

## MEMORANDUM FOR Record

SUBJECT: Minutes of River Resources Forum Meeting #80, 5 December 2007

1. Introductions / Approve Minutes/ Meetings– A meeting of the River Resources Forum (RRF) was held on 4 & 5 December 2007 at Ft. Snelling State Park in Bloomington, MN. Attached is the attendance list and handouts from the meeting. Following introductions, the Minutes from RRF #79 were approved as prepared. The next meetings were scheduled: 29 & 30 April 2008 in Winona, MN; 26 & 27 August 2008 location TBD (either Pool 6 or Pool 8 area); and 2 & 3 December 2008 in Bloomington, MN.

2. Agency Activities – Note: Only the agencies listed below had significant information to report.

- A. COE (Tapp): The dredge housing quarters, Taggatz, is scheduled for delivery in May 2008. The dredge Thompson is scheduled to be moved to the MN Marine Art Museum in Winona, MN in April 2008. The last tow left the district on Nov 30. LD3 will be dewatered this winter and LD10 continues major rehabilitation. Dan Krumholz is planning to retire in May 2008.
- B. FWS (Wege): Roger Gordon has left the Genoa Fish Hatchery office for another job and will be replaced by Jim Luoma from the USGS in LaCrosse. (Hultman) [Attachment 80-3]: Successful dedication of Spring Lake EMP project. Proposed rule that implements general recreation in CCP is listed in the Federal Register for public review. Cleanup took place in Garvin Brook by Living Lands and Waters. The Brownsville overlook was completed in Nov 2007 in conjunction with MNDOT and the railroad. Furbearer Management Plan completed and it includes an increase in trapping fees and limiting otter to one on the refuge. The Trempealeau Refuge CCP should be final this winter with little controversy.  
(Sullins): Paul Burke, worked at MN River Valley office, passed away recently in a car accident.
- C. NPS (Johnson): Acquiring the property above the MN/Miss River confluence. This will double the acreage for the park. Working with MNDOT on Hwy 35 bridge reconstruction which involves the Pool 1 placement site.
- D. IA DNR (Konrad): Received dock permits in Harpers Ferry and Bellevue Slough. There are issues with mussels in these areas and they are trying to determine how to deal with them.
- E. MN DNR (Wooden): Finalizing the Mississippi River Critical Area study report. Talking internally to prepare for NESP. Ed Fick is retiring in December 2007.
- F. WI DNR (Benjamin): There is a new DNR secretary, Matt Frank. Attorney Mike Cane is retiring who was involved with the lawsuit against the COE. They are compiling all documents. Water quality section at LD26 requires helper boat, why is that not required at LD3.
- G. MN DOT (Lambert): Slow towboat traffic near end of season. Rail freight cost is high.
- H. LMRWD (Schwalbe): Funding for MN river 9' channel has been challenging. They are going to legislature in 2008 for funds for access road and acquisition of the

Powerline site. They are looking at making the MN River as a watershed basin to involve more organizations. They would then create a basin commission. They are looking for support from the RRF. The board denied the agreement negotiated Kraemer on the use of their site, so that site is no longer available.

3. Channel Maintenance Program [Attachment 80–4].

A. Channel Management (Machajewski)

- Continuing to work on Pool 2 and Lower Pool 4 Channel Management Plans. Continue to look at ways to reduce sedimentation from the Chippewa River.

B. Dredge Schedule and Channel Maintenance and Placement Site Schedule (Lund)

- The Channel Maintenance Coordinator position will be readvertised as a GS-7, 9, 11. Hope to have filled by spring 2008.
- Gretchen Benjamin noted the superior job by the COE on coordinating the mussel surveys in Pool 8 prior to dredging.
- Gary Wege suggested islands be constructed in Pool 3 with dredge material.
- The summaries for 2007 were reviewed.

4. Environmental Management Program (Powell) [Attachment 80-5]

A. 2007 MVP budget – Obligated \$5.983M and \$100K from MVR.

B. FY08 Budget – Presidents Budget is \$23.5M; MVP anticipating \$4.0M. Funds will be used for award of Pool 8 Ph III Stage 2B options, complete Stage 2A, and P&S for Stage 3; continue DPR's for Harpers, Capoli, and Conway; initiate work on Lake Winneshiek and McGregor; and do more performance evaluation and monitoring.

C. FY07 Construction Update

(1) Pool 8 Phase III Stage 1 – Added rock to E1 for visibility; Stage 2A – M&R completed seed islands and half of island N1. Will complete the other half of N1 in spring 2008; Stage 2B – Base bid in contract (West islands) was awarded to Matteson. The three options will be awarded in FY08 as funding permits; Stage 3 – Team meeting scheduled for Feb to discuss material sources, P&S is scheduled for completion in summer 2008.

(2) Pool Slough Wetland Complex – Pump delivered in May and IADNR started operating in October.

(3) Long Meadow Lake – Structure completed last December, need O&M manuals, FWS does not want to plant trees because site is reforesting naturally.

(4) Spring Lake Islands – Need O&M manuals. No bidders for tree planting contract so volunteer planting is possible.

(5) Clear Lake – East berm sand and interior groins were completed. Plan to dredge Clear Lake and use material for topsoil on LD 4 Embankment unless bids too high then will use wetland scrapes.

D. Planning and Design

(1) Capoli Slough - mussel survey completed in Sep 07.

(2) Harpers Slough – Revised design, benefit evaluation this winter, draft DPR for review in spring, mussel survey in summer, final DPR in Sept 08.

(3) Conway Lake, Lake Winneshiek, and McGregor Lake deferred due to funding shortage.

(4) EMPCC endorsed decision to pursue pool scale drawdowns and T&E species under NESP.

E. Completion Reports – Need to complete 8 reports that were delayed in FY07 due to funding and manpower: Pool 9 Islands, Indian Slough, Peterson Lake, Spring Lake Peninsula, Guttenberg Ponds, Lansing Big Lake, Rice Lake, and East Channel

5. Navigation & Ecosystem Sustainability Program (Barr, Spitzak – MVR) [Attachment 80-6]
- There is no construction money for 2008, but possibly in 2009.
  - Gretchen stated we need to approach NESP the same way EMP was approached with specific projects listed. She also mentioned the states need to work together with the federal agencies to support the program.
- (DeZellar) – RRF will discuss projects; the River Resources Council is formed in NESP. There are no construction funds in 2008. The Implementation Guidance policy will be coming from headquarters but no timeline.

*Tony Sullins motioned and Gretchen Benjamin seconded that a paper be written stating the role the RRF wants to be involved with NESP. The motion was endorsed by consensus.*

Gretchen will draft a statement and forward to the RRF members for review and comment. The paper will be discussed at the April RRF.

6. Water Level Management (Schlagenhaft)

A. Drawdowns

- (1) Pool 6 - Scheduled for a minor drawdown in 2008. Two public meetings were held with low turnout. Plan to have another public meeting in spring. Mussel and vegetation surveys were completed.
- (2) Pool 3 - Drawdown draft proposal fact sheet for Pool 3 will be proposed at April RRF. If funds received from NESP, plan to drawdown Pool 3 in 2009. Planning will continue with agencies. Spot dike construction would benefit with Pool 3 drawdown.

B. Adaptive Management Strategy - Develop a program for Water Level Management, study how long drawdowns last. Looking at perennial vegetation with target conditions to initiate future drawdowns. Document has been reviewed for comment and will be discussed at the April RRF. Includes some timeline for pool drawdowns for planning but needs to be flexible.

7. Floodplain Restoration (Schlagenhaft)

- Form task force for ag land, floodplain areas, etc. with interested parties (i.e. levee districts, farmers). Agencies should discuss amongst themselves prior to April RRF.

8. Fish & Wildlife Work Group (Anderson)

- Jon Hendrickson discussed the Pool 5 modeling workshop with the next workshop scheduled for April.
- Recreation Boating White paper – All agencies agreed they don't have full time staff to support paper. The RRF decided to leave the document as is. The COE will do scoping (GIS database with cost and time) and report to RWG. Funding will come from NESP Shoreline.

9. Recreation Work Group (Otto) [Attachment 80-7]

- A. Boating Study – A summary report was provided to the RRF. Data will be posted to the website. RWG could discuss funding and planning for future years and decide frequency of fly-over's. The next meeting is scheduled for January.
- B. Beach Plans - Pool 9 plan is in draft form due to funding shortage. Pool 10 beach OSIT meeting is planned for 2008.

10. Navigation Work Group (Lambert)

- Carl Kepper will be leaving in May to next position. Dick will be acting Interim Chair of group.
- The next meeting is scheduled for Feb.
- Issues: RR issues with inspection responsibilities; Mooring facilities – there is a MVR team with mooring facilities; Pool 2, Freeborn Island cut-off is being addressed under Pool 2 CMP; Barge fleet with NESP is a separate team that is not very active.

11. Mussel Presentation (Wege) [Attachment 80-8]

Steve Tapp  
Co-Chairman, RRF

Att:

- 80-1 Agenda
- 80-2 Attendance Sheet
- 80-3 FWS Summary
- 80-4 CMC Presentation
- 80-5 EMP Summary
- 80-6 NESP Presentation
- 80-7 Recreation Boating Study
- 80-8 Mussel Presentation

# RIVER RESOURCES FORUM #80

Tuesday, 4 December 2007, 12:30 – 3:45  
Wednesday, 5 December 2007, 8:30 – 12:00

Fort Snelling State Park, St. Paul, MN

See page 2 for meeting location and lodging information

## Agenda

### 4 December

12:30 – 12:45	Introductions, Approve Minutes, Next Meetings & Locations	Tapp/Benjamin
12:45 – 1:30	Agency Activities	All
1:30 – 2:00	Channel Maintenance Program Activities	OP-CH
2:00 – 2:15	<i>Break</i>	
2:15 – 2:45	Environmental Management Program	Powell
2:45 – 3:45	Navigation & Ecosystem Sustainability Program (NESP) - Dialogue with Chuck Spitzak & Ken Barr, MVR	DeZellar
3:45	<i>Adjourn</i>	

### 5 December

8:30 – 8:45	General Discussion	Tapp/Benjamin
8:45 – 9:00	Water Level Management Task Force Activities	Schlagenhaft
9:00 – 9:15	Floodplain Restoration Task Force Discussion	Schlagenhaft
9:15 – 10:15	Fish & Wildlife Work Group Activities - Project Proposal for a Pool Drawdown - Discuss EMP funding for drawdowns	Anderson
10:15 – 10:30	<i>Break</i>	
10:30 – 11:00	Recreation Work Group Activities	Berg
11:00 – 11:10	Navigation Work Group Activities	Kepper
11:10 – 11:30	Mussel Coordination - 2006 Status Report	Wege
11:30 – 12:00	Other Issues	
12:00	<i>Adjourn</i>	



# RIVER RESOURCE FORUM #80

4 & 5 December 2007

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U.S. Fish and Wildlife Service

Upper Mississippi River National Wildlife and Fish Refuge

Comparison of Current and New (2008) General Recreation Regulations

Subject	Current Refuge Regulation	New Refuge Regulation
<b>Collecting edible fruits, nuts, mushrooms, plant parts</b>	No regulation, but generally allowed, sometime by special use permit.	Collecting of edible fruits, nuts, mushrooms, or other plant parts for personal use allowed without permit (no sale or barter). Limit of 2 gallons by volume per person, per day.
<b>Wild rice harvest</b>	Prohibited	Prohibited
<b>Other natural objects, antlers</b>	Prohibited except by special use permit.	Prohibited, but allow the collection of plants or their parts for ornamental use by permit
<b>Cutting, removing or damaging vegetation</b>	Prohibited without a permit except willows for trap stakes, blinds, and commercial fishing gear.	Same, except possession of a chainsaw on the refuge without a permit is prohibited, and regulation clarified to prohibit attaching nails, screws, or other hardware to trees.
<b>Vehicle access/use</b>	Off road vehicles prohibited except on ice over navigable waters accessed from boat landings.	Same, language clarified.
<b>Dogs</b>	Encouraged when hunting; must be under control or on a leash at other times and leashed on trail, access areas. Out-and-back retrieval training/exercising allowed.	Same
<b>Firearms</b>	Carrying, possession, or discharging prohibited except by licensed hunters/trappers during established seasons. Firearm definition includes training pistols and training dummy launchers. Target practice not allowed.	Same
<b>Glass food and beverage containers</b>	No restriction.	Prohibited on beaches and other lands within refuge, OK in boats.
<b>Sanitation, litter</b>	All sites must be kept clean during period of use and occupancy, and no litter or refuse scattered on ground. Litter must be disposed off-refuge immediately upon vacating site.	Same, except new provision requires that human solid waste and associated material be either removed and disposed off-refuge or buried on site to depth of 6-8 inches at least 50 feet from water.

**Please note:** This is a brief summary of current and new regulations for comparison purposes. Please consult full regulations and maps available at refuge offices or on the refuge website at: [www.fws.gov/midwest/UpperMississippiRiver/](http://www.fws.gov/midwest/UpperMississippiRiver/)

U.S. Fish and Wildlife Service

Upper Mississippi River National Wildlife and Fish Refuge

Comparison of Current and New (2008) General Recreation Regulations

<b>Electric Motor Areas</b>	Currently one (1) area (Mertes Slough, Pool 6)	Four (4) new areas, 1,630 acres. Motorized vehicles and watercraft prohibited except watercraft powered by electric motors or nonmotorized means. The possession of other motors not prohibited, only their use. Areas remain open to hunting, fishing and other uses.
<b>Slow, No-Wake Areas</b>	None	Eight (8) new areas, 9,370 acres. Nelson-Trevino area takes effect in 2009, rest in 2008. Watercraft required to travel at slow, no-wake speed from March 16 through October 31. Applicable state definition of slow, no-wake operation applies. No airboats or hovercraft allowed March 16 through October 31. Areas remain open to hunting, fishing, and other uses.
<b>Slow, No Wake Zones</b>	Two in place for safety or shoreline protection; not specifically in refuge regulations.	Zone designation added to refuge regulations. Several new areas proposed for safety or shoreline protection; working through local/state authorities to establish. Speed and distance regulation established for Spring Lake and Crooked Slough-Lost Mound in Pool 13.
<b>Boat Mooring</b>	Boats may be left unattended for 72 hours; mooring within 200 feet of boat landings or restricted areas prohibited.	Boats must be used every 24 hours and being used defined at moving at least 100 feet on water with operator on board. Other mooring restrictions remain the same.
<b>Camping</b>	Allowed refuge-wide except during waterfowl hunting season in Closed Areas, Sanctuaries and No hunting Zones, and must be within sight of main channel during waterfowl season. Camping defined, limit of 14-day stay on any site, restricted at landings/public use sites, must occupy daily (minimum of 2 hours), and must remove equipment.	Same
<b>Campfires</b>	Allowed in conjunction with camping, day-use activities, and ice fishing. May use dead wood on ground, charcoal or bring firewood, but such unused firewood must be removed on departure. Other rules on burying fires, fire safety and location, and burning hazardous material or trash included.	Same

**Please note:** This is a brief summary of current and new regulations for comparison purposes. Please consult full regulations and maps available at refuge offices or on the refuge website at: [www.fws.gov/midwest/UpperMississippiRiver/](http://www.fws.gov/midwest/UpperMississippiRiver/)

## **FACT SHEET**

### **Electric Motor Areas and Slow, No-Wake Areas**

**Electric Motor Areas:** In areas posted and shown on maps as “Electric Motor Area,” we prohibit motorized vehicles and watercraft year-round except watercraft powered by electric motors or nonmotorized means. We do not prohibit the possession of other watercraft motors in these areas, only their use.

**Slow, No-Wake Areas:** In areas posted and shown on maps as “Slow No Wake Area,” we require watercraft to travel at slow, no-wake speed from March 16 through October 31. We apply the applicable State definition of slow, no-wake operation in these areas. We also prohibit the operation of airboats or hovercraft in these areas from March 16 through October 31.

#### **Existing Electric Motor Area**

Pool 6            Mertes Slough, Wisconsin, 222 acres

#### **2008 NEW Electric Motor Areas (4 areas, 1,630 acres)**

Pool 5            Island 42, Minnesota, 459 acres.  
Pool 5A          Snyder Lake, Minnesota, 182 acres.  
Pool 7            Browns Marsh, Wisconsin, 827 acres.  
Pool 10          Hoosier Lake, Wisconsin, 162 acres.

#### **2008 NEW Slow, No-Wake Areas (7 areas, 6,744 acres)**

Pool 5A          Denzers Slough, Minnesota, 83 acres.  
Pool 7            Black River Bottoms, Wisconsin, 815 acres.  
Pool 8            Blue/Target Lake, Minnesota, 1,834 acres.  
Pool 8            Root River, Minnesota, 695 acres.  
Pool 9            Reno Bottoms, Minnesota, 2,536 acres.  
Pool 12          Nine Mile Island, Iowa, 454 acres.  
Pool 14          Princeton, Iowa, 327 acres.

#### **2009 NEW Slow, No-Wake Area (1 area)**

Pool 4            Nelson-Trevino, Wisconsin, 2,626 acres.

# U.S. Army Corps of Engineers St. Paul District Channels & Harbors Project 2007 Activities

Presentation  
for  
**River Resources Forum**  
by  
**Lisa Lund**

4-5 December 2007

## Channels & Harbors Project Office Staff

**Steve Tapp**  
Operations Manager

**Lisa Lund**  
Dredged Material Manager

**?**  
Channel Manager

One Corps Serving the Armed Forces and the Nation

## 2007 Dredging Summary

POOL	Dredging Job Number	Start Date	End Date	Quantity (CY)	Material Type	Job Status
001	121-117	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-118	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-119	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-120	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-121	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-122	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-123	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-124	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-125	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-126	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-127	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-128	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-129	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-130	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-131	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-132	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-133	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-134	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-135	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-136	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-137	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-138	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-139	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-140	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-141	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-142	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-143	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-144	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-145	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-146	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-147	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-148	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-149	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-150	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-151	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-152	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-153	03/01/07	03/01/07	1,217	Bank Material	Complete
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001	121-171	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-172	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-173	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-174	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-175	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-176	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-177	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-178	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-179	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-180	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-181	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-182	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-183	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-184	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-185	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-186	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-187	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-188	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-189	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-190	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-191	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-192	03/01/07	03/01/07	1,217	Bank Material	Complete
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001	121-194	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-195	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-196	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-197	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-198	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-199	03/01/07	03/01/07	1,217	Bank Material	Complete
001	121-200	03/01/07	03/01/07	1,217	Bank Material	Complete

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## Dredge Quantity History 1985 - 2007

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## Survey Acreage History 1989 - 2007

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## 2007 Channel Mgmt & Placement Site Activity Summary

POOL	DESCRIPTION OF WORK	WORK TYPE	REVER MILE	DATE	EQUIP	DREDGERS (CY)	BOCK (CY)	COMMENTS/STATUS
4	Trappena Unloading/Disposal	EX	757.5-1.017	12 Sep - 5 Oct	CMR	30,000		CMR hauler material from Trappena Ponds to C&D Embank. M&B placed into ponds on bank. CMR spoil being processed.
4	Alma Marine Landscaping	LS	754.5-1.018	June/July	SR			Placed boulders along bank and main channel banks.
7	Chaska Island Closure	DRCL	708.5-1.019	10 Apr - 7 May	SR	4,500		Material dredged from Lower Chaska Island used for closure.
8	Abbe Brownville Unloading	EX	607.5-1.017	Jul - Sep	SR			Unloaded material for Pool 8 in 100 ft increments.
9	Shawnee Landscaping	LS	688.7-1.018	Oct	SR			Installed berm on W&S side. Placed items for visual barrier.
9	Landing Heavy Bridge Preparation	RE	683.5-1.018	Aug	SR			Prepared site for dredging operations.
10	Wabam Property	LS	618.5-1.017	July	CT			Remove deadening cottonwood trees.

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US Army Corps of Engineers  
Mississippi Valley Division  
Mississippi River Commission

## LD4 Embankment

4 Dec 07

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Mississippi Valley Division  
Mississippi River Commission

## LD4 Embankment (cont)

4 Dec 07

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US Army Corps of Engineers  
Mississippi Valley Division  
Mississippi River Commission

## 2008 C&H Management Activities

- New Mechanical Dredging Contract
- MN - Develop Cargill East River
- Pool 2 – Southport
- Pool 3 – Corps Island Unloading → Pierce County Pit
- Up Pool 4 – Cut 5 and RWWL
- Pool 4 – Reads and Crats Bank Stabilization
- Pool 4 – Teepeeota Unloading → Bennett Pit
- Pool 4 – LD4 Embankment
- Pool 5 – Fisher Unloading → Burmeister Property
- Pool 8 – Abv Brownsville Unloading → Pool 8 Phase III Stg 2

4 Dec 07

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US Army Corps of Engineers  
Mississippi Valley Division  
Mississippi River Commission

Looking forward to another trusting & cooperative year

managing OUR Mississippi River resources.

4 Dec 07

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10

## ENVIRONMENTAL MANAGEMENT PROGRAM (St. Paul District) - 12/4/07

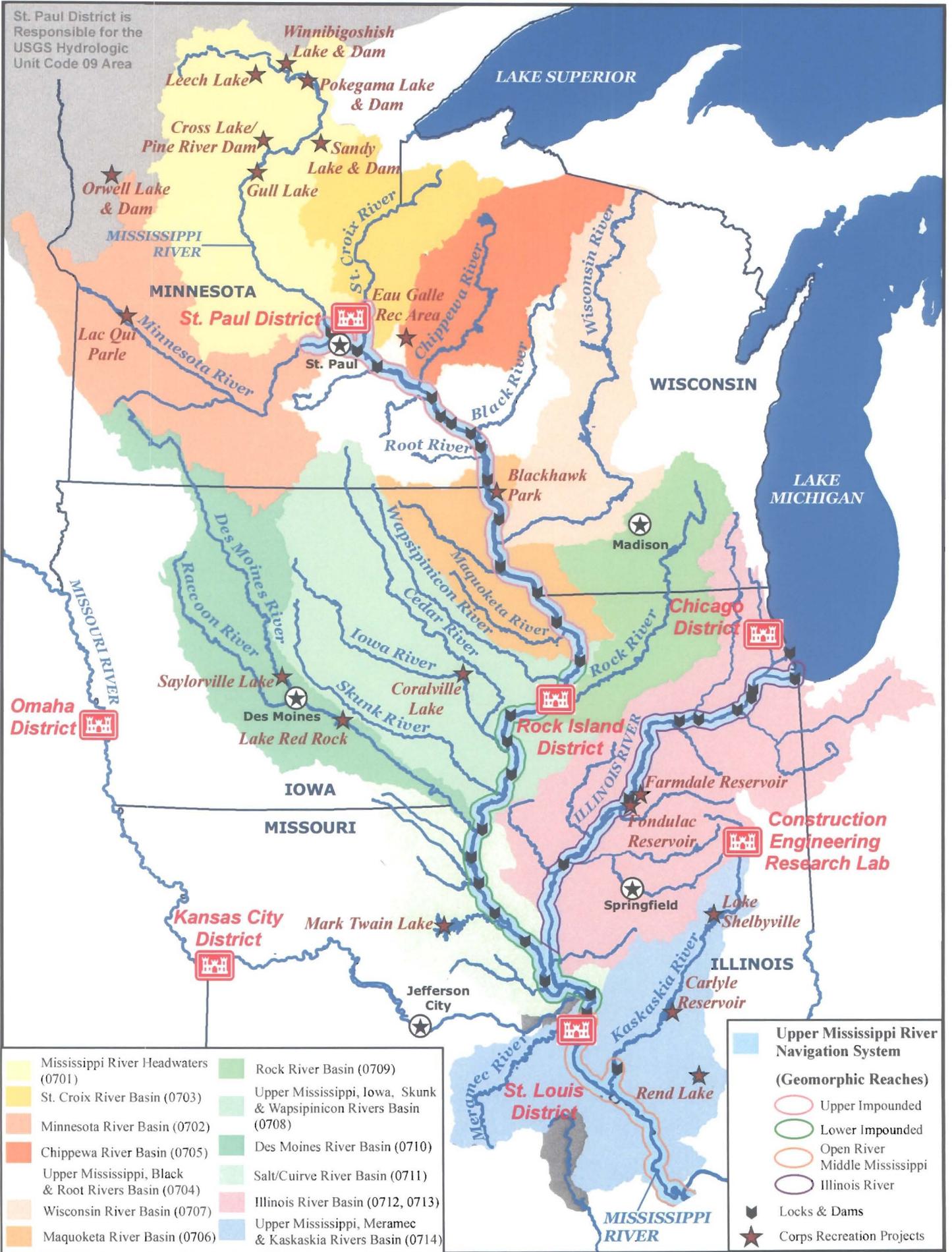
PROJECT -constr \$ -(pool) Contact	FY07 - \$6,181,000*		FY08 - \$4,000,000**	
	\$1,000	TASKS	\$1,000	TASKS
<b>Spring Lake Islands -\$4.4M -(5)</b> Novak/Powell	-16	Prepare tree/shrub planting specs Plan project dedication	130	Complete tree/shrub planting contract Project dedication Complete O&M manual
<b>Pool Slough - \$0.8M -(9)</b> Williams/Powell	36	Pump delivery and set-up Closeout contract	15	Closeout Project dedication?
<b>Harpers Slough - \$11.0M -(9)</b> Anderson/Novak/Powell	81	Planning Mussel surveys	141	Complete draft DPR Mussel surveys
<b>Capoli Slough - \$4.1M -(9)</b> Clark/Powell	100	Planning Mussel surveys	150	Complete draft & final DPR
<b>Long Meadow Lake - \$0.8M -(Mn)</b> Novak/Powell	67	Complete construction & closeout Prepare tree planting specs	20	Complete contract closeout Complete O&M manual Project dedication?
<b>Pool 8 Islands Phase III - \$15.1M</b>				
Stage 1 - \$865K (E-1,2,3 & East) Powell/Novak	1	Closeout Modify Island E1	0	
Stage 2 - \$6.9M 2A = \$300K (N-1,3,4,5,6) 2B = \$4.9M (W-1,2,3,4) 2B Opt = \$2.4M (N-2,7,8) Devendorf/Novak/Powell	5,476 (+1,600 from CH)	Begin Stg 2A construction Award Stg 2B construction contract	2,481	Complete Stage 2A construction Award remaining Stg 2B options Begin Stg 2B construction
Stage 3 - \$5.5M (C-2,3,4,5,6,7,8) Novak	0		140	Prepare P&S for Stg 3 contract
<b>Lake Winneshiek - \$4.6M -(9)</b> Novak/Powell	0		80	Initiate planning
<b>Conway Lake - \$2.5M -(9)</b> Clark/Powell	15	Collect flow information	100	Continue planning
<b>McGregor Lake - \$6.4M -(10)</b> Novak/Powell	0		50	Initiate planning
<b>Finger/Clear Lake - \$0.1M -(5)</b> Stefanik/Powell	17	Complete letter report	160	Prepare P&S for construction contract Complete construction
<b>Completion reports</b> Wilcox/Powell	5	Continue 8 reports	48	Complete 8 reports
<b>Performance monitoring</b> Wilcox/Powell	35	Develop program Monitoring	70	Develop program Monitoring Prepare O&M manuals
<b>Biological monitoring</b>	0	None	0	None
<b>Baseline monitoring</b> Powell	17	Develop program Monitoring	65	Develop program Monitoring Bathymetry
<b>LTRM</b>	0		0	
<b>EMP</b> Powell	237	Program management	230	Program management
<b>FWS Assistance</b> Powell	110	Funds to FWS for HREP assistance	120	Funds to FWS for HREP assistance
<b>TOTALS</b>	6,181		4,000	

\*Includes an additional \$2M compared to original work plan plus \$98K FY06 carryover plus \$100 from MVR

\*\*Assumed allocation of about \$20M for total EMP; includes MVP FY07 carryover of \$17K

# The Upper Mississippi River Basin (USGS Hydrologic Unit Code 07)

St. Paul District is Responsible for the USGS Hydrologic Unit Code 09 Area



- Mississippi River Headwaters (0701)
- St. Croix River Basin (0703)
- Minnesota River Basin (0702)
- Chippewa River Basin (0705)
- Upper Mississippi, Black & Root Rivers Basin (0704)
- Wisconsin River Basin (0707)
- Maquoketa River Basin (0706)
- Rock River Basin (0709)
- Upper Mississippi, Iowa, Skunk & Wapsipinicon Rivers Basin (0708)
- Des Moines River Basin (0710)
- Salt/Cuirve River Basin (0711)
- Illinois River Basin (0712, 0713)
- Upper Mississippi, Meramec & Kaskaskia Rivers Basin (0714)

- Upper Mississippi River Navigation System
- (Geomorphic Reaches)
  - Upper Impounded
  - Lower Impounded
  - Open River
  - Middle Mississippi
  - Illinois River
- Locks & Dams
- Corps Recreation Projects

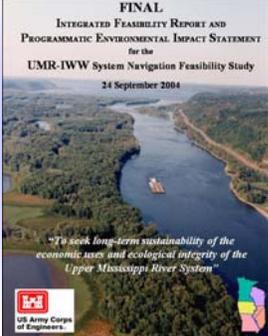
# River Resources Forum Implementation of NESP Barr - Spitzack 4 December 2007



**Navigation & the Environment:  
Recommendations for a  
Sustainable Upper Mississippi  
River  
Navigation  
System**

**Implementation of NESP  
River Resources Forum**

**Dec 2007  
Chuck Spitzack and Ken Barr  
Corps of Engineers**



**INTEGRATED FEASIBILITY REPORT AND PEIS**

**FINAL  
INTEGRATED FEASIBILITY REPORT AND  
PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT  
for the  
UMR-IWW System Navigation Feasibility Study  
24 September 2004**

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

**US Army Corps  
of Engineers**

*One Team: Relevant, Ready, Responsive and Reliable*



**RECOMMENDED DUAL PURPOSE PLAN**

- \$2.4 Billion Navigation Efficiency Framework
- \$5.3 Billion Ecosystem Restoration Framework
- Adaptive Implementation – First Increment
  - ✓ Navigation Efficiency = \$1.88 B
  - ✓ Ecosystem Restoration = \$1.46 B
  - ✓ Decision Checkpoints at 3, 7, and 15 yrs.

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**NAVIGATION IMPLEMENTATION**

**\$1.88 billion in First Increment**

- Mooring Facilities @ Locks 12, 14, 18, 20, 22, 24 and LaGrange
- Switchboats @ Locks 20 through 25
- Adaptive Implementation of 1200' chambers at Locks 20, 21, 22, 24, 25, LaGrange and Peoria
- Mitigation for Site Specific and System Effects
- Continued Study and Monitoring

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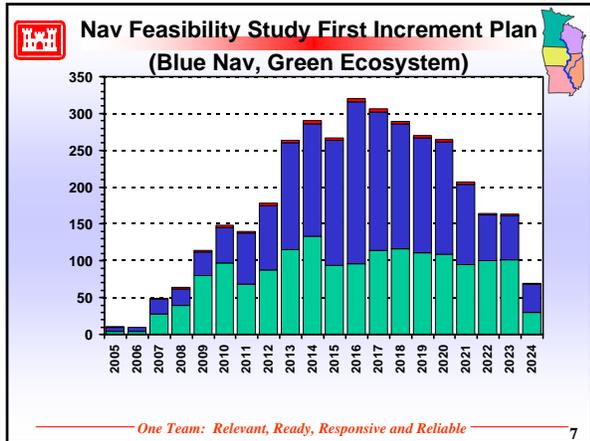

**ECOSYSTEM RESTORATION  
IMPLEMENTATION**

**\$1.46 billion in First Increment**

- Fish Passage @ Dams 4, 8, 22, and 26
- Changes in Water Level Control @ Dams 25 and 16
- Forest & Cultural Resources Management Plans
- Adaptive Implementation of 225 small projects of less than \$25 million each
  - Island Building
  - Water Level Management
  - Backwater/Side Channel Restoration
  - Wing Dam/Dike Alterations
  - Island Shoreline Protection
- 35,000 Acres of Floodplain Restoration
- Continued Study and Monitoring

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# River Resources Forum Implementation of NESP Barr - Spitzack 4 December 2007



Ecosystem Measures	Number of Projects	Costs (2003 millions) Measure
Adaptive Management	-	\$136.0
Cultural Stewardship	78	\$13.0
Cultural Mitigation		\$13.0
Forest Management	0	\$37.6
Island Building	23	\$150.9
Fish Passage	4	\$209.0
Floodplain Restoration (Pools 1-13)	10	\$18.0
Floodplain Restoration (Rest of UMR-IWW)	7	\$140.0
Water Level Management - Pool	13	\$61.7
Water Level Management - Backwater	5	\$38.3
Backwater Restoration (Dredging)	33	\$145.5
Side Channel Restoration	29	\$80.8
Wing Dam/Dike Alteration	19	\$28.5
Island Protection	33	\$31.1
Shoreline Protection	40	\$37.6
Topographic Diversity	9	\$13.5
Dam Point Control	2	\$25.3
Restoration Response Monitoring and Evaluation		\$136.0
<b>Total</b>	<b>227</b>	<b>\$1,315.8</b>
Real Estate		\$146.0
<b>Grand Total</b>		<b>\$1,461.8</b>

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Ecosystem Measures	Number of Projects	Project Costs (Millions) Measure
Adaptive Management	-	\$34.0
Cultural Stewardship	52	\$8.0
Cultural Mitigation		\$3.3
Forest Management		\$9.4
Island Building	8	\$52.5
Fish Passage	2	\$100.0
Floodplain Restoration (Pools 1-13)	10	\$18.8
Floodplain Restoration (Rest of UMR-IWW)*		-
Water Level Management - Pool	6	\$28.4
Water Level Management - Backwater	3	\$19.1
Backwater Restoration (Dredging)	12	\$52.9
Side Channel Restoration	4	\$11.3
Wing Dam/Dike Alteration	2	\$3.0
Island Protection	12	\$11.3
Shoreline Protection	10	\$9.4
Topographic Diversity	3	\$4.5
Dam Point Control	-	-
Restoration Response Monitoring and Evaluation		\$34.0
<b>Total</b>	<b>72</b>	<b>\$399.9</b>

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## Authorization Issues of Interest

- 100% Fed Funds below Ordinary high water mark
- NGOs as Cost share partners
- Cooperative Agreement Act
- Ranking system and Advisory Committee

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Adaptive Management  
The U.S. Department of the Interior  
Technical Guide

<http://www.doi.gov/initiatives/AdaptiveManagement/index.html>

One Team: Relevant, Ready, Responsive and Reliable 11

**Vision Statement**  
(Upper Mississippi River Summit 1996)  
To seek long-term sustainability of the economic uses and ecological integrity of the Upper Mississippi River System

**System Goal**  
(Science Panel, Navigation & Ecosystem Sustainability Program)  
Conserve, restore, and maintain the ecological structure and function of the Upper Mississippi River System to achieve the vision for the Upper Mississippi River System

**Second Tier Goals**  
(Grumbine 1994; adopted by UMRCC 1995)  
• Maintain viable populations of all native species in situ  
• Represent all native ecosystem types across their natural range of variation  
• Restore and maintain evolutionary and ecological processes  
• Integrate human uses and occupancy within these constraints

**UMRS Ecosystem Objectives**  
(Lubinski and Barbo 2003, ENV Report 52)  
• 43 Ecological objectives within 5 essential ecosystem characteristics: water quality, geomorphology, hydrology & hydraulics, habitat, and biota

# River Resources Forum Implementation of NESP Barr - Spitzack 4 December 2007



**BOX 3 – Elements of Ecosystems**  
(adapted from Society for Ecological Restoration 2004)

**Process** refers to rates of essential ecosystem functions, such as population growth, photosynthetic rate, decomposition rate, dispersal rate. (e.g., effects of a 2-foot early-summer drawdown on production of annual moist-soil plants)

**Function** defines the dynamic attributes of ecosystems, including density organisms, interactions among organisms, and interactions between organisms and their environment. (e.g., effects of changes in winter dissolved oxygen levels on density of overwintering white crappie)

**Structure** refers to the parts of the whole or the architecture of a community. It includes the pattern of habitats, the frequency distribution of species-populations, and the sizes and life forms of the organisms that compose communities. (e.g., size-frequency distribution of largemouth bass in Pool 11)

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**Landscape Objectives**

**UMRS Landscape Objectives:**

Objectives categorized into 7 landscape classes

- Forest
- Grass/Prairie
- Island
- Wetland
- Backwater
- Side Channel
- Main Channel

Terrestrial (Forest, Grass/Prairie, Island)  
Transitional (Wetland)  
Aquatic (Backwater, Side Channel, Main Channel)

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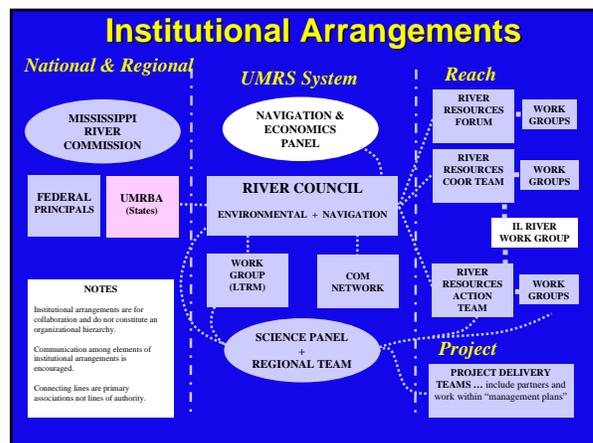
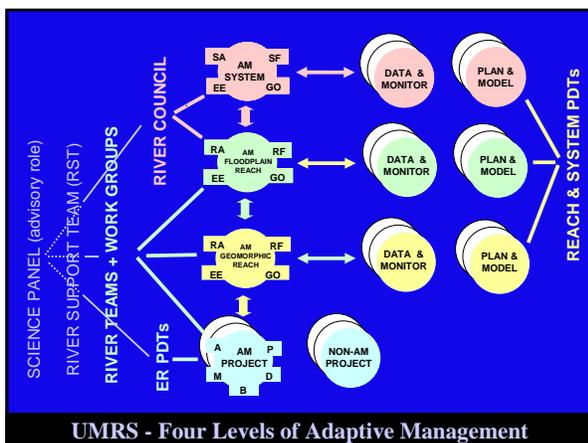
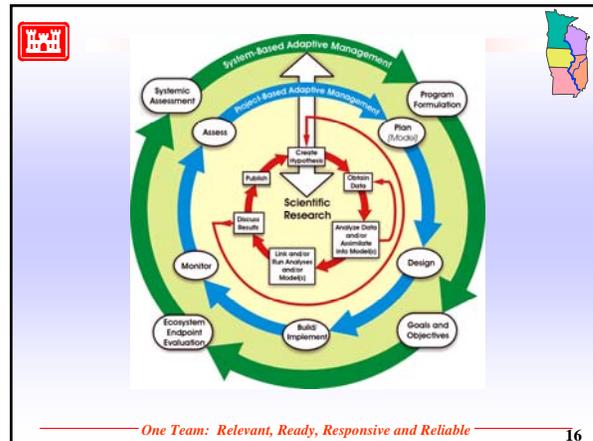


**Geomorphic Reach Workshops**

- Preparation meeting
- January 9-10 SGO Workshop in Moline, IL
- Reach meetings Beginning in April (Pool 5?)

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# River Resources Forum Implementation of NESP Barr - Spitzack 4 December 2007



**INSTITUTIONAL ARRANGEMENTS**

**RIVER COUNCIL**



- Verify satisfaction with draft provisions
  - USACE & USFWS (Oct 07)
  - Partners & stakeholders (Dec 07)
- Meet with MVD - collaboration framework (Jan)
- Submit to USFWS & USACE for approval (Feb)
- Confirm compatibility with guidance
- USFWS & USACE make joint request to States to approve, sign MOU, and assign representatives
- Stand up River Council (Nov 08)

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# **Preliminary Summary – 2007 Recreational Boating Study**

**GSS Richtman – 11-28-07**

## **Introduction**

Overall the 2007 Recreational Boating Study (RBS) was a success. Ten flights were completed during the boating season between Memorial Day weekend and Labor Day weekend. There were seven peak-day (holidays and weekends) and three off-peak flights completed. Each flight covered portions of the Mississippi, Minnesota, and Saint Croix rivers. Total length of waterway covered in each flight was in excess of 300 miles. The data was processed and analyzed to determine seasonal use estimates for the 2007 season. Where applicable, this year's data was compared to data from previous years in an attempt to recognize developing patterns and trends in year to year recreational use.

## **Data Collection**

The data collection methodology for the 2007 is essentially identical to that of previous years. Aerial imagery was gathered with the plane flying over the center of the channel, and pictures were taken for 100% coverage of the main channel. This year refinements to the equipment were introduced to streamline the process. A Nikon 10MP Digital SLR with an 8 GB memory card was employed. The size of the memory card allowed an entire day's worth of data to be gathered without changing cards. GPS technology was used to not only track the plane's position as it had been in the past, but also for navigational purposes of keeping the plane over the centerline of the channel. The introduction of the GPS for navigational purposes all but eliminated the need for re-flying any areas that were missed due to the plane drifting off the channel. After the initial flight, an aluminum camera mounting fixture was introduced. This fixture mounted the camera directly in the camera port of the plane, eliminating the need for the camera operator to hold it and eliminating a primary source of fatigue for the operator. A remote shutter trip further reduced operator fatigue. Imagery was downloaded directly from the camera to the GSS server for processing. The DNR Garmin extension was used to dump the track log from the GPS and link the track points to their respective photos. Boat counts were accomplished using on-screen photo-interpretation methods with the numbers entered directly into a personal geodatabase.

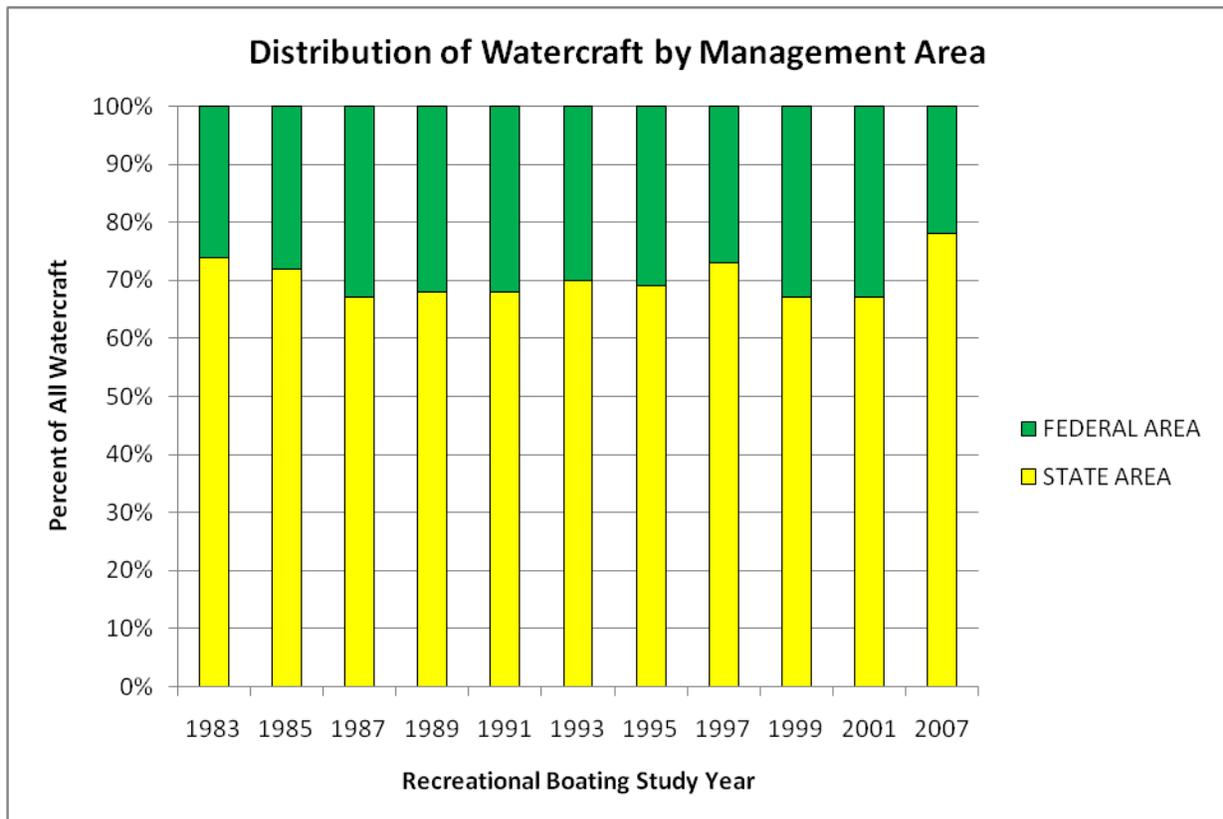
## Results

### Saint Croix River

Seasonal use estimates, as shown below, indicate an increase in recreational use for the Saint Croix River.

	<b>Peak Day</b>	<b>Off-Peak Day</b>	<b>101-Day Season</b>
<b>1989-2001 Boat-Hours</b>	477,519	245,941	723,460
<b>2007 Boat-Hours</b>	826,443	334,789	1,161,232
<b>1989-2001 Boats</b>	102,770	43,917	147,421
<b>2007 Boats</b>	147,579	59,783	207,362
<b>1989-2001 People</b>	247,630	105,162	352,792
<b>2007 People</b>	354,190	143,481	497,671

The state managed area of the Saint Croix accounted for almost 80% of the total boats counted on the Saint Croix. This is a shift from previous years as shown by the table below.



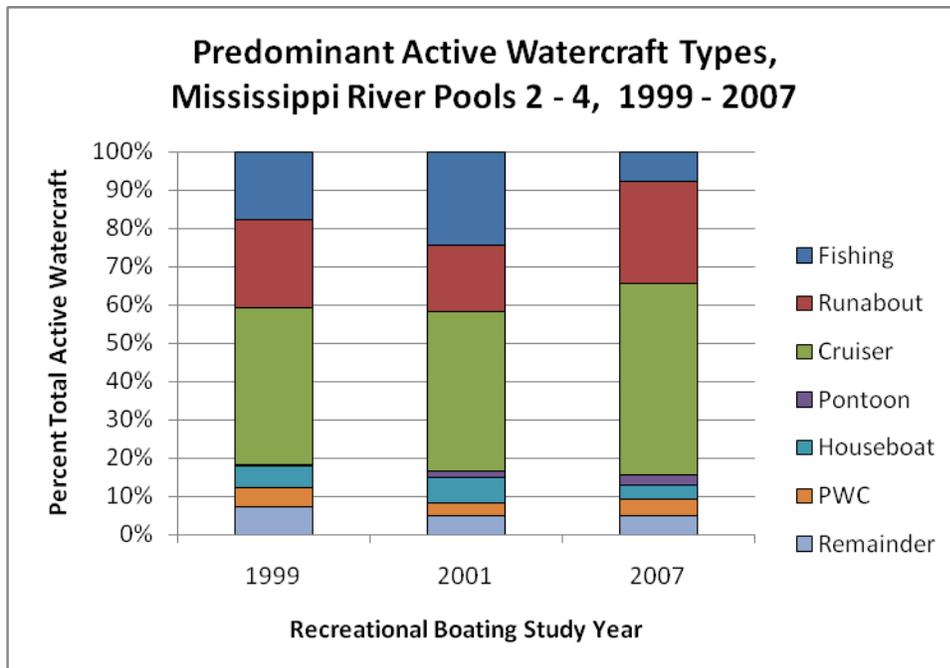
Cruisers continue to be the dominant watercraft type in the state managed area. This type accounts for 57.4% of active boats and 64.0% of beached boats. Canoes continue to be the predominant type in the federally managed areas, although there were increases in runabouts, pontoons and cruisers.

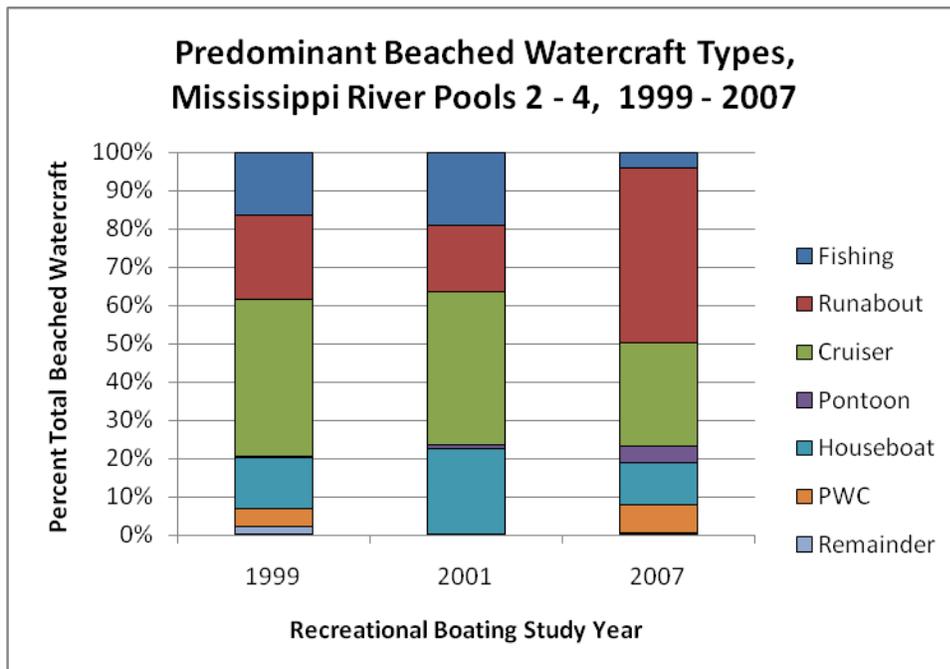
Mississippi River – Lock and Dam #1 to the Head of Lake Pepin

This reach continues to see increases in recreational use as shown by the following table. However, the percent increase is not as large as that seen on the Saint Croix.

	<b>Peak Day</b>	<b>Off-Peak Day</b>	<b>101-Day Season</b>
<b>1989-2001 Boat-Hours</b>	175,274	68,409	243,683
<b>2007 Boat-Hours</b>	181,128	91,199	272,327
<b>1989-2001 Boats</b>	31,298	12,216	43,514
<b>2007 Boats</b>	32,344	16,285	48,629
<b>1989-2001 People</b>	75,118	29,318	104,436
<b>2007 People</b>	77,626	39,085	116,711

Cruisers accounted for approximately 50% of the active boats in this area as shown by the graph below. Runabouts were the predominant beached watercraft type for this area.



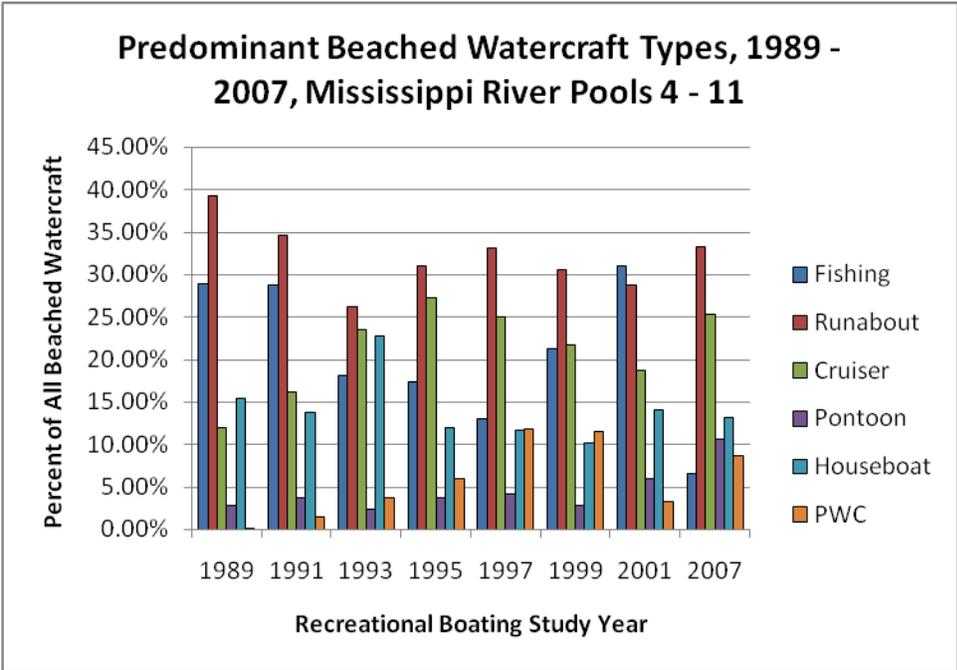
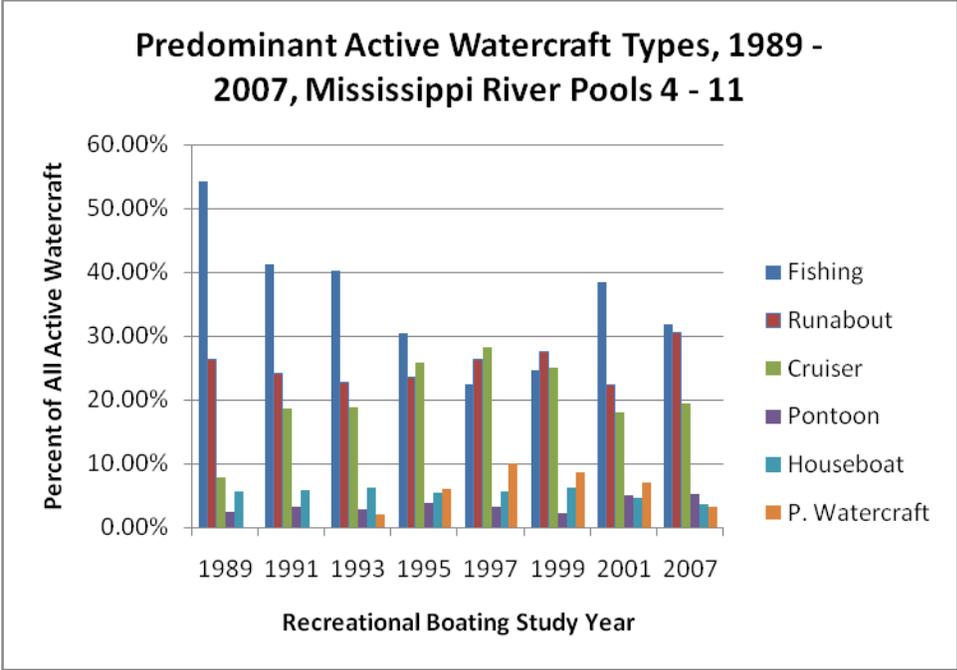


Mississippi River - Foot of Lake Pepin to COE Saint Paul/Rock Island District Line

Seasonal use estimates indicate a decrease in use for this reach over previous years.

	<b>Peak Day</b>	<b>Off-Peak Day</b>	<b>101-Day Season</b>
<b>1989-2001 Boat-Hours</b>	694,459	341,959	1,036,428
<b>2007 Boat-Hours</b>	417,351	293,357	710,708
<b>1989-2001 Boats</b>	124,010	61,066	185,076
<b>2007 Boats</b>	74,527	52,385	126,912
<b>1989-2001 People</b>	297,625	146,559	444,184
<b>2007 People</b>	178,865	125,725	304,590

Runabouts accounted for the majority of both active and beached boats. Runabouts also showed the largest percent increase over previous years with the percentage of other types either decreasing or showing very minimal gains. It should also be noted that between 2001 and 2007 fishing boats dropped from over 30% to less than 10% of beached watercraft.



Mississippi River – Lock and Dam #1 to Cloquet Island, Dayton, MN  
Minnesota River – Fort Snelling to Carver Rapids

This is the first time these areas were sampled as part of the Recreational Boating Study. It appears that the recreational use is rather limited in both areas. The data is still in the process of

being analyzed, and although year to year comparisons are not possible, the data could be used as a baseline for future studies.

## **Conclusions**

The data indicates that recreational use has continued to increase on the Saint Croix River and the Mississippi River between Lock and Dam #1 and the head of Lake Pepin. The Mississippi River from the foot of Lake Pepin to the Corps of Engineers – Saint Paul District Line appears to have decreased. There appears to be comparatively little recreational use of the Mississippi River above Lock and Dam #1 and the Minnesota River from Fort Snelling to Carver Rapids.

## **Recommendations**

Although all ten flights were successfully completed in 2007 this study represents the maximum of what can be accomplished using current methods. Without the updated camera technology and other refinements, it is doubtful this year's study would have been completed successfully. Also the large study area made it impossible to build any flexibility into the schedule for dealing with issues such as weather or air traffic around Minneapolis. A suggestion would be to sample smaller areas, or divide the study area into segments that could be flown on different days. This may be a departure from the "snapshot" concept of the data, but given the amount of time required to fly the entire study area, there are likely to be temporal effects present in the current data.

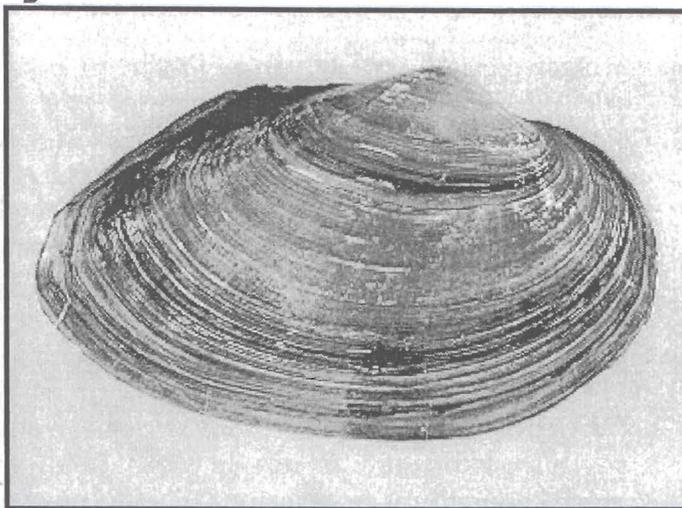


**U.S. Fish & Wildlife  
Service**



## Freshwater Mussels of the Upper Mississippi River System

-  [Species Identification and Location](#)
-  [Threatened and Endangered Mussels](#)
-  [Life History](#)  [Ecology](#)
-  [Mussel Harvest on the River](#)
-  [Current Threats](#)
-  [Mussel Conservation Activities](#)
-  [Ongoing Studies and Projects](#)
-  [Multimedia](#)  [Teacher Resources](#)
-  [Frequently Asked Questions](#)
-  [Glossary](#)  [References](#)
-  [Links to Other Mussel Sites](#)



Click on the mussel above to go to the [Field Guide to Freshwater Mussels](#) and find out more information about this species. A different species will appear everytime this page is loaded.

Nearly 300 species of mussels inhabit freshwater rivers and lakes in North America. This is the richest diversity of mussels found in the world. Freshwater mussels are sedentary, long-lived (some live over 100 years) mollusks that live in sediments and filter water to feed. Because they are filter-feeders, mussels are excellent indicators of the health of aquatic ecosystems. In addition, mussels are a vital link in the food chain because they are a major food item for wildlife such as raccoon, muskrat, and otter. Their lustrous pearl-like interiors have made them valuable in the cultured pearl and jewelry industry.

[Species Identification and Location](#) • [Threatened and Endangered Mussels](#) • [Life History](#) • [Ecology](#) • [Mussel Harvest on the River](#) • [Current Threats](#) • [Mussel Conservation Activities](#) • [Ongoing Studies and Projects](#) • [Multimedia](#) • [Teacher Resources](#) • [Frequently Asked Questions](#) • [Glossary](#) • [References](#) • [Links to Other Mussel Sites](#) • [About this site](#)

[Department of the Interior](#) • [U.S. Fish & Wildlife Service](#) • [U.S. Geological Survey](#)

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<http://www.fws.gov/midwest/mussel/>  
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## **2006 STATUS REPORT ON THE ACCOMPLISHMENTS OF THE INTERAGENCY MUSSEL COORDINATION TEAM**

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Since 2000, a variety of conservation measures have been implemented for the federally endangered Higgins eye (*Lampsilis higginsii*) and winged mapleleaf (*Quadrula fragosa*) by the U.S. Army Corps of Engineers with assistance from the interagency Mussel Coordination Team. Conservation activities were required by a Biological Opinion for continued operation and maintenance of the federal 9-Foot Channel Project on the Upper Mississippi River System (UMRS). Major accomplishments include: 1) identifying host fish for winged mapleleaf; 2) hatchery and cage propagation of Higgins eye and winged mapleleaf; 3) stocking adult, subadult, and juvenile Higgins eye into the UMR and tributaries to establish five new and viable populations; 4) collecting sexually mature Higgins eye at age 4 that were stocked as subadults; 5) collecting subadult Higgins eye at population establishment sites where infested fish were released; 6) developing marking techniques for stocked subadults; 7) testing a floating cage system; 8) developing a Geographic Information System mussel database and Internet web site; 9) determining thermal requirements for transformation of Higgins eye and winged mapleleaf glochidia; and 10) implementing conservation activities for other native mussels.

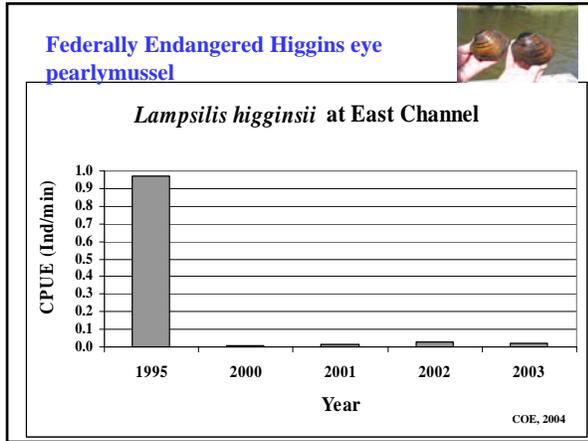
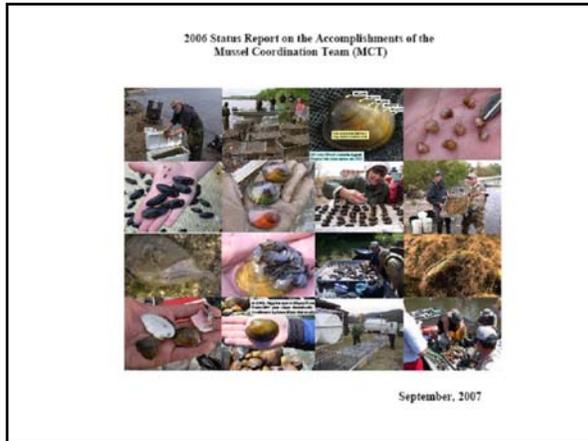
Report available online from authors

Go to St. Paul District Home Page = <http://www.mvp.usace.army.mil/>

Click on "Environment" in top menu

On left side, click on "Endangered Species – Conservation of Native Mussels"

On right side, click on "Mussel Coordination Status Report"



**FWS Biological Opinion for the 9-Foot Channel Project**  
April, 2000 = **Jeopardy**

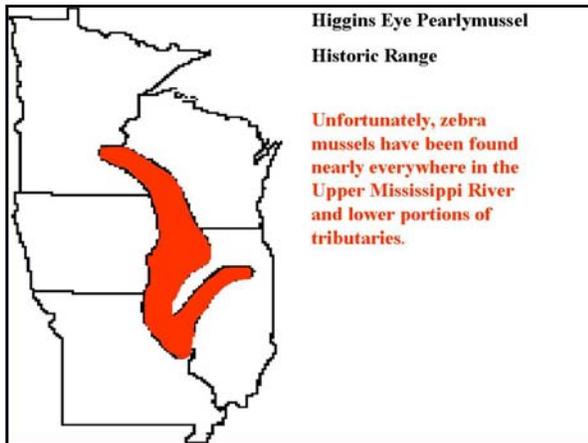
- Reasonable & Prudent Measures to Avoid Jeopardy:
  - Establish viable populations of Higgins eye in areas not infested with zebra mussels
  - Control upstream transport of zebra mussels

**Mussel Coordination Team**

- Assist Corps of Engineers in implementing Biological Opinion requirements
- Partners:**
  - Wisconsin, Minnesota, Iowa, Missouri & Illinois Departments of Natural Resources
  - U.S. Geological Survey
  - Corps of Engineers
  - U.S. Coast Guard
  - Fish & Wildlife Service
  - National Park Service
  - Science Museum of Minnesota
  - University of Minnesota, Iowa State University

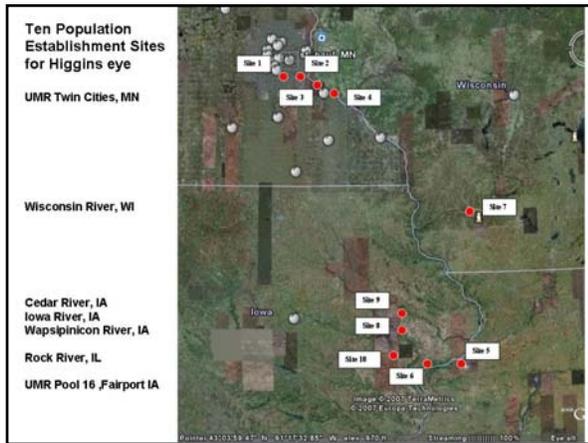
**Higgins Eye Pearlymussel Conservation Plan**

- Interim Goal** (next 10 years or so) -- Maintain/establish viable *Lh* populations
  - Establish minimum of 5 new and viable populations **in areas not infested with zebra mussels**



**Establish 5 New Populations**

1. Select 10 Experimental Sites

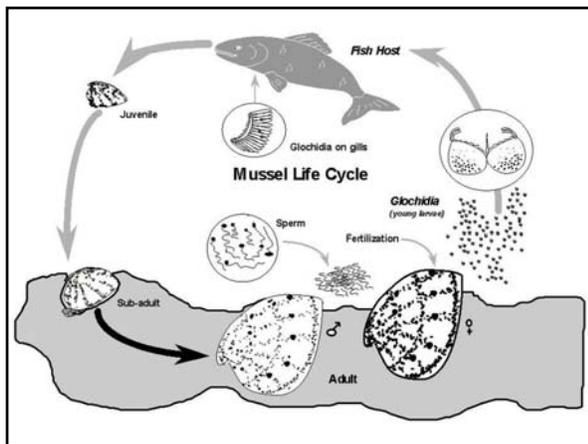


**Establish 5 New Populations**

1. Select 10 Experimental Sites

2. Methods

- Stock Juvenile Mussels (<1 yr old)
- Stock Sub-adult Mussels
- Stock Adult Mussels
- Combination of Above



Lures to entice host fish species "Free Lunch"



*Lampsilis reeveiana*

Chris Barnhart, SMSU

### Higgins eye

*Lampsilis higginsii*

Host fish infestation  
at Genoa National  
Fish Hatchery, WI

343 female Higgs (3  
strains)

39,387 host fish  
(walleye, smallmouth  
bass, largemouth  
bass)

5,918,276 potential  
juveniles



## 1. Stocking Juveniles

### Methods

- 1. Release Hatchery Juveniles into River
  - Approx. 8,000 stocked with no recovery = **discontinued method**

## 1. Stocking Juveniles

### Methods

- 2. Release Glochidia-Inoculated Host Fish (hatchery or wild) directly into River
  - 21,429 stocked at four sites... 10 juveniles collected in Wapsipinicon River (IA) and 4 in Wisconsin River (WI)

## 1. Stocking Juveniles

### Methods

- 3. Place Glochidia-Inoculated Host Fish in "Open" Cages in the River
  - 2,802 fish placed in 78 open cages... 4 juveniles collected in Wisconsin River WI (combination fish release & cage site)

Open Cages = transformers fall through wire mesh

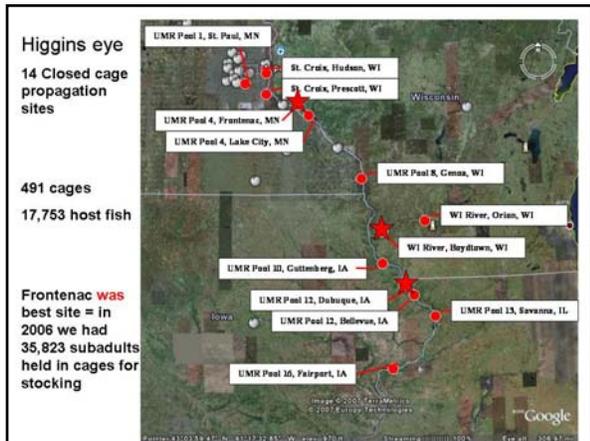




## 2. Stocking Sub-adults

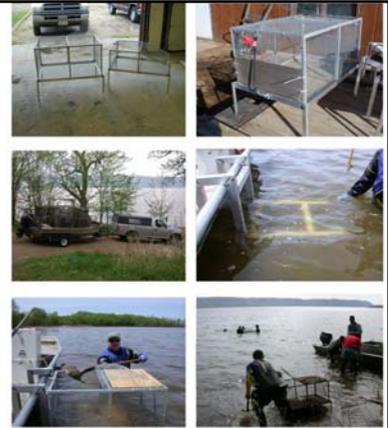
### Methods

- 1. Grow Juveniles in "Closed" Cages Until Age 2 or 3 and Release into River



### Higgins eye

Cage propagation at Frontenac, MN  
Pool 4, Upper Miss. River



Floating cage propagation system used in the Ice Harbor at Dubuque, IA

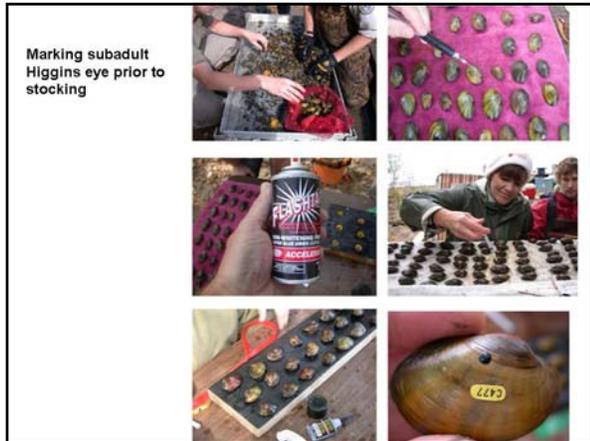
Pool 12, Upper Miss. River



Collecting Higgins eye from propagation cages in the Upper Miss. River



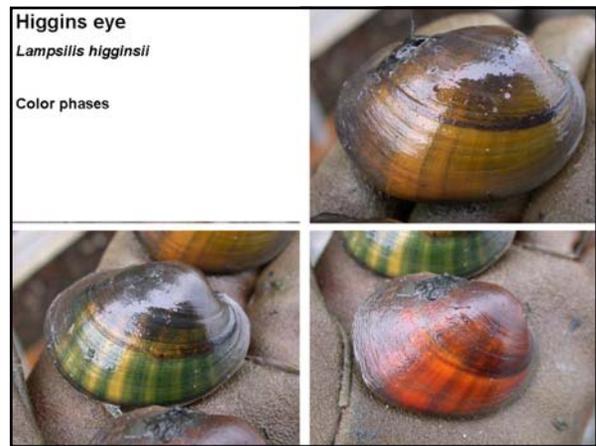
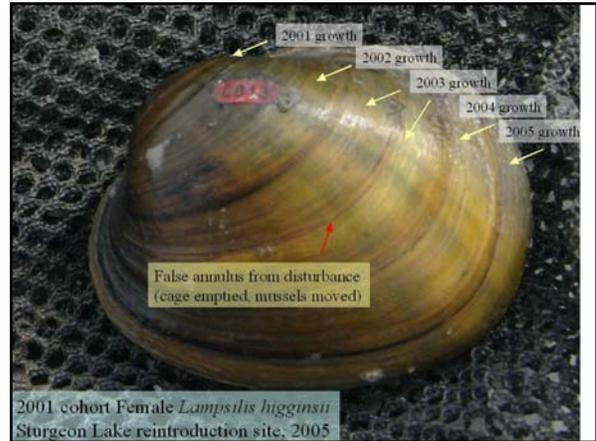
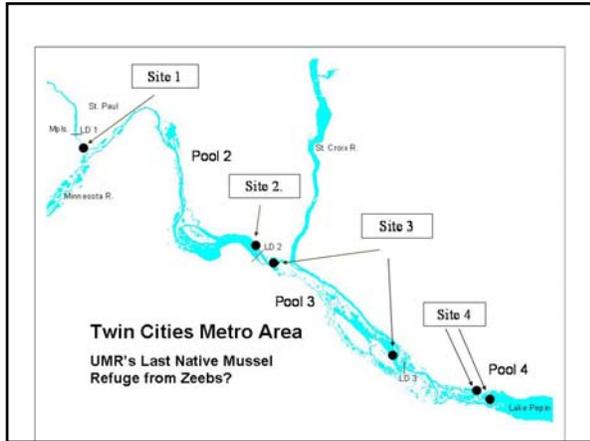
\* Record number of juveniles per cage was 1,400 in 2005



## 2. Stocking Sub-adults

### Methods

- 1. Grow Juveniles in "Closed" Cages Until Age 2 or 3 and Release into River
  - 9,754 stocked at six sites + 19,135 in 2007 = 28,889 total
  - Age 1, 10 – 20 mm; Age 2, 20 – 40 mm; Age 3, 40 – 50 mm
  - Survival influenced by predation (fish?)
  - Sexually mature in four years (same as in cages)
  - Three color phases (red – green – yellow)
  - 13 other species found in cages





### 3. Stocking Adults

Methods

- 1. Clean Adults of Zebra Mussels and Relocate
  - 472 adults relocated from Pools 11 and 14 to Pools 2 and 3 + 2,100 state-listed species
  - High Survival (only found 8 dead), -1 to 19 mm growth
  - Gravid females

Cleaning Higgins eye of zebra mussels and preparing for transport

Cordova, IL  
Pool 14, Upper Miss. River

Transport and placement of Higgins eye from Pool 14 at Cordova, IL to Pool 2, Twin Cities, MN

Gravid female Higgins eye  
←

### Mid Point of Ten Year Establishment Period – What Next?

- Propagation through 2008, augmentation thereafter.
- Survey for Higgins eye recruits
- Continue to monitor sub-adults
  - Survival, growth, etc..
  - Evaluate protection and rearing technique
- Develop and implement long term monitoring strategy (20 years)
  - Viable populations?
- Develop mussel database

Federally Endangered Winged Mapleleaf (*Quadrula fragosa*)

Winged Mapleleaf Historic and Current Distribution

★ 2005 estimated population of WML at single collection site in Saline River, AR = 10,000

● Historic locations  
● Current locations (1990 - present)



## On-going MCT Activities

- April 2000 Biological Opinion (*Lh* & *Qf*)
- Host fish ID & propagation of other species
- Pool-wide population estimates
- Life history research & modeling
- Standard mussel sampling protocol for large and small scale projects
- New GIS database
- Maintaining UMRS Mussel Web Site
- Proposal to include mussel conservation in Navigation & Ecosystem Sustainability Program (NESP)

Brought to you by –

A dedicated bunch of River Rats !



NPS (Byron, Bob, Lisel, Brenda, Jennifer)

Mark Hove, U of M

Bernard Sietman, MDNR

Nick Rowse, Susan Oetker, Phil Delphey, FWS

