational Plan will be the annual SOW

  Remaining Issues

  Budget coordination

  How to operationalize the plan

Outcomes of the Plan

- Even more effective habitat restoration projects
- Even more effective application of science (esp. ecological, biological, and engineering science) to habitat restoration work

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Outcomes of the Plan

- Deeper understanding of the dynamics and details of river health and resilience
- Stronger commitment to the collection, maintenance, and application of long term monitoring data
- An even stronger partnership among the organizations that participate directly in the Program
- And, most importantly, the UMRS will be healthier and more resilient because of the Program's work.

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Achieving these outcomes will require some change

Significance of these recommendations:

- Require us to characterize/define the existing health and resiliency of the system
- Use existing and potentially additional data sets or indicators to establish a baseline and to monitor change
- Utilize existing and develop new indicators to monitor progress

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Additional Changes

- Increased use of habitat projects to test important science questions on the UMRS.
- Increased involvement of scientists with PDT's in project formulation.
- Additional project performance monitoring

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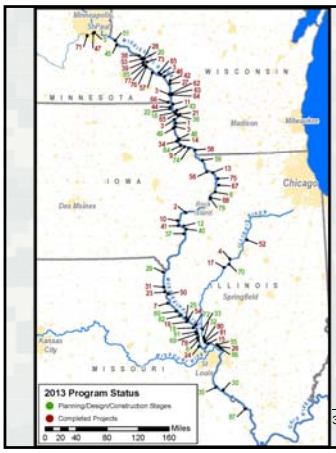

UMRR (EMP) Habitat Rehabilitation and Enhancement Projects

As of November 2014:
55 Projects Completed
8 Projects in Construction
27 Projects in Design

ST. LOUIS DISTRICT (MVS)
FY15 HREP Work Plan (November 2014)

PLANNING

Rip Rap Landing, IL
- Final Draft Feasibility complete waiting on sponsor letter of support *$200k*

Piasa and Eagles Nest Islands, Pool 26, IL
- Continue feasibility *$350k*
- Develop physical model

Harlow MO /Wilkinson IL Islands, Middle River
- Initiate feasibility *$400k*

Other studies in the Queue *$200k*
- Glades & Godar, IL River
- West Alton/Missouri Islands

EVALUATION *$150k*
Baseline Monitoring
Post Project Monitoring
Performance Evaluation

DESIGN

Clarence Cannon Refuge, MO *$1100k*
- Berm Setback
- Pump Station
- South Unit water control & channels
- North Unit water control & berm degrades

Ted Shanks, MO *$500k*
- Pump Station

CONSTRUCTION

Ted Shanks, MO *$3950k*
- SR1 Water Control
- North Berm and Setback
- HL1 Water Control
- NS1,NS2, DS Water Control
- Channel and Berm Earthwork

Pools 25 & 26 Islands, MO
- Bolters Island *$100k*

Batchtown, IL – Punchlist *$100k*

New MVS Commander HREP Site Visit

ST. PAUL DISTRICT (MVP)
FY15 HREP Work Plan (19 Nov 2014)

PLANNING – in priority order…..

North & Sturgeon Lakes, Pool 3, MN – ($400k)
- Complete Feasibility

Conway Lake, Pool 9, IA – ($350k)
- Complete Draft Feasibility

McGregor Lake, Pool 10, WI – ($150k)
- Continue Draft Feasibility

Other studies in the Queue
- Pool 10 Islands
- Lake Winneshiek (Pool 9),
- Weaver Bottoms (Pool 5),
- Clear Lake (Pool 5),
- Bass Lake Ponds (Mn Valley),

CONSTRUCTION

Capoli Slough Islands, Pool 9, WI ($250k)
- Stage 1 - Newt Marine
- Stage 2 - McHugh/JF Brennan

Harpers Slough, Pool 9, IA ($12.3M*)
- Awarded $6M Base Bid and three options in September to Newt Marine. Exercised final two options ($5.9M) in Oct.

EVALUATION
- Baseline Monitoring
- Post Project Monitoring
- Performance Evaluation
  - Lansing Big Lake
  - Ambrough Slough
  - Bank Stabilization

ROCK ISLAND DISTRICT (MVR)
FY14 HREP Work Plan (Nov 2014)

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- Performance Evaluations **($250K)**
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  - Pool 11 Overwintering
  - Chautauqua NWF

Emiquon Preserve Habitat Project

- TNC has indicated that they will not pursue a PPA with the Corps, at this time, due to a number of issues, including the requirement for perpetual O & M of the project.

New Project Starts FY17-FY18

- Next Steps
  - EMP-CC Feedback on approach
  - Proposed schedule (FY15 -
    - Formal start – 1st Quarter FY15
      - Develop Outline
      - assemble key data sourses
      - Identify perspective members of SET
      - Link rehabilitation efforts to refined goals, objectives, indicators, and data from base monitoring
    - Completion – 4th Quarter FY17

Environmental Design Handbook

- Jon Hendrickson

Harpers Slough

- Tom Novak

NESP

- Marv Hubbell and Mike Tarpy

Mud Lake Pool 11 July 2006

Completed Projects

Illinois

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Andalusia Refuge	393	$2,741,000	$0	$2,741,000
Banner Marsh	4,290	$5,339,000	$1,780,000	$7,119,000
Calhoun Point	2,135	$10,764,000	$0	$10,764,000
Chautauqua Refuge	3,940	$14,151,000	$0	$14,151,000
Gardner Division (Long Island Division)	6,300	$7,760,000	$0	$7,760,000
Peoria Lake	2,500	$3,235,000	$42,000	$3,277,000
Potters Marsh	2,305	$3,007,000	$0	$3,007,000
Spring Lake	3,300	$6,530,000	$0	$6,530,000
Stump Lake	2,960	$6,057,000	$0	$6,057,000
Total:	**37,218**	**$71,165,000**	**$3,644,000**	**$74,809,000**

Field Station	Total Cost
National Great Rivers Research & Education Center Biological Field Station	$ 8,783,000
Illinois River Biological Field Station	$ 8,783,000
Total Science & Monitoring	**$17,566,000**

Future Projects — Illinois

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Batchtown	3,280	$17,091,000	$146,000	$17,237,000
Boston Bay	900	$6,337,000	$0	$6,337,000
Delair Division	1,685	$9,500,000	$0	$9,500,000
Glades Wetlands	2,650	$17,218,000	$0	$17,218,000
Godar Refuge	2,400	$8,202,000	$0	$8,202,000
Keithsburg Division	1,390	$6,350,000	$0	$6,350,000
Pool 12 Overwintering	7,990	$20,656,000	$0	$20,656,000
Red's Landing Wetlands	1,620	$4,484,000	$0	$4,484,000
Rip Rap Landing	2,300	$8,169,000	$231,000	$8,400,000
Salt Lake/Ft Chartres Side Channel	60	$2,000,000	$0	$2,000,000
Swan Lake	2,900	$15,623,000	$262,000	$15,885,000
Total:	**32,225**	**$132,881,000**	**$408,000**	**$133,289,000**

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Completed Projects — Iowa

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Big Timber	1,039	$851,000	$0	$851,000
Brown's Lake	453	$2,093,000	$0	$2,093,000
Bussey Lake	494	$3,432,000	$162,000	$3,594,000
Guttenberg Waterfowl Ponds	198	$327,000	$0	$327,000
Lake Odessa	6,788	$22,600,000	$0	$22,600,000
Lansing Big Lake	6,420	$2,090,000	$0	$2,090,000
Pleasant Creek	2,350	$1,312,000	$0	$1,312,000
Pool 11 Islands-Mud Lake	4,550	$4,597,920	$0	$4,597,920
Pool Slough	620	$518,000	$175,000	$693,000
Princeton Refuge	1,129	$4,006,000	$54,000	$4,060,000
Total:	**24,041**	**$41,826,920**	**$391,000**	**$42,217,920**

Field Station	Total Cost
Iowa DNR Mississippi River Biological Field Station	$9,786,000

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Future Projects — Iowa

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Beaver Island	1,750	$13,375,000	$0	$13,375,000
Conway Lake	1,043	$2,512,000	$0	$2,512,000
Harpers Slough	2,200	$12,150,000	$0	$12,150,000
Huron Island	2,000	$13,773,000	$0	$13,773,000
Lower Pool 10 Island and Backwater Complex	2,340	$6,000,000	$0	$6,000,000
Steamboat Island	1,280	$7,780,000	$0	$7,780,000
Turkey River Bottoms Delta and Backwater Complex	3,638	$18,700,000	$0	$18,700,000
Total:	**14,251**	**$74,290,000**	**$0**	**$74,290,000**

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Completed Projects — Minnesota

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
East Channel	320	$559,000	$0	$559,000
Finger Lakes	530	$1,445,000	$0	$1,445,000
Island 42	420	$262,000	$0	$262,000
Long Meadow Lake	2,340	$750,000	$0	$750,000
Peterson Lake	614	$1,179,000	$0	$1,179,000
Polander Lake	790	$3,000,000	$0	$3,000,000
Pool 8 Islands Phase III	3,288	$19,650,000	$0	$19,650,000
Pool Slough	620	$518,000	$175,000	$693,000
Rice Lake-MN	807	$682,000	$0	$682,000
Total:	**9,729**	**$28,045,000**	**$175,000**	**$28,220,000**

Field Station	Total Cost
State of Minnesota, Lake City Biological Field Station	$ 10,170,000

BUILDING STRONG®

Future Projects — Minnesota

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Bass Ponds, Marsh, and Wetland	390	$3,000,000	$0	$3,000,000
Clear Lake (Finger Lake) Dredging	321	$2,500,000	$0	$2,500,000
North and Sturgeon Lakes	5,150	$8,000,000	$0	$8,000,000
Weaver Bottoms	4,883	$10,000,000	$0	$10,000,000
Total:	**11,134**	**$26,500,000**	**$0**	**$26,500,000**

BUILDING STRONG®

Completed Projects — Missouri

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Bay Island	650	$3,112,000	$0	$3,112,000
Clarksville Refuge	312	$454,000	$0	$454,000
Cuivre Island	2,180	$1,444,000	$479,000	$1,923,000
Dresser Island	940	$2,904,000	$0	$2,904,000
Monkey Chute	88	$56,000	$0	$56,000
Pharrs Island	525	$2,783,000	$0	$2,783,000
Stag and Keaton Islands	470	$471,000	$0	$471,000
Total:	**5,165**	**$11,224,000**	**$479,000**	**$11,703,000**

Field Station	Total Cost
Big Rivers & Wetlands Biological Field Station	$7,387,000

BUILDING STRONG®

Future Projects

Missouri

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Clarence Cannon	3,750	$25,800,000	$0	$25,800,000
Fox Island	2,033	$4,800,000	$0	$4,800,000
Harlow Island	1,300	$6,500,000	$0	$6,500,000
Piasa - Eagle's Nest Islands	1,600	$5,500,000	$0	$5,500,000
Pool 24 Islands	3,150	$9,492,000	$0	$9,492,000
Pool 25 and 26 Islands	2,026	$2,660,000	$0	$2,660,000
Ted Shanks	2,900	$29,506,000	$0	$29,506,000
West Alton Tract	610	$6,532,000	$0	$6,532,000
Wilkinson Island	2,700	$5,980,000	$0	$5,980,000
Total:	**27,271**	**$111,582,000**	**$**	**$111,582,000**

Completed Projects

Wisconsin

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Ambrough Slough	2,746	$2,461,000	$166,000	$2,627,000
Bertom Mccartney Lakes	2,000	$2,440,000	$0	$2,440,000
Blackhawk Park	82	$232,000	$77,000	$309,000
Cold Springs	30	$463,000	$0	$463,000
East Channel	320	$559,000	$0	$559,000
Indian Slough	825	$988,000	$0	$988,000
Lake Onalaska	2,750	$2,064,000	$0	$2,064,000
Long Lake	40	$649,000	$0	$649,000
Pool 11 Islands-Sunfish Lake	4,000	$5,247,228	$0	$5,247,228
Pool 8 Islands Phase I	643	$2,314,000	$0	$2,314,000
Pool 8 Islands Phase II	1,268	$3,482,000	$0	$3,482,000
Pool 8 Islands Phase III	3,288	$19,650,000	$0	$19,650,000
Pool 9 Islands	410	$1,266,000	$0	$1,266,000
Small Scale Drawdown	80	$97,000	$0	$97,000
Spring Lake Islands	530	$3,895,000	$0	$3,895,000
Spring Lake Peninsula	30	$448,000	$0	$448,000
Trempeleau	5,487	$5,835,000	$0	$5,835,000
Total:	**30,056**	**$58,574,228**	**$243,000**	**$58,817,228**

Field Station	Total Cost
USGS – Upper Mississippi River Environmental Science Center	$95,154,000
State of Wisconsin, La Crosse Biological Field Station	$10,293,000

Future Projects

Wisconsin

Project Name	Acres Restored	Federal Cost	Non-Federal Cost	Total Cost
Capoli Slough	820	$9,450,000	$0	$9,450,000
Lake Winneshiek	5,170	$5,000,000	$0	$5,000,000
Lock & Dam 3	660	$9,100,000	$0	$9,100,000
Lower Pool 10 Island and Backwater Complex	2,340	$6,000,000	$0	$6,000,000
McGregor Lake	1,000	$6,500,000	$0	$6,500,000
Snyder Slough Backwater Complex	2,064	$16,800,000	$0	$16,800,000
Turkey River Bottoms Delta and Backwater Complex	3,638	$18,700,000	$0	$18,700,000
Total:	**15,692**	**$71,550,000**	**$0**	**$71,550,000**

Non-federal PPA Issue Overview and Proposed Solutions

Issue:

UMRR habitat restoration projects on non-federal lands require a cost share sponsor and most state and NGO partners either find it difficult, or they are unable, to sign the USACE Project Partnership Agreement (PPA).

PPA agreements between the USACE and non-federal sponsors for the UMR have become legally very restrictive:

- Perpetual agreements (used to be 50 years)
- Indemnifies project sponsor making them liable for unanticipated costs (used to be a "subject to appropriation clause):
  - Includes costs over those estimated in the construction agreement
  - Includes damages resulting from design flaws by Corps or contractors
- Sponsor liable for 100% of future O&M costs under a perpetual agreement, with no definition or capping of those costs

- Several agreements have been signed in the past 25 years, but very few in the past 10 since language has become more restrictive.
- Recently signed agreements are facing these same indemnification and O&M issues.
- For some projects, the habitat restoration plan is complete, the funding is in hand, yet the agreement cannot legally be signed.

At a program level, the USACE places a high priority on cost sharing projects:

- Influences funding decisions – leverages federal dollars
- Tightened legal requirements have created "unintended consequences"
- Unless this changes, very unlikely there will be many future cost share projects

This has a serious, long-term impact to the program and to the river's ecosystem

- Thousands of acres of non-federal land within the UMR – mostly outside refuge
- Lands cannot be improved through UMRR without a sponsor and signed cost share agreement
- Many of these lands are in serious need of restoration
- This also applies to aquatic habitat projects within the river

Issue was discussed at EMPCC leadership summit in Dubuque:

- Colonel Mark Deschenes and MVD leadership expressed willingness to work with non federal sponsors to resolve issue
- Leaders requested EMPCC members develop brief summary to serve as working paper
- Issues paper developed by subcommittee that summarized issue and proposed three solutions

Solution 1:

Modify the hold and save clause to a more equitable, shared approach to liability that does not extend beyond the liabilities that already exist under applicable constitutions and laws.

Solution 2:

Include language providing that unanticipated costs for project construction are subject to: a) the state's future appropriations for the project, or b) the nonprofit's availability of funds for the project. In addition, construct projects in phases when appropriate to limit cost overruns.

Solution 3:

Provide greater specificity regarding OMRR&R costs and requirements in the PPA's, rather than providing those requirements post-construction. PPA provisions should include:

a) A defined end term that is based on the expected useful life of the project's construction features.

b) Language providing that unanticipated costs are subject to the state's future appropriations or the nonprofit's availability of funds.

c) Adaptive management provisions to address risk and uncertainty regarding project outcomes and the need and ability to perform OMRR&R obligations depending on whether the project features perform as intended.

Most UMRR HREP's:

- are built to work **with** instead of **against** the river's natural processes;
- require little or no construction related maintenance;
- are constructed entirely for public benefit.

So ….. PPA's for HREP's should not require the same type of legally restrictive language that is typically used for more heavily engineered and damage susceptible projects such as flood control levees for watershed districts.

Taking the next step

- Letter from UMRR-EMPCC to Colonel Mark Deschenes that expresses appreciation for his willingness to work with non-federal sponsors, encloses the issue statement and proposed solutions, and asks how we can best work together to address issues.
- Recognizing issues extend beyond UMRR, partners may provide input on WRRDA implementation guidance and USACE's evaluation of its PPAs (Sec. 1013 of WRRDA 2014)

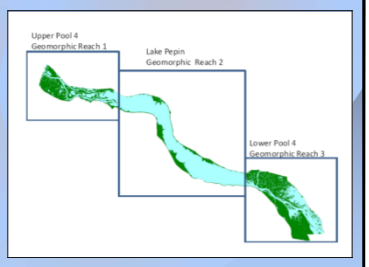
Temporal trends in water quality and biota in segments of Pool 4 above and below Lake Pepin, Upper Mississippi River: indications of a recent ecological shift.

W. Popp, R. Burdis, S. DeLain, and M. Moore
LTRMP Completion Report

- Sediment loads from the Minnesota River create high turbidity and low transparency above Lake Pepin.
- Lake Pepin acts as a large settling basin, so below the lake, water is much clearer.

Temporal trends in water quality and biota in segments of Pool 4 above and below Lake Pepin, Upper Mississippi River: indications of a recent ecological shift.

- Upper Pool 4, above Lake Pepin, is turbidity impaired and sparsely vegetated.
- Lower Pool 4 is a heavily vegetated mosaic of secondary channels and backwaters



Temporal trends in water quality and biota in segments of Pool 4 above and below Lake Pepin, Upper Mississippi River: indications of a recent ecological shift.

- 2005 through 2011 was a low flow period for Pool 4, resulting in lower water elevations and reduced suspended solids concentrations.
- In lower Pool 4, the frequency of submersed vegetation increased 29%. In upper Pool 4 it increased 36% and became more diverse (relative to 1998-2004).
- Relative abundance of fish associated with veg increased (bluegill, bass) in both areas, whereas emerald shiners (open water species) declined.
- LTRMP data in the future will indicate if these results are temporary, but they indicate that in Pool 4, vegetation and fish can respond to changes in habitat conditions.

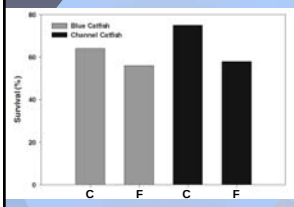
Synergy between silver carp egestion and benthic fishes

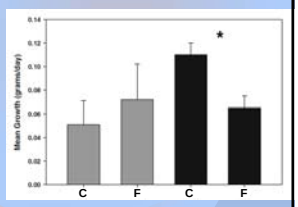
K. Yallaly, J. Seibert & Q Phelps
Environmental Biology of Fishes

- Studies have shown a negative effect of silver carp on native planktivores because of dietary overlap.
- An alternative feedback loop may exist between Asian carps and native fishes. (similar to effect of zebra mussels)
- Silver carp eat lots of plankton, but assimilation efficiency is low so they egest energy-rich fecal pellets. These may be a food source for benthic fishes or invertebrates.

Synergy between silver carp egestion and benthic fishes

- Extracted fecal pellets from silver carp. Fed fecal pellets and chironomids to age-0 blue catfish & channel catfish for 20 days.





- Results suggest that Asian carp may act to move food resources from the water column to the bottom – thus competing with planktivores but providing increased food resources for benthic feeders.

American Eel Population Characteristics in the Upper Mississippi River

Q. Phelps, J. Ridings, and D. Herzog
The American Midland Naturalist, 171(1):165-171

- American eels are being considered for listing in US. LTRMP data were provided to USFWS in the past. This study updated and published those results.
- Eels are catadromous, living in rivers as adults and spawning in the Sargasso Sea (Atlantic Ocean).
- During 1993-2010, 92 eels were collected by LTRMP. Found in all reaches.

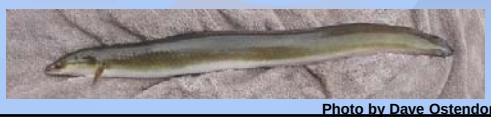
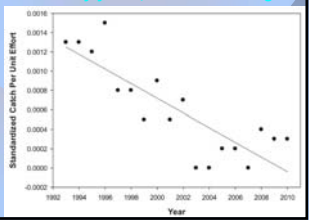


Photo by Dave Ostendorf

American Eel Population Characteristics in the Upper Mississippi River

Q. Phelps, J. Ridings, and D. Herzog
The American Midland Naturalist, 171(1):165-171

- Occurred mainly in channel borders with shallow water, rock substrate, and low current velocity.
- The majority of eels were captured in early years, with decreasing catch rates over time.
- Example of LTRMP's fish community-based sampling providing useful information to partners.



U.S. Army Corps of Engineers' Upper Mississippi River Restoration Long Term Resource Monitoring Program Data Webinar

- LTRMP has great data & lots of it!
- Many people don't know about those data, how to access them, or the ways we've developed to provide information quickly & easily.
- We have tried for years to get the word out, but it's a slow process.
- How can we reach more people at once? Tried a ½ day webinar on 27 October 2014.

U.S. Army Corps of Engineers' Upper Mississippi River Restoration Long Term Resource Monitoring Program Data Webinar

- Webinar open to anyone. Sent announcements to UMRR staff and various river mailing lists.
- Estimated ~50-60 people attended, about 1/2 of whom were "outsiders."
- Included:
  Feds (Corps, EPA, FWS); States (DNRs + others); NGO's (Audubon, NE-MW, MICRA, Amer. Rivers); academics; Exelon Power; Horinko Group.
- Planned to tape it, but ….

U.S. Army Corps of Engineers' Upper Mississippi River Restoration Long Term Resource Monitoring Program Data Webinar

Jennifer Sauer - Brief introduction to the Web Pages and LTRMP Sampling Design
Ben Schlifer - How to use the data download and graphical tools
Yao Yin - Vegetation Graphical Browser
Brian Ickes - Fish Graphical Browser and Treemap
Jeff Houser - Water Quality Stratified Random Sampling and Fixed Site Graphical Browsers
Nate De Jager - Landscape Indicator Graphical Web Browser

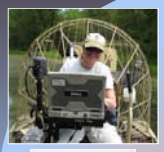
Oct. 27, 2014

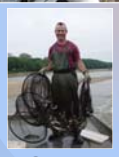
U.S. Army Corps of Engineers' Upper Mississippi River Restoration Long Term Resource Monitoring Program Data Webinar

Things we learned:

- Considerable silence from the audience, very few questions (a characteristic of webinars?). But got good feedback after it was over.
- Next time, plant a few questions in the audience to "break the ice." Also, have more pre-planned examples of ways to use the data to answer a specific question.
- 1/2 day is long. Probably good for the 1st time, but focus on 1 or 2 components next time.

Additional UMRR LTRMP Staff Activities





See a complete list on the A-Team Corner

www.umesc.usgs.gov/ltrmp/documents/fy14_quarter_activity_all.pdf

FY14 Fourth Quarter
Additional UMRR LTRMP Staff Activities

Jennifer Sauer, Brian Ickes, Jeff Houser, and Larry Robinson presented an overview of UMRR-LTRMP an all-employee meeting of the UMR National Wildlife and Fish Refuge, July 17, 2014, in La Crosse, WI.

Rich Pendleton and Levi Solomon hosted a large river ecology seminar for local Senior citizens at the Havana Nature center.

Bowler, Miller, and Reed provided crayfish captured during routine LTRMP fish sampling for Charlie Jordan of the Iowa Aquatic Nuisance Species Program

Brian Gray, Yulia Gel and Vyacheslav Lyubchich presented "Regression estimation of trends in temperature when time and date of sampling are haphazard" at the Joint Statistical Meetings in Boston on 7 August 2014.

Summary of the Inaugural Science Meeting for the Upper Mississippi River Restoration, February 2014

(Draft Nov. 2014)

Contents

Meeting Summary

Table 1. Attendees and their agency or group affiliations
Table 2. Agenda for UMRR Science Meeting
Table 3. Summary of quantitative responses to evaluation survey

Appendix A. Contents of the read-ahead file
Appendix B. Full list of responses from the evaluation survey
Appendix C. Draft of the initial Science Plan

Upper Mississippi River Restoration 3-year Science Plan for Fiscal Years 2015–2017

Produced by Science Staff at
the Upper Midwest Environmental Sciences Center
and State Field Stations

D R A F T August 2014

Contents:

Introduction
Aquatic Vegetation
Native Mussels
Landscape Patterns
Water Quality
Fish
Statistics
Program-wide

3-Year Running Science Plan for Native Mussels, FY 2015-2017

Project title	PI	Co-PI's & Collaborators	Description of Questions and Issues	Coordination needed to conduct work	Time frame
Evaluate the effects of HREPS on native mussel communities	T. Newton, UMESC	Steve Zigler (UMESC), Heidi Dunn (Ecological Specialists), Jon Hendrickson (possible, COE St. P.), Brian Johnson (possible, COE St. L.),	Choose an appropriate HREP to design, build, and evaluate effects on mussels. We will use recently developed hydrophysical models to help plan HREP physical and hydraulic features designed to benefit native mussel populations. If a pre-planned design approach is not feasible, we will assess whether any existing HREPs might be candidates for a post-construction evaluation of hydrophysical features and their links to mussel use. We could also blend these two approaches	Coordinate with COE biologists and engineers to choose likely project(s), design features, and monitoring. Coordinate with other biologists (e.g., divers) that can assist with pre- and post-project monitoring.	FY14-15: Work with COE to find project(s). Remaining time frame dependent on HREP scheduling. Evaluation would require monitoring mussels and hydrophysical conditions for 1-2 years pre-project and 3-6 years post-project.

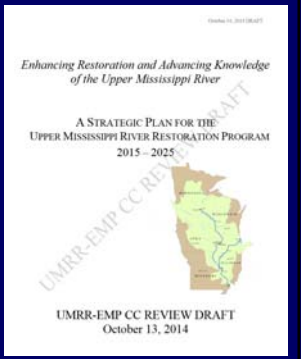
Resilience of the Upper Mississippi River System

UMRR-EMP CC Quarterly meeting
19 November 2014
Jeff Houser

Acknowledgements: Nathan DeJager, Brian Ickes, Ken Lubinski, Barry Johnson, James Rogala, Bill Richardson, Jennie Sauer, Yao Yin

UMRR Vision Statement

"A healthier and more resilient Upper Mississippi River Ecosystem that sustains the river's multiple uses."



Other agencies are incorporating resilience concepts into guidance documents

- **"Healthy, resilient landscapes…"--** USDA Forest Service, Interim Directive in Forest Service Manual: Ecologial Restoration and Resilience (2009)
- "…**important to support ecological resilience**…"--USFWS, Strategic Plan for Responding to Accelerating Climate Change…(2010)
- "…**develop resilience and adaptive strategies**…"--US Bureau of Reclamation, Landscape conservation cooperatives (2010)

Ecological resilience

- Concept has been around for 40 years.
  - Holling, C.S. 1973. *Resilience and stability of ecological systems*. Annual Review of Ecology and Systematics.
- Discussion largely academic for much of that time.
- Recent interest in applying concept in natural resource management.
- Applied examples of the use of resilience in natural resource management remain scarce.
- The challenge: Applying resilience concepts to the UMRS…

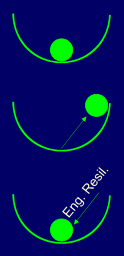
Resilience: a word with multiple meanings

(Brand and Jax 2007)

Resilience: two prominent meanings

- Engineering resilience: stability
- Ecological resilience: long-term persistence

Resilience metaphor: engineering resilience

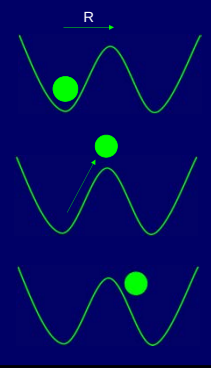


System stable at a single equilbrium

"Disturbance" - shake cup

-Engineering resilience – tendency of a system to return to an equilibrium following a disturbance

Resilience metaphor: ecological resilience

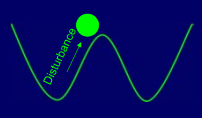


-There are multiple possible equilibria--more than one cup

-Disturbance can move the ball into a different cup representing a different ecosystem state.

-Ecological resilience:
- How likely the ball is to move into a different cup.
-Change in resilience: change in breadth/depth of cup.

Ecosystem resilience: ball and cup metaphor extended



Ecosystem may respond rapidly and irreversibly if/when these slow variables cross a threshold.

Ball – components that respond quickly to disturbances in the ecosystem.
- Water clarity
- Vegetation abundance

Disturbance (shakes cup):
-Pushes ball around
-E.g., Large flood event

Cup: represents a particular ecosystem "state".
- shape defined by slowly changing variables in the system:
-Bathymetry/floodplain elevation
-Catchment land use
-Abundance/diversity of long-lived organisms

Fundamental questions for applying ecological resilience to the UMRS:

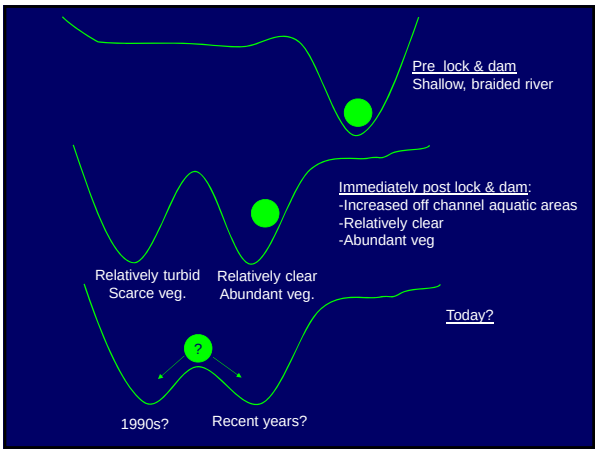
- What are the rapidly responding ecosystem characteristics("balls") of greatest interest?
  - Indicators Report
  - Some examples:
    - Water clarity
    - bluegill abundance
    - SAV abundance and distribution

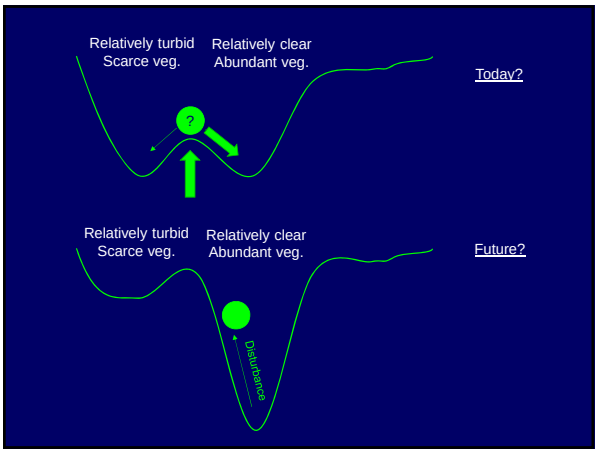
Fundamental questions for applying ecological resilience to the UMR:

- What disturbances ("shakes") are of greatest concern?
- Some *possible* examples:
  - Climate change
  - Large floods
  - Multiple years of exceptionally high or low discharge
  - Species invasions or extirpations
  - Modifications for navigation
  - Completion of locks & dams, wing dams, closing dams, etc.

Fundamental questions for applying ecological resilience to the UMR:

- What defines the current "state" of the UMRS ecosystem (depth and breadth of the "cup")
- Answer may differ by geomorphic reach
- Some *possible* examples:
  - Bathymetry and distribution of floodplain elevation
  - Hydrologic regime
  - Fish and vegetation species community composition
  - Basin land use (sediment and nutrient input)
- Is the current "state" of the ecosystem acceptable?





What contributes to ecosystem resilience in the UMRS
(determines the depth and breadth of the "cup")

- Longitudinal orientation and connectivity
  - Provides access to a wide range of conditions
  - Buffers against long term variation in climate
  - Management: fish passage at locks & dams

What contributes to ecosystem resilience in the UMR
(determines the depth and breadth of the "cup")

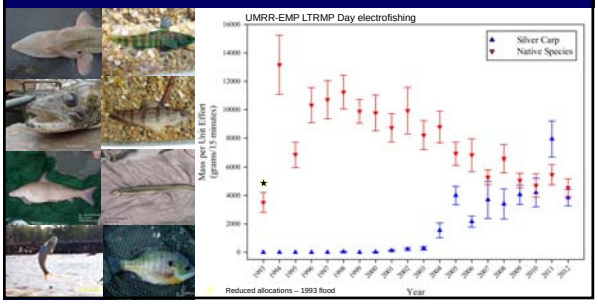
- Lateral diversity
  - Broad range of flow, depth, clarity conditions in any given year.
  - Mobile species can find "acceptable" habitat despite annual and seasonal variation in regional conditions.
  - Provides refugia for vegetation in otherwise inhospitable years
  - Management :
    - Alteration of lateral diversity (e.g., dredging, island construction)
    - Alteration of connectivity among various aquatic areas (e.g., closing dams)

What contributes to ecosystem resilience in the UMR
(determines the depth and breadth of the "cup")

- Biodiversity: fish
  - Greater biodiversity may provide enhanced resilience.
  - Management : changes in fish community composition due to invasive species (e.g., B. Ickes 2015 proposal)
  - What changes are occurring? What are the implication for the ecosystem?

Community level effects, La Grange Reach of the Illinois River
UMRR-EMP LTRMP data sources
Ickes (in review)

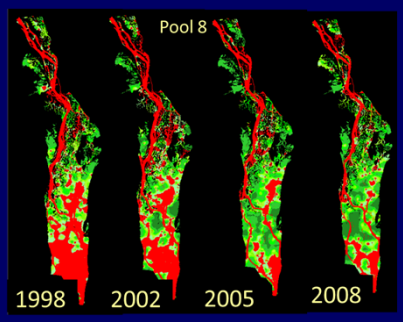
http://www.umesc.usgs.gov/data_library/fisheries/fish_page.html



What contributes to ecosystem resilience in the UMR
(determines the depth and breadth of the "cup")

- Biodiversity: vegetation
  - Species differ in their tolerance of turbidity, flow, etc.
  - Allows SAV to persist across a wide range of conditions
  - What changes are occurring? What are the implications for the ecosystem?

SAV changes in Pool 8



What contributes to ecosystem resilience in the UMR
(determines the depth and breadth of the "cup")

- Hydrologic variability (seasonal and annual)
  - Locks and dams have removed the low end of the hydrograph
  - Management: water level management (drawdowns)

A few questions that need answers

- What are the critical, slowly changing variables that define the "cup" that constrains the current state of the UMR?
- Some possibilities:
  - Catchment land use
    - Proportion tilled
    - Fertilizer application rates
  - Sediment accumulation in off-channel areas:
    - Loss of large-scale hydrogeomorphic diversity
  - Water column turbidity
    - Reduced vegetation abundance/distribution.
  - Nutrient accumulation in sediments
    - Increased free floating plants and filamentous algae in backwaters.
  - Fundamental changes in fish populations due to species invasions
  - Propagule bank for vegation
  - Long term changes in fishing practices, preferences, etc.

A few questions that need answers

- Where is the current state acceptable, where is it not?
- What do we know about other states that are possible given the myriad of management constraints?
- What would the UMR look like in 25, 50, 100 years with no additional management actions?
  - Which of those changes would we most like to prevent?

Resilience based management
(Holling 1973)

- View events in a regional rather than a local context
- Emphasize heterogeneity
- Recognize our ignorance rather than presume sufficient knowledge
- Does not require a precise capacity to predict the future, but…a qualitative capacity to devise systems than can absorb and accommodate future events.
- Ecosystems are moving targets with multiple potential futures that are uncertain and unpredictable
- **Address gradual changes that affect resilience rather than focus all effort trying to control disturbance and fluctuations**

UMRR-EMP
Environmental Design Handbook

Presentation to the EMPCC

November 2014

US Army Corps of Engineers
BUILDING STRONG®

Authors

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Contributing Agencies

Upper Mississippi River Basin Association

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Environmental Design Handbook 2006

- U.S. Army Corps of Engineers (Corps), with input from Upper Mississippi River Restoration- Environmental Management Program (UMRR-EMP) partners, completed the first Environmental Design Handbook in August 2006
  - Documents EMP's array of restoration tools and lessons learned to inform future Habitat Rehabilitation and Enhancement Program (HREP) projects.
  - The Handbook details the project features, design methodologies, and lessons learned since UMRR-EMP's inception.
  - The 2006 handbook can be found online here: http://www.mvr.usace.army.mil/EMP/designhandbook.htm

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Environmental Design Handbook 2012

- Front end chapters incorporate information presented in many different UMRR-EMP reports to describe:
  - UMRS, EMP, HREP and HREP Process
  - Ecosystem Restoration Objectives
  - Updated Design chapters with new case studies, lessons learned and design information. Design chapters also are addressing ecosystem restoration objectives.
- The information in the 2006 Design Handbook have either been incorporated into these chapters, or removed from the handbook based on the absence of this type of work in the UMRR-EMP HREP.

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2006 Environmental Design Handbook	2012 Environmental Design Handbook
Introduction	Introduction
	UMRS, EMP, HREP
	HREP Processes
	Ecosystem Reach Objectives
Shoreline Stabilization	Shoreline Protection
Localized Water Level Management	Localized Water Level Management
Dredging	Dredging
River Training Structures and Secondary Channel Modification	River Training Structures and Secondary Channel Modifications
Aeration	*(pertinent information was moved to other chapters)*
Floodplain Restoration	Floodplain Restoration
Tributary Restoration	*(information was moved to other chapters)*
Islands	Island Design

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Why Write a Design Handbook?

- People retire or are promoted taking knowledge and experience with them
- Combines or refers to information in…
  - Fact Sheets, Planning Reports, Plans and Specs, As Built Drawings, O&M Manuals, Performance Evaluation Reports, Scientific Literature, Monitoring Documents, Reports to Congress, Engineering Regulations, Model Certifications
- Summarizes lessons learned
- Information and lessons learned is available to new personnel
- Documents innovative and unique design and construction methods

2012 Updates

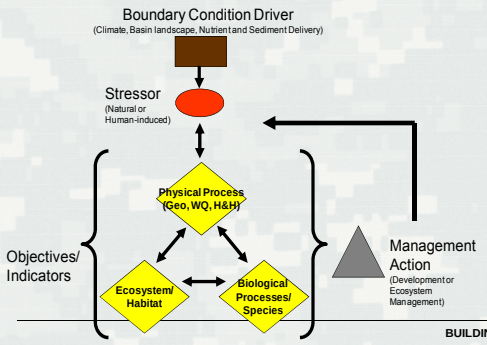
- The Handbook was updated by the Rock Island, St. Paul, and St. Louis U.S. Army Corps of Engineers Districts with input from State and Federal agencies involved in the UMRR.
- Updates Include:
  - New project features.
  - Connections between habitat objectives and management actions.
  - Success and challenges with different projects.
  - Recent case studies.

New Project Features

Emergent Wetlands	a. Emergent wetlands elevations should vary between up to 2ft with the mean elevation .5ft below LCP. Wetlands should not be table smooth and should slop toward the sand berm and away from islands. Sand berm (containment dike) are required for hydraulic placement during construction but the height is left up to contractor. Contractor plan as required b y specification will describe construction details.
Access Pads	Access Pads are an innovative construction feature that limits the amount of access dredging required. They can either be left in or removed depending on stakeholders and Government desires.

New Project Features

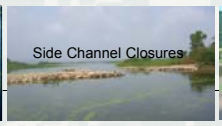
Connections between habitat objectives and features



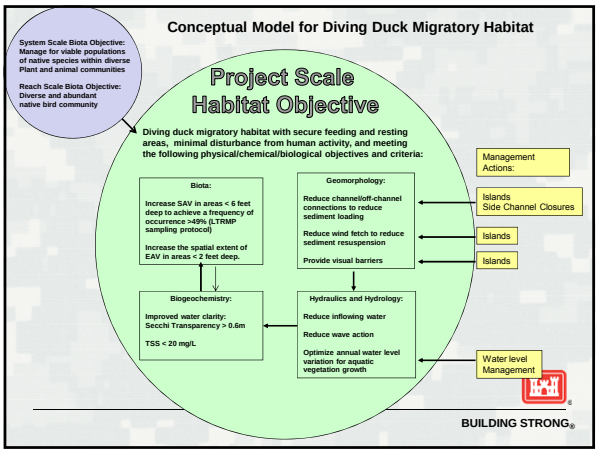
System Scale Objective - Manage for a diverse and dynamic pattern of Habitats to support native biota

Reach Scale Objective - Diverse and abundant native aquatic vegetation communities (SAV, EAV, R/F)

Project Scale Objective	Criteria	Management Action
Increase the acreage of submerged aquatic vegetation	• Improved water clarity • Reduced sediment resuspension in North and Sturgeon Lakes • Reduced wave action • Reduced rates of sediment transport and deposition • Periodically emulate low seasonal water levels.	• Island Construction • Side Channel Closures • Water Level Drawdowns



Conceptual Model for Diving Duck Migratory Habitat



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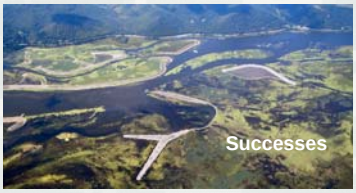

System Scale Objective for Geomorphology: Manage for processes that shape a physically diverse and dynamic river floodplain system

Reach Scale Objective: Restore a sediment transport regime so that transport, deposition, and erosion rates and geomorphic patterns are within acceptable limits

Project Scale Objective Increase, maintain, or improve	Closure Structure	Islands
Aquatic Veg	X	X
Delta Growth		X
2ndary Channels		X
Riverine Fish		X
Migratory Birds	X	X
Backwater Fish	X	X

Questions

Contacts

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Notes

- Looks like this should be a 15 minute talk based on the EMPCC schedule
- Discussed with Marv Hubbel in late Oct. Marv mentioned
  - Feature evolution should be discussed (mudflats
  - Linkage to objectives and reach objectives
  - Connections physical to biology in future effort
- Check Kara's ASCE talk – image 39 and others
- Check Marv and my talk that we gave at the Columbus Conference
- Future evolution – SMART Lessons Learned, have to get out and study.
- Spring Lake Island Vegetation too dense
- Update my CM based on North and Sturgeon Lakes, See CM directory in N&S
- Na, don't show CMs – bad communication – get a good image of a couple of management actions and list the system and reach scale objectives they achieve.
- Vanessa's delta images are nice.
- Piassa and Eagle Nest
- See Table 3-1 in Ch 3 of design handbook.

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Harpers Slough HREP
EMPCC Project Briefing

By: Tom Novak
HREP Project Manager
St. Paul District

Nov. 19, 2014

US Army Corps of Engineers
BUILDING STRONG®

Harpers Slough Project Area

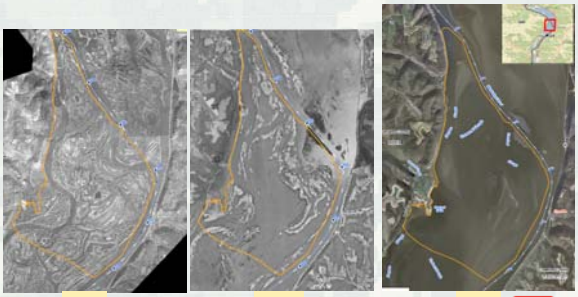
- RM 665.0 – 650.0
- Pool 9
- ~3,500 acres
- 100% Federal lands

Current Status

- 6/14 - Feasibility Report
- 7/14 - P&S/Advertise
- 9/14 - Awarded Base Bid & three options - Newt
- 10/14 - Awarded two remaining options

- 5/15 – Harpers Ground Break/Capoli Dedication
- 5/15 - Mobilization
  - 4 summers 2015-2018
- 6/19 - Contract completion/Harpers Dedication
- Project monitoring/Adaptive Management

Historic vs. Current Conditions



1929 1970s 2009

Problems and Opportunities

Problems

- Loss of emergent and floating leaf aquatic vegetation
- Lack of SAV resilience
- **Loss of islands**
- Degradation of waterfowl habitat
- Lost of habitat suitable for neotropical migrants, marsh, water birds, shorebirds, turtles, etc.
- Degraded secondary/tertiary channels
- Loss of bathymetric diversity in backwaters

Opportunities

- **Protect existing Islands**
- **Restore island habitat**
- **Reduce wave action**
- Create overwintering habitat
- **Alter flows**
- **Create habitat suitable for vertebrate species**
- Restore backwater wetlands
- Improve carrying capacity for migrating waterfowl
- **Improve extent and quality of aquatic vegetation**

Project Goals & Objectives

Goals

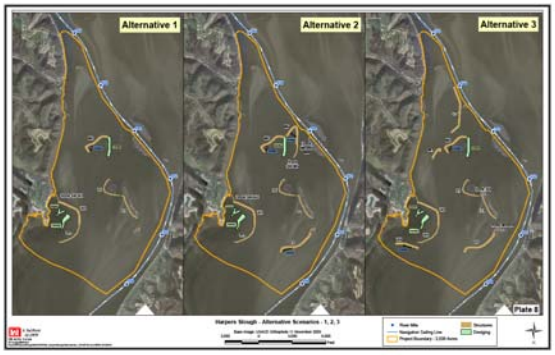
- Maintain and/or enhance habitat in the Harpers Slough backwater area for migratory waterfowl birds
- Create habitat for migratory & resident vertebrates
- Enhance channel habitat for riverine fish & mussel species
- Create & maintain protected lacustrine habitat for backwater fish species

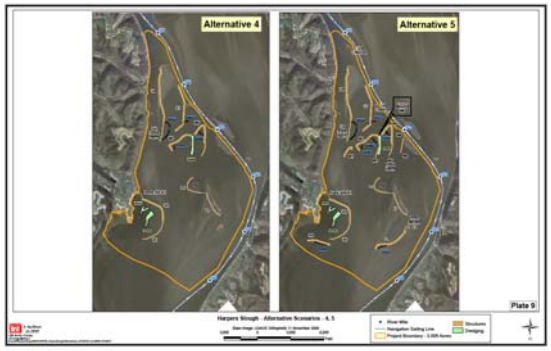
Objectives

- Increase aquatic plant growth
- Maintain & increase emergent wetlands and isolated wetlands
- Protect existing islands & create new islands
- Provide habitat for migratory and resident wildlife, especially marsh and shore birds and turtles
- Improve habitat for waterfowl
- Enhance secondary habitat for riverine fish and mussels
- Create protected deep water overwintering fish habitat for backwater fish species (e.g., bluegill)

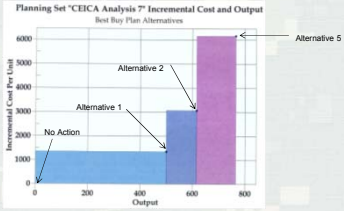
Alternative Plan Formulation

- Combined features into alternatives
  - Generated +700 possible alternatives
  - Pared down to 6 alternatives (including no action)
- CE/ICA resulted in 4 Best Buys (including no action)





CEICA Analysis – Best Buy Plans

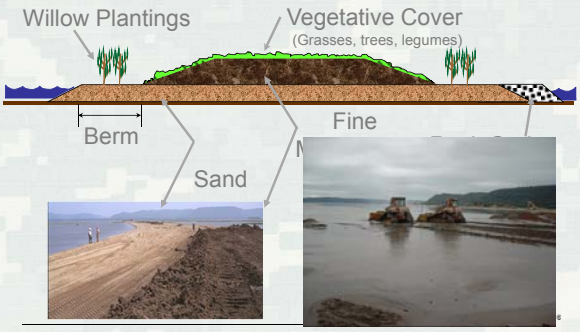


Alternative	Output (AAHUs)	Cost ($1,000)	Average Cost/AAHU	Incremental Cost ($1,000)	Incremental Output (AAHUs)	Incremental Cost per Output
No Action	0	0	NA	NA	NA	NA
1	500.5	$673,558	$1,346	$673,558	500.5	$1,346
2	618.0	$1,031,185	$1,669	$357,627	117.5	$3,043
5	767.5	$1,951,746	$2,543	$920,561	149.5	$6,157

Selected Plan Project Features

- Seven islands (new & protect existing)
- Five rock sills
- Two rock mounds
- Groins, vanes & rock berms
- Habitat dredging
- Three emergent wetlands

Typical Island Cross Section



Dredging

- Backwater dredging
- Improve deep water habitat

Try to balance

- Top soil for island construction

Emergent Wetlands

- Created in shallow flats near islands
- Increase emergent vegetation
- Habitat for amphibians, reptiles, and other similar wildlife

What else?

- Lessons Learned from Capoli
- Detail changes
  - ►Rock berm
  - ►Narrow Island width
  - ►Island details
- 2D Modeling/flows overwintering & flood stage impacts

Lessons Learned – Capoli Slough Stage 2

Mike Binsfeld – JF Brennan

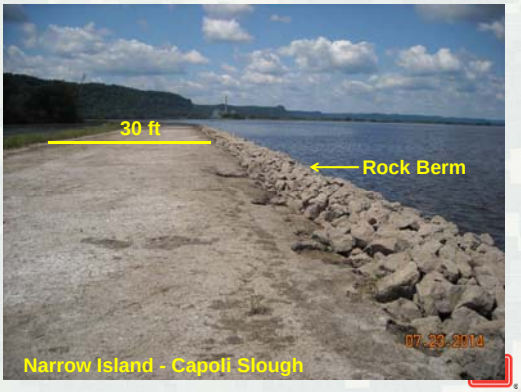
1. Building islands with a low profile granular base can be difficult in soft sediment situations can present challenges to the contractor's equipment on the island.
2. Deep fines placement (4 feet +) can create lengthy drying periods that may go beyond a contract performance period. Minimizing the fines drying time is critical to get an accurate post placement survey.
3. Allowing enough time for contractors to bid the project is critical. A more accurate bid can be submitted if the material composition at the borrow sites and placement area can be analyzed properly.
4. Wages in the bid package should apply only to the county where work is being completed. The EMP projects should be completed under Heavy and Highway agreements, as the maintenance dredge wages don't apply for construction sites. Both wage agreements were put into the bid package for the contractors to choose from.
5. Interaction of the contractors from successive stages should be kept to a minimum.
6. The waterfowl hunting zones around the project site should be closed so that the contractor can make use of the work season after September 30th each year.
7. Survey specifications should be updated in accordance to the practices set forth in Stage II. Survey submittal requirements should be more clearly defined.

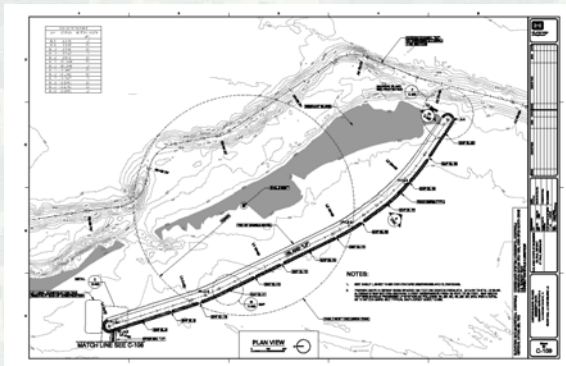
Scott Baker – Corp of Engineers

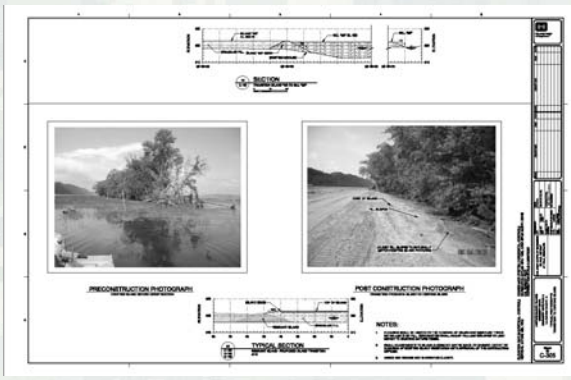
8. Survey Staffing – Since a full time surveyor is necessary to provide the survey deliverables and assure adequate QC, the specification should require a full time surveyor dedicated to surveying. This person cannot have additional duties as Superintendent or QC Manager.
9. Island alignments and existing soil conditions – After preliminary alignments are selected during design process and before solicitation, borings or soil samples should be taken along island centerline to confirm bottom conditions are suitable. (i.e. soft conditions on Island C should have been identified earlier.)
10. Bid Quantities - Corps needs to develop QC process for checking project quantities during design process. A large overrun in payable fine materials on Island G were due to a calculation error not any change in site conditions. Estimator should insure estimated quantities include specification tolerances.
11. Communications Plan – Corps, Agencies (and Contractor) should develop a joint communications plan for the project. A communications plan is needed: (1) Assure an effective effort is implemented to get the word out to the local community (including hunters & fisherman) about the project, and (2) an avenue to share project success stories.
12. Barge Washing – Material barges need to be cleaned routiely for safety of personnel & equipment. Contractor should address this need (and their plans for washing barges) in their initial operation plan. Addressing this before construction starts may avoid water quality concerns by regulator agencies - unaware of the need for barge washing.
13. As-Built Drawings - Requiring (and allowing) contractors to generate electronically generated As-Built drawings could: (1) improve accountability by contractor to keep drawings current during construction,
14. Surveys – Contractor & Corps COR should work through requirements of survey backup for interim payments early in the project if possible. (Survey backup should be sufficient to confirm quantities in place but be in less detail than those required for the Final Quantity survey so interim payments are processed more frequently.)

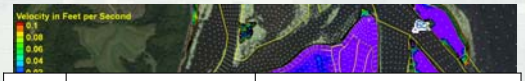
Sharonne Baylor – Fish & Wildlife

15. Partner Meetings: Continue to hold bi/weekly onsite partner meetings. I believe these meetings were instrumental to the project success.
16. High Water: JFB was able to work through the high water by constructing the islands taller and narrower, reshaping to grade once the water receded. It was beneficial to have a wide island to construct during high water, rather than just narrow islands.
17. Soft Material: Per Ross and Mike, deeper water would have helped reduce the Island C extreme mud wave issue. Ross suggested that if this situation were encountered again, a narrower (40' minimum width), taller island may have helped reduce the mud wave negative impacts. He suggested least 2' of granular above the water surface would be beneficial.
18. Design Details: Some of the design details may need some updating. Many of those details are copied from previous contracts. I recommend Ross mark up the plans with his suggested revisions and provide them to Scott.
19. Field Fit Tie-ins: Make the plan notes more prominent regarding field fitting tie-ins to existing and previously constructed islands. In most cases it is easier to define the existing island tie-in while on site with the contractor.
20. Access Channel Layout: Ensure the plans show the access channel corners as rounded, not at ninety degree angles.
21. Agency and Visitor Personal Protective Equipment: Ensure agency personnel and visitors are wearing the proper personal protective equipment when on-site. This includes sturdy boots, hard hat, high visibility vest, personal floatation device, long pants, and short or long sleeved shirt, and at times may also require hearing protection and eye protection.
22. Hunting Signs: The Refuge will ensure consistency between the posted sign and news release language.
23. Outreach: Continue to look for ways to inform the public about the [illegible] UMRREMP. I recommend the Project Manager develop an outreach plan for each project. The Refuge will continue to host project tours, highlight projects on our website and social media, develop project fact sheets on the Friends groups, coordinate with the Corps of Engineers, etc.



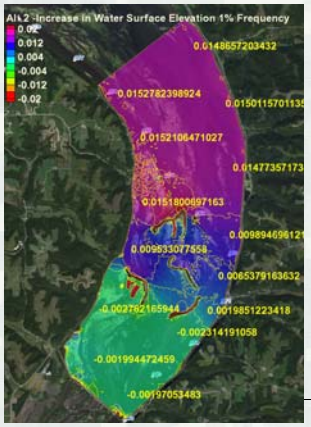






Stressor /Attribute	Performance Measure	Management Actions			
		Option 1	Option 2	Option 3	Option 4
Fish over-wintering / loss of habitat diversity	1 – By year 0, create 2+ overwintering sites, each 4 & 21 acres. 2 – By year 5, create overwintering sites that meet bluegill criteria. 3 – By year 15, demonstrate electrofishing Centrarchid CPUE is similar to known quality sites.	Extend M-5 island to address eddy.	Extend W-3 island to address eddy.	Construct additional island west of W-3 to promote mixing.	Add hump in Habitat Dredge 1 area to contain denser, warmer water.

Figure 8. Flow velocities in the M and W island complex for low flow conditions.



Design Constraints
Flood Stage Impacts

Final Questions?

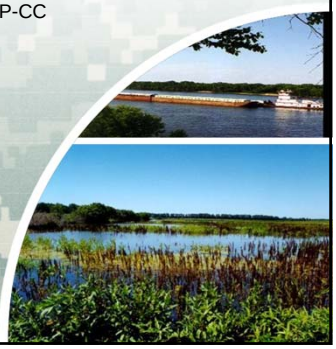
NAVIGATION AND ECOSYSTEM SUSTAINABILITY PROGRAM (NESP)

Presentation to UMRR EMP-CC
November 19, 2014

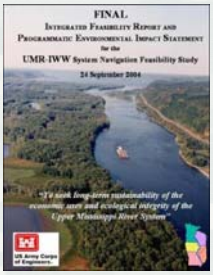
Michael Tarpey
NESP Program Manager

Upper Mississippi River Navigation Modernization & Ecosystem Restoration

Regional Program
MVR, MVS, MVP



Feasibility Study & PEIS

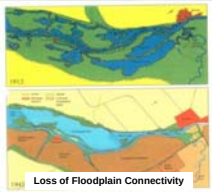


- System study with 50-yr planning horizon
- Recommendation → Dual Purpose Plan
  - Integrated Management
  - Dual purpose UMRS operation
  - Adaptive Implementation
- WRDA 2007 authorized 1st increment
  - Comparable progress of ecosystem restoration & navigation improvements
  - Ecosystem = $1.85 (Dec 2008 costs)
  - Navigation = $2.37 billion (50/50 Cost Share) (Dec 2008 costs)

$76M Feasibility Study (1993 - 2004)
$62M PED (2005 – 2011)

VISION: *To seek long-term sustainability of the economic uses and ecological integrity of the Upper Mississippi River System*

Ecosystem Challenges



Loss of Floodplain Connectivity

Loss of Island Habitat

Impoundment & Loss of Diversity

Navigation Challenges

Aging Infrastructure & Ineffeciencies

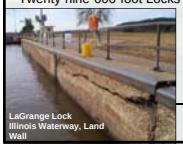
Lock Capacity:
1200' Lock ⟹ Tow with 15 Barges
600' Lock ⟹ Tow with 8 Barge
Tow with > 8 Barges = "Double Lockage"

✓Increase lockage time by 60 minutes
✓Can create long queues
✓ Single point of failure

Leads to increased costs for…Suppliers, Carriers, Shippers, Consumers

Lock Condition:
Over 94% are over 50 years old (design life)
Twenty-nine 600-foot Locks built in the 1930's

✓More Downtime
✓Higher Risk of component failure



LaGrange Lock
Illinois Waterway, Land Wall

Navigation Economics Issue

- Former ASA (CW) Secretary Woodley did not initially take a position on the Chief's Report because of uncertainty in economic forecasts (2008)
- 2008 economic reevaluation did not resolve uncertainty related to waterway traffic & transportation prices
- Qualitative risk and multimodal assessments in the reevaluation suggested greater potential benefits from waterways – economic, social, and environmental

ASA(CW) returned the Chief's Report as not actionable for budgetary consideration pending further economic analysis.

Inland Waterway Trust Fund (IWTF)

- IWTF cost shares 50% of new projects & major rehab
- Since 2009, IWTF balance has limited expenditures to amount of annual fuel tax collected
  - Annual approximately $85 million collected
- Fuel tax since 1994 is 20 cents per gallon
- Unconstrained "need" thru 2030 is approximately $18 billion or $900 million/year
- WRDA 2014 directs ASA(CW) in coordination with IWUB to prepare 20-yr navigation investment program report

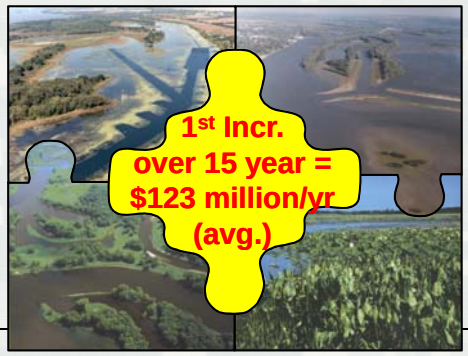
Construction $170m/year

O&M/Rehab 2014 - 2037	Lock Design 2032 - 2037	Lock Construction 2037 - 2047

Timeline assumes IWTF funds not available until 2037 for NESP

Why NESP is still important…

Increased Ecosystem Restoration Investment

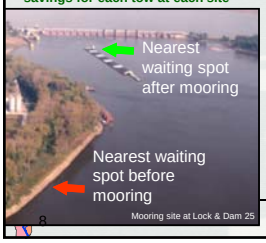


Why NESP is still important…

Increased Effeciency, Capacity, & Reliability

- Improve locking ***efficiency*** with mooring cells & switchboats to reduce lock cycle time
  - Ready for immediate implementation and cost less than $2 million each
- Increased ***capacity*** with 1200 feet locks & improved ***reliability*** with 2nd chamber

✓**Adjacent Mooring: 5 Minutes average savings for each tow at each site**

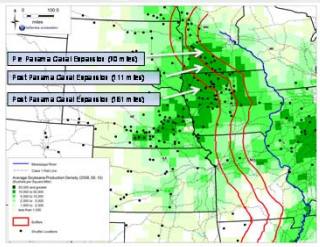


✓**1200 ft lock: Up to 1 hour saving for each tow**

Navigation Traffic Trends

Potential Post-Panamax Impacts

- From June 2012 IWR report:
  - Imports increase 4X and Exports 7X in next 30 years
  - Most growth will be in manufactured goods (container shipments)
  - Increased grain shipments via Miss River to Gulf Ports
  - UMR-IWW has sufficient capacity to support growth until at least 2020
  - Existing Capacity of WW's need to be maintained
- **Key Question: When will traffic will increases require new locks?**



Panama Canal Expansion – Increasing distance from which it will be cost effective to ship via Waterway

Way Forward

- Update NESP cost estimates & economics
  - ➔ **Goal is for NESP to be included in future President's budget**
  - $50k FY14 funding used to prepare plan for updating cost estimates & economics
  - NESP is not in the President's FY15 budget
- Start construction of mooring cells & comparable ecosystem projects in order to **Reduce traffic delays** & **Increase ecosystem investment**
- Finish lock designs & comparable ecosystem projects **to be ready for implementation when traffic trends indicate need for larger locks**
  - 1200 ft locks will take at least 10 to 15 years to design and build
- Develop long-term strategy to maintain UMRS economic uses and ecological integrity

QUESTIONS?

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