

# **Upper Mississippi River Restoration Program Coordinating Committee**

**Quarterly Meeting**

**August 21, 2019**

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**Agenda  
with  
Background  
and  
Supporting Materials**

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## UPPER MISSISSIPPI RIVER RESTORATION PROGRAM COORDINATING COMMITTEE

August 20-21, 2019

### AGENDA

#### Tuesday, August 20 Partner Quarterly Pre-Meetings (Radisson Hotel)

- 4:15 – 5:30 p.m. Corps of Engineers  
4:15 – 5:30 p.m. Department of the Interior  
4:15 – 5:30 p.m. States

#### Wednesday, August 21 UMRR Coordinating Committee Quarterly Meeting (UMESC)

| Time       | Attachment | Topic  | Presenter                       |
|------------|------------|--|---------------------------------|
| 8:00 a.m.  |            | Welcome and Introductions  | <i>Brian Chewning, USACE</i>    |
| 8:05       | A1-12      | Approval of Minutes of May 22, 2019 Meeting                              |                                 |
| 8:10       |            | <b>Regional Management and Partnership Collaboration</b>                 | <i>Marshall Plumley, USACE</i>  |
|            | B1-4       | ▪ FY 2019 Fiscal Update and FY 2020 Outlook                              |                                 |
|            | B5-11      | ▪ Statements of UMRR's National Significance                             |                                 |
|            | B12-13     | ▪ UMRR Communications Pilot Project                                      | <i>Andrew Stephenson, UMRBA</i> |
|            |            | ▪ External Communications and Outreach Events                            | <i>All</i>                      |
| 9:00       |            | <b>UMRR Showcase Presentations</b>                                       |                                 |
|            |            | ▪ MVP HREP AAR meetings  | <i>Sierra Keenan, USACE</i>     |
|            |            | ▪ Evaluating Aquatic Management Techniques to Maximize Wildlife Habitats | <i>Danelle Larson, USGS</i>     |
| 9:45       |            | Break  |                                 |
| 10:00      |            | <b>Program Reports</b>   |                                 |
|            |            | ▪ Habitat Restoration  |                                 |
|            |            | – District Reports   | <i>District HREP Managers</i>   |
|            | C1         | – Project Selection Process  | <i>Marshall Plumley, USACE</i>  |
|            |            | ▪ Long Term Resource Monitoring and Science                              |                                 |
|            | C2-16      | – LTRM FY 2019 3 <sup>rd</sup> Quarter Highlights                        | <i>Jeff Houser, USGS</i>        |
|            | C17-18     | – USACE LTRM Update  | <i>Karen Hagerty, USACE</i>     |
|            |            | – A-Team Report  | <i>Nick Schlessner, MN DNR</i>  |
| 11:50      |            | <b>Other Business</b>  |                                 |
|            | D1         | ▪ Future Meeting Schedule  |                                 |
| 12:00 noon |            | Adjourn  |                                 |

[See Attachment D for frequently used acronyms,  
UMRR authorization (as amended), and UMRR (EMP) operating approach.]

## **ATTACHMENT A**

**Minutes of the May 22, 2019**  
**UMRR Coordinating Committee Quarterly Meeting**  
*(A-1 to A-12)*

**DRAFT**  
**Minutes of the**  
**Upper Mississippi River Restoration Program**  
**Coordinating Committee**

**May 22, 2019**  
**Quarterly Meeting**

**Hampton Inn Gateway Arch**  
**St. Louis, Missouri**

Justin Sexton of the U.S. Fish and Wildlife Service called the meeting to order at 8:01 a.m. on May 22, 2019. UMRR Coordinating Committee representatives present were Brian Chewning (USACE), Sabrina Chandler (USFWS) via phone, Mark Gaikowski (USGS), Randy Schultz (IA DNR), Megan Moore (MN DNR) via phone, Matt Vitello (MO DoC), Jim Fischer (WI DNR), and Marty Adkins (NRCS). A complete list of attendees follows these minutes.

**Minutes of the February 27, 2019 Meeting**

Jim Fischer moved and Randy Schultz seconded a motion to approve the draft minutes of the February 27, 2019 UMRR Coordinating Committee meeting as written. The motion carried unanimously.

**Regional Management and Partnership Collaboration**

Marshall Plumley expressed appreciation for the invitation from USGS staff to meet with elected officials and USGS Director Jim Reilly on April 16, 2019 at UMESC. The visit included a tour of the Center and a discussion of UMRR.

Plumley reported that \$7.56 million of UMRR's \$33.17 million FY 2019 appropriation was obligated in the second quarter and that \$11.5 million was obligated as of May 21, 2019. Plumley said the program has excelled at obligating funds into projects and science. The FY 2019 obligations to date are typical of UMRR's annual program implementation cycle at this point in the fiscal year. Bass Ponds habitat project is a considerable upcoming expenditure and Keithsburg and Clarence Cannon habitat projects will be awarded later this year. Plumley reviewed UMRR's FY 2019 internal allocations as follows:

- Regional Administration and Programmatic Efforts – \$1,100,000
- Regional Science and Monitoring – \$10,295,000
  - o Long term resource monitoring – \$4,920,000
  - o Regional science in support of restoration – \$3,750,000
  - o Regional science staff support – \$200,000
  - o Habitat project evaluations – \$975,000
  - o Habitat Needs Assessment-II/Regional Project Sequencing – \$450,000
- Habitat Restoration – \$21,775,000
  - o MVP – \$7,670,000
  - o MVR – \$7,695,000
  - o MVS – \$6,310,000
  - o Model certification – \$100,000

### *FY 2020 President's Budget*

Plumley said the President's FY 2020 budget recommendation for UMRR is \$33,170,000. The final FY 2020 UMRR appropriation is unknown.

### *UMRR Five-Year Plan*

Plumley pointed to page B-5 of the agenda packet, and said the UMRR five-year plan chart has been updated through FY 2023. Jim Fischer expressed appreciation for the inclusion of the five-year plan chart in the packet and said it is helpful for tracking as well as for sharing the complexity of the program with the Administration and elected leaders. In response to a question from Kirsten Wallace, Plumley said he anticipates that the project selection process will add projects in feasibility and he will continue to update the chart and provide in the agenda packets.

Marty Adkins suggested that Plumley meet with NRCS conservation easement program managers and state natural resource agencies to discuss improving coordination of HREPs with upland conservation areas and practices to maximize opportunities and outcomes in the system. Plumley agreed and said that it might be good to invite them to river team meetings as well. Adkins said coordination had been done previously, but suggested it be institutionalized. Sabrina Chandler noted their involvement would also be helpful to identify policy issues for HREPs involving WRP lands as the U.S. Fish and Wildlife Service has avoided projects with WRP due to policy issues. Adkins said it would not be necessary to have HREPs on WRP lands, but provided Horseshoe Bend as an example where there was a mosaic of easement lands with some managed by The Nature Conservancy and some privately held that might provide an opportunity. Chandler noted that an HREP proposal for Horseshoe Bend was submitted and determined to be outside the scope of UMRR, and added that the policy issues arose on other fee title land encumbered by WRP. Chandler said that, if the policy issues could be addressed, WRP lands would provide an excellent opportunity for habitat restoration under UMRR. Gretchen Benjamin suggested looking for ways to coordinate NRCS projects on tributaries to improve inflow and identify HREP opportunities on the mainstem as a systems approach to conservation in the basin. Fischer said that improved coordination was discussed in the 2015-2025 UMRR Strategic Plan and suggested that fact sheets include a check box noting whether surrounding areas have been reviewed for related efforts that may provide benefits to the HREP. Andrew Stephenson stated that the river teams will be asked to consider synergy when developing project proposals.

### *Statements of UMRR's National Significance*

Plumley said there was minimal progress in developing statements of UMRR significance since the February 27, 2019 UMRR Coordinating Committee quarterly meeting due to other high priorities. He emphasized the importance of these statements as a communication tool to articulate the importance of the system, to define a desired future condition, and to help establish the end goal of the program to claim success. Plumley apologized for the delay and said he will schedule a call with the Coordinating Committee in the coming months to discuss next steps and will provide regional and national examples as read aheads. Fischer and Chandler both said no apologies were necessary and that it is understandable considering the compressed schedule due to government shutdown as well other higher priority initiatives.

### *Reflections on One Year as Program Manager*

Plumley provided reflections on major lessons learned during his first-year tenure as UMRR program manager through the themes: listen, people first, execution, partnership, stewardship, vision.

- Listen – He has appreciated getting out and hearing from a variety of people and partners about their missions and what needs to be brought to bear on the program and has found that those involved in the program are skilled at listening to the public and stakeholders.

- People first – The people involved in the program have so much to offer with their skills and gifts and Plumley credits them with solving tough issues for the program.
- Execution – This is a significant metric for gauging the quality of the program and the program’s ability to execute is due to the partnership.
- Partnership – The partnership serves as an example for other programs regionally and nationally.
- Stewardship – It is important to take care of this resource, which is the “body of the county,” and the greatest resource the country has next to its people.
- Vision – The partnership will be even more effective if we can share on a personal level why we do what we do and what we hope to do.

#### *Potential Changes to State Management Responsibilities*

Matt Vitello discussed potential land management policy changes in Missouri DoC following the culmination of a two-year strategic planning process. The agency identified opportunities to alleviate its burden by reducing the number of acres managed for other agencies including General Plan lands owned by the Corps. Missouri DoC is currently working internally as well as with the Corps and USFWS to determine how these changes would affect current and future HREPs. In response to a question from Andy Barnes, Vitello said the agreement in place requires one year of notice before vacating management responsibilities. Subsequent changes to a number of waterfowl regulations would require additional analysis and public outreach. Chandler said she appreciated that Vitello raised the issue early so the necessary conversations can occur to ensure the issue will be addressed appropriately. Vitello expressed his appreciation to Chandler and the Corps for their productive conversation to date. Plumley said the Corps is currently identifying staff who should be involved in future discussions involving HREPs. In response to a question from Brian Chewning, Vitello said that continued coordination to understand the potential impact to these actions will take place over the next year and acknowledged the inopportune timing with the ongoing HREP selection process.

#### *External Communications*

UMRR partners reported on the following communication and outreach activities since the February 27, 2019 UMRR Coordinating Committee meeting:

- Wallace reported that the House Committee on Transportation and Infrastructure Subcommittee on Water Resources and the Environment invited UMRBA to speak at its April 10, 2019 hearing about the importance and compatibility of managing inland rivers for both navigation and ecosystem health.
- Karen Hagerty said UMRR had a booth with a sand table at the National Mississippi River Museum & Aquarium’s April 20, 2019 “Party for the Planet” and interacted with about 500 visitors. Plumley added that conversations have begun regarding updating the 15-year old UMRR displays at the museum.
- Fischer mentioned that Steve Galarneau of Wisconsin DNR’s Office of Great Waters spoke on behalf of UMRR at a meeting with DNR leadership and the Secretary’s Office.
- Mark Gaikowski said USGS Director Jim Reilly, Congresswoman Betty McCollum, Congressman Ron Kind, La Crosse Mayor Tim Kabat, and MRCTI Executive Director Colin Wellenkamp toured UMESC in April 2019 and were updated on UMRR. USGS is planning to host a Congressional delegation visit to Wisconsin in August, 2019 that may coincide with the UMRR Coordinating Committee quarterly meeting. Gaikowski added that American Queen is planning to bring a steamboat vessel up the river to stop in La Crosse as well. Scott Morlock said he and Sandy Morrison will be meeting with the American Queen boat to talk about water quality efforts.

- Chandler provided UMRR briefing papers to new USFWS leadership in Washington D.C. and attended the Mississippi River Parkway Commission's semi-annual meeting in April 2019. Chandler is coordinating with Parkway Commission meeting planners to determine field trip locations for the next meeting in La Crosse.
- Gaikowski said the 2019 Mississippi River Parkway Commission's annual meeting will be held in La Crosse and might present an opportunity to highlight some notable HREPs in the vicinity. Chandler said that USFWS staff are working with the meeting planners to determine fieldtrip locations.

In response to a question from Chewning, Wallace said that the House Transportation and Infrastructure Committee asked that she speak on the compatibility of navigation and ecosystem restoration on the river. Wallace explained that the interest is mostly due to Missouri River controversy following the spring 2019 floods as well as the newly authorized Lower Mississippi River feasibility study.

### **UMRR Showcase Presentation**

#### *Piasa and Eagles Nest Islands*

Brandon Schneider and Jasen Brown, both from MVS, described the tentatively selected plan (TSP) for Piasa and Eagles Nest Islands HREP including promoting natural river processes in island construction and self-sustaining dredge cuts to reduce O&M costs. The public meeting for this project was the highest attended in St. Louis District, which is still receiving calls and encouragement for the project to keep moving forward. Schneider said the last aerial photo of the area prior to the construction of the L&D in 1932 shows many islands of which only two large islands can be seen in arials from 1941. Problems identified include loss of depth and flow in Piasa Chute, loss of backwater habitat, and loss of diverse island mosaic. Goals for the project are to increase depth and flow diversity in side channels, increase depth diversity in connected backwaters, and restore diverse island mosaic. The area used to be frequented by the Alton boat club and water skiers but is now too shallow. This project could restore recreational boating opportunities in the area as well as provide fishing and hunting, photography, and environmental interpretation and education opportunities. Navigation may benefit due to increased flows. Aquatic vegetation is anticipated to respond well in conjunction with environmental pool management.

Brown said Kat McCain was the lead planner on the project and he explained the engineering behind the Piasa and Eagles Nest Islands HREP. A braided dredge cut is intended to enhance natural river processes already occurring and promoting island creation. Brown highlighted the projects use of ERDC's TOPAZ high performing computer to run 150 adaptive hydraulics model variants with varying CFS from two-, five-, 10-, 25-, and 50- year events and emphasized the reduced time and cost of feasibility as a result. The TSP includes construction of notched rock structure to borrow energy from the main flow to ensure a self-sustaining dredge cut on the landward side of Piasa Island. The project finished planning in August 2018 and is now in design, with construction expected to begin in 2020 or early 2021.

In response to a question from Randy Schultz, Kat McCain explained that rootless islands are those that have no connection with other land. In response to a question from Plumley, Brown said the estimated cost of the project is \$25 million. In response to a question from Stephenson, Brown said there was no cost to use the high performing computer with the only restriction being available server time. Reduced time and labor of running these models resulted in substantial cost savings. Gaikowski said USGS has one high power computer available now and will have a new deep learning computer available in fall 2019 or spring 2020; both available for HREP use. In response to a question from Chewning, Brown explained that the addition of the rock structure will increase the flow through the chute by 40 percent and that structures will be built two feet above the max pool height so they should always be visible. In

response to a question from Marty Adkins, Brown explained that modeling high flow events showed that the rock structures can divert necessary flow to channel to be self-sustaining. In response to a question from Mike Klingner, Brown said the new islands will be built to the same elevation as the existing islands – i.e., Piasa and Eagles Nest. In response to a question from Plumley, McCain said that constructed islands are targeting least tern restoration and that vegetation on the islands is undesirable.

#### *Status and Trends of Smallmouth Buffalo in UMRS*

Kris Maxson, IRBS, presented on the status and trends of smallmouth buffalo in the UMRS. Maxson acknowledged that data for the presentation comes from all six UMRR LTRM field stations. Three species of buffalo (largemouth, smallmouth, black) make up 35 percent of commercial catch and 30 percent of commercial value in the UMR, totaling 3.5 million pounds of harvest. Smallmouth buffalo is the most abundant of the species. Standardization of fish monitoring across the six field stations has allowed for comparison across the UMRS. Maxson said there is a decreasing trend in harvest, which may be due to fewer commercial anglers. Large hoop net catch per unit effort (CPUE) is trending down in all LTRM pools, but up in the open river with the average length of fish increasing in all areas. Electrofishing CPUE has shown a slight downward trend in all pools and the open river, with the greatest change in LaGrange. In response to a question from Adkins, Maxson said the estimated mortality is approximately 9.7 percent per year in Pool 13.

Maxson explained that fish collected for the growth study were collected during LTRM and LTEF routine sampling in 2017, frozen, and transported to IRBS. Pool 4 had, on average, the longest fish, with smaller fish downstream. Growth curves show that, in Pool 13, smallmouth may be smaller (230-290mm) and younger (one to three years) at maturity than in other areas, with Pool 26 and LaGrange averaging approximately 340-405mm long and 5.1 to 7.3 years old at maturity. Maxson cautioned that these differences may be due to confidence in assigning ages as there is no structure that has been validate for ageing smallmouth buffalo.

Overall, Maxson said the population is not showing signs of overfishing and has low estimated mortality with individuals regularly reaching age 20. CPUE is trending down in most LTRM pools, but smallmouth buffalo are still abundant.

In response to a question from Adkins, Maxson said smallmouth are bottom feeders, but bigmouth are planktivores so there could be some competition with Asian carp. In response to a question from Jim Cole, Maxson stated that buffalo are common target species for bowfishing. While bowfishing has increased, he does not have the data to show any correlation between them. In response to a question from Fischer, Maxson said he does not know at what point action would be needed if the trend continues downward. He added that a bigmouth in South Dakota was recently estimated to be over 100 years old. In response to a question from Chewning, Maxson said that the downward trend in harvest may be due to decreases in licenses. In response to a question from Karen Hagerty, Maxson said large nets target larger fish and looking at young of the year may better indicate recruitment trends. Maxson responded to a question from Fischer, saying the majority of commercial harvest of bigmouth buffalo is for Asian markets and human consumption.

#### **Long Term Resource Monitoring and Science**

##### *FY 2019 2<sup>nd</sup> Quarter Report*

Jennie Sauer said that LTRM is now tracking a record number of tasks and projects, which can be found in Appendix C of the meeting packet.

Sauer said accomplishments of the second quarter of FY 2019 include publication of the following:



- Manuscript: “Applying concepts of general resilience to large river ecosystems: A case study from the Upper Mississippi and Illinois rivers.”
- Completion report: “Off-channel waterbodies in the Middle Mississippi River: A pilot investigation.”

Sauer said the manuscript was part of the ongoing ecological resilience work by Kristen Bouska and briefly explained that the purpose of the resilience research framework is to outline research opportunities by examining how past, current, and future projects can inform and build on current knowledge. Sauer said current resilience work is focused on defining the following three potential alternate regimes: 1) a clear, vegetated state or a turbid, sparsely vegetated state; 2) a diverse native fish community or an invasive-dominant fish community; and 3) diverse and dynamic floodplain vegetation or invasive-dominant wet meadow. Sauer explained that differences among floodplain reaches in the ten identified indicators were represented through spider diagrams and noted that more color in the spider diagram denotes more indicators addressed.

Sauer explained that the completion report was a pilot investigation to explore water quality changes and fish communities in backwater areas formed through a levee break. Backwaters were clearer and warmer than the main channel and Horseshoe Lake showed changes in fish communities including presence of bluegill. Results may inform potential backwater creation in the Middle Mississippi River.

Sauer said that all 2018 LTRM vegetation, fish, and water quality raw data is now available on the graphical browsers. She noted that turbidity in Pool 8 decreased during the summer and that information and graphical outputs can help in HREP and management discussions.

Sauer stated that the LTRM water quality lab participated in the Standard Reference Sample, which consists of many organizations analyzing the same water sample and submitting their results for comparison. While it is not a certification process, USGS is required to participate and LTRM staff take pride in their participation and their results. Water quality lab Standard Reference Sample results show that LTRM water quality labs are rated good to excellent for phosphorous and nitrite and nitrate as N. Sauer emphasized that this is an example of the behind-the-scenes work that helps make UMRR successful and high quality.

Sauer observed that LTRM was well represented at the 51<sup>st</sup> annual meeting of the Mississippi River Research Consortium (MRRC) meeting with half of the 25 presentations and many posters utilizing LTRM datasets or models. She explained that Dr. Quinton Phelps from West Virginia University accompanied 10 students who are using LTRM-related data and resources. Hagerty mentioned John Chick was studying fish populations with archaeologists. Sauer added that the floodplain forest session was a particularly good example of connecting LTRM with restoration and of multiple partners coming together and using LTRM data.

Sauer reiterated that USGS Director Jim Reilly had visited UMESC and received an overview of UMRR and that Colin Wellenkamp of MRCTI had preserved the moment on Twitter.

#### *USACE LTRM Report*

Karen Hagerty said the Corps is planning that the FY 2019-2020 funding for UMRR monitoring and science in support is \$8.67 million. She explained that four science proposals were selected and will receive funding totaling \$583,137 and a fifth proposal will be funded through salary savings and support from UW-La Crosse. Funding for decadal LC/LU was approved and will total \$1.982 million over FY 2020-2023.

### *A-Team Report*

Vitello said the A-Team met in La Crosse on April 24, 2019 in conjunction with the MRRC. He reported that the A-Team received updates on UMRR from Marshall Plumley and on LTRM from Jeff Houser. A-Team members discussed the resilience framework with Kristen Bouska and were asked to submit comments on the document by the end of May 2019. The A-Team had a productive discussion concerning modifications to the science review process, including having discussions with PIs before members are tasked with ranking the proposals. A-Team members were asked to provide stories using LTRM data that could be included in the next LTRM status and trends report. The A-Team meeting also included a presentation on climate change impacts and trends in Minnesota and a similar presentation on Wisconsin. Jeff Houser will develop an outline and scope for the next LTRM status and trends report for the A-Team's input at its next meeting. Vitello said the next meeting has not been scheduled but will occur before the August 21, 2019 UMRR Coordinating Committee quarterly meeting. Minnesota DNR's Nick Schlessler is the new chair. [Note: The A-Team met July 31, 2019 via webinar.]

Hagerty and Fischer expressed their gratitude for Vitello serving as chair of the A-Team. In response to a question from Fischer, Vitello said no conclusions were made about how A-Team input could be used in the HREP selection process, but noted that a number of A-Team members serve on the river teams, so it may be duplicative. Marty Adkins asked if a summary of big picture results was available to pass on to NRCS state conservationists who may not be involved in discussions but would be interested in knowing about the available data. In response, Vitello said that some is posted on the LTRM and UMRR websites. Sauer added that those individuals could be added to the LTRM distribution list and clarified that the type of information should be similar to what is relevant to Congressional members and high-level administration. Hagerty suggested a report card for automated measures could be added as a follow-on to the Status and Trends Report. Wallace reflected on past conversations about the communication plan and identifying information that would be relevant to parties outside UMRR. Hagerty and Adkins suggested tailoring information to different audiences with different mediums for distribution. Fischer said the A-Team might help identify relevant information for other groups.

### *2020 LTRM Status and Trends Report*

Sauer explained that the target audience for the third edition LTRM status and trends report will be scientists, river managers, and knowledgeable public, with summary documents tailored to other audiences as needed. The report will be technical in nature, similar to the 2008 document. Sauer identified some previous relevant documents as Ecological Status and Trends of the UMRS (2008), Status and Trends of Selected Resources of the UMRS (2008), Indicators of Ecosystem Health for the UMRS (2013), and Fish Indicators of Ecosystem Health: UMRS (2017). Sauer stated that associated activities during FY 2019 will be identifying a clear purpose for the document, developing an outline of intended content, seeking review from A-Team and UMRR Coordinating Committee, and identifying staff that will assist in document production. Plumley stated that it is important to tell the story as a program and this report will help inform the 2022 UMRR report to Congress.

### *IWW Closure Monitoring Studies*

Hagerty explained that significant closures on the Illinois Waterway (IWW) in 2020 present an opportunity to monitor biological response to reduced navigation. An *ad hoc* group was established to evaluate research possibilities. The UMRR Coordinating Committee held a special meeting via conference call on April 30, 2019 to discuss the potential for using LTRM and other relevant monitoring sources. The ultimate goal is to leverage LTRM and other relevant WQ data to inform future HREPs. Hagerty explained that the 2020 land cover survey is already funded under existing work and that, on the April 30 call, the Committee unanimously endorsed funding the following research proposals using FY 2018 carry-over funding from cost-savings on MVR habitat project construction.

- Illinois Waterway aquatic vegetation study
- Pre- and post-maintenance aerial imagery from Brandon Road through Alton Pool
- Fish community response to the Illinois Waterway 2020 lock closure
- Water clarity and the Illinois Waterway 2020 lock closures

Costs for supporting the work through FY 2022 total \$570,436, however the program is only funding year one now for \$157,782. Hagerty emphasized that the selected proposals will assess the response to reduced navigation due to lock closure on water quality, vegetation, and fish at multiple scales and that insights will help inform future HREPs along the IWW and possibly the Mississippi River. Plumley expressed his appreciation that UMRR has something in place to capture information on this historic event on the river. He also acknowledged some risks and unknowns with these efforts, but commended the partnership for its willingness to move forward and advance science.

Matt Vitello moved and Randy Schultz seconded approving the draft April 30, 2019 special meeting minutes on the Illinois Waterways closure monitoring proposals as provided in the meeting packet. The minutes were approved unanimously.

In response to a question from Gretchen Benjamin, Plumley stated that there would still be recreational traffic and industry will move barges within pools. Hagerty and Chewning said that there have been no deviations to water control plans, which would be required for drawdowns for ecological purposes.

## **Habitat Restoration**

### *District Reports*

#### St. Paul District

Shahin Khazrajafari explained that MVP is working hard to complete planning and design on Bass Lake Ponds habitat project so that a construction contract of \$5,000,000,000 can be awarded this year. The District's other planning priorities are McGregor Lake, Reno Bottoms, and Lower Pool 10 habitat projects. McGregor Lake is in final approval for feasibility and a construction award is planned for the 2<sup>nd</sup> quarter of 2020. Lower Pool 10 is further along than Reno Bottoms and is being considered by MVP to move into feasibility. A construction award for the project is anticipated for the second quarter of FY 2020. Khazrajafari said the District is currently identifying information needs and assembling a team for Reno Bottoms. Construction is complete for Harpers Slough and a dedication ceremony is being planned for July 2019. A construction contract for Conway Lake was awarded in late calendar year 2018, with the goal of starting construction in FY 2020 and completing construction in 2021.

In response to a question from Adkins, Khazrajafari said shape files for each HREP location are available on the UMRR website. Fischer noted that Bass Ponds is located in a major metro area, providing high visibility for the program. He suggested adding signage and an informational display at the refuge center. Mark Gaikowski said that he, Gretchen Benjamin, Mayor Tim Kabat, and Scott Gruber participated in the Wisconsin Ideas forum that brought University of Wisconsin Faculty and Staff onto the river. He said they discussed social justice in urban areas and how to engage non-traditional groups in conversations about habitat restoration. Karen Hagerty noted that many of the public meetings for HREPs occur in rural areas, near the project locations. Sabrina Chandler said that USFWS staff at the Minnesota Valley Refuge have been focused on engaging diverse populations and would use this project as an opportunity to expand the program. In response to a question from Fischer, Khazrajafari said he will follow-up on a date for the ribbon cutting ceremony to allow adequate time for agency leadership to be present.

Julie Millhollin explained that MVR selected a TSP for Steamboat Island in February 2019 and held an IPR with MVD on April 11, 2019. The PDT is drafting feasibility chapters in anticipation for public review in November 2019. Lower Pool 13 and Green Island habitat projects are the District's other planning priorities. The Lower Pool 13 fact sheet was approved by MVD and the PDT held a scoping meeting with stakeholders on May 14. A kickoff for Green Island habitat project is scheduled for late summer 2019. USFWS anticipates signing the Keithsburg Division habitat project MOA soon. Millhollin said that high water has halted construction on Pool 12 Overwintering and Huron Island Stage II, and the projects will be assessed for flood damage after the water recedes. Millhollin said some tree removal was accomplished on Beaver Island and a ground breaking is planned for when water levels drop. She added that pumps at Rice Lake habitat project are in need of repairs and the Fox Island habitat project performance evaluation was postponed due to high water and will be rescheduled for when river levels decrease. Chandler said that USFWS was in the process of signing the MOA and it would be transmitted May 23, 2019. Plumley said they need a permit by July 15, 2019 to stay on schedule.

Brian Markert said MVS is continuing work on the feasibility study with the Forest Service on Oakwood Bottoms. He said Rip Rap Landing habitat project meetings will be scheduled when new Illinois DNR staff vacancies are filled. Work on PED for Harlow Island habitat project will hopefully begin soon so that work on plans and specs can begin next year. Crains Island is through design and awaiting funding availability to request construction bids. Markert said MVS is working on advancing the last major construction of levee setbacks at Clarence Cannon habitat project. Markert mentioned work is suspended in the fall at refuge areas. He noted that there may be some highwater damage to address. Markert said a pump station warranty issue needs to be addressed at Ted Shanks habitat projects, which is anticipated to be closed out next year. He said that USFWS anticipates signing the Harlow Island MOA soon. MVS staff are reaching out to regional partners about the opportunity for new habitat projects through the forthcoming HREP selection process. Chandler said USFWS is in the process of signing the MOA and expects its transmittal on May 23, 2019.

Marshall Plumley reported that UMRR has constructed 56 projects to date directly affecting 106,000 acres. He noted there are currently 20 HREPs planned in the next ten years, encompassing 65,180 acres.

#### *HREP Planning and Design Workshop*

Plumley said he has received tremendous positive feedback regarding the May 6-8, 2019 UMRR HREP Planning and Design Workshop. The goal was to bring HREP practitioners together to exchange lessons learned and collaborate on the future direction of HREPs. The workshop had over 100 attendees from various agencies and organizations. It provided a good opportunity for exchanging knowledge with 20 attendees having less than three years of experience with the program and 15 participants with over 20 years of experience. Plumley explained that the three themes of the workshop were 1) risk informed planning, 2) HREP lessons learned, and 3) the program's future. Discussion topics included tools used in developing HREPs, integrating LTRM and HREP, and identifying gaps in current habitat modeling. Various strategies were used to stimulate discussion and capture participant sentiments including presentations, breakout group discussions, facilitated exercises, and live polling. Plumley stated that the workshop was preceded by a webinar series that was also well attended with each webinar having over 50 participants. Recordings of the webinars are now available on the UMRR website and serve as a source of information on the basics of the program. Plumley explained that UMRR is planning to hold additional webinars and requested suggestions for topics.

Megan Moore said she had also heard positive feedback regarding the workshop, specifically the format and problem-solving questions and activities. Moore said she also heard that the pre-workshop webinars were valuable and was looking forward to the future webinars. Justin Sexton said he enjoyed the live polling exercises. Plumley explained that the live polling consisted of some prepared questions that

allowed responses to be viewed in real time. Live polling was a great tool to help visualize the discussion. Fischer agreed that the workshop was valuable and believed people learned a lot of new information. He mentioned that LTRM staff commented that the workshop was too in-depth on HREP planning while there was great value in the breakouts and getting practitioners in the same room together. He suggested that the next workshop could include an in-depth discussion day for the LTRM and HREP components separately, followed by a day of joint discussion. Plumley concurred that breakouts were valuable and mentioned that a summary would be available online with all past workshop materials.

### *HREP Selection Process*

Plumley said the Program Planning Team (PPT) is scheduled to have a call on May 28, 2019 to refine the next generation HREP selection process guidance materials that will be provided to the river teams at the beginning of June 2019. The river teams will have until December 2019 to engage potential project sponsors (including NGOs) in a collaborative process to identify a suite of fact sheet proposals that address HNA-II indicators. River teams will provide project recommendations to the PPT by the end of calendar year 2019 for consideration and implementation in FY 2021-2025. Plumley said the goals of the process are to optimize investment in habitat needs within UMRS, address ecological needs from pool- to system-scales and integrate with Habitat Needs Assessment, enhance public understanding and trust in the decision-making process, and retain flexibility to ensure efficient and effective program execution. Plumley reviewed the top four indicators from HNA-II across all reaches as aquatic function class, floodplain functional class, floodplain vegetation, and aquatic vegetation. Plumley explained that the science support team (SST) will include technical discipline experts and provide support to river teams as needed. Plumley also explained that NGO sponsor engagement will include a packet of information with an invitation letter, outline of roles of the river teams, points of contact on the river team, an overview of the selection process, fact sheet template, schedule, and sponsor requirements. Plumley said these materials would be provided to the river team chairs at the end of May 2019.

Kat McCain asked if there had been any discussion about how to coordinate with the FWIC and RRAT about an Illinois River working group. Plumley responded that the last time an Illinois River team was formed was when UMRR and NESP co-occurred and many of the individuals involved have retired. To his knowledge, Illinois has not expressed interest in standing a team up. In response to a question from Jodi Creswell, Wallace mentioned that Illinois has a new hire who will be the point of contact for UMRR. Nerissa McClelland would be the best contact for the Illinois River. Plumley said he could reach out to Matt O'Hara and Mike McClelland to identify the best point of contact. Fischer mentioned there may be value in the river teams going through the risk-informed planning exercise on Yorkinut Slough, as used during the HREP Planning and Design Workshop, to prioritize indicators. Plumley said that suggestion be lent to the river teams. McCain said that would be a good idea for the RRAT as it would provide something to react to. Fischer said it was a helpful exercise to move away from the old model of project development, but understood that the tight timeline for river teams might not allow it. Plumley said he would follow up with the river team chairs during the next call. Stephenson said, and Plumley agreed, that it would be helpful to get updates from the river team chairs about progress after their initial river team conversations.

### **Other Business**

#### *Marty Adkins Retirement*

Plumley congratulated Marty Adkins on his upcoming retirement thanked him for his service on the Coordinating Committee. Adkins expressed his appreciation for the opportunity and introduced Verlon Barnes, NRCS Missouri River Coordinator, who will be the next NRCS representative on the Coordinating Committee.

### *Future Meetings*

Wallace mentioned that the February 2020 meeting would be in Iowa, but the location was not yet determined.

Upcoming quarterly meetings are as follows:

- August 2019 – La Crosse
  - UMRBA quarterly meeting – August 20
  - **UMRR Coordinating Committee quarterly meeting – August 21**
- October 2019 – St. Paul
  - UMRBA quarterly meeting – October 29
  - **UMRR Coordinating Committee quarterly meeting – October 30**
- February 2020 – TBD (Dubuque, Quad Cities, or Muscatine)
  - UMRBA quarterly meeting – February 25
  - **UMRR Coordinating Committee quarterly meeting – February 26**

With no further business, the meeting adjourned at 11:41 a.m.

**UMRR Coordinating Committee Attendance List**  
**May 22, 2019**

**UMRR Coordinating Committee Members**

|                  |  |
|------------------|--|
| Brian Chewning   | U.S. Army Corps of Engineers, MVD                          |
| Sabrina Chandler | U.S. Fish and Wildlife Service, UMR Refuges [on the phone] |
| Mark Gaikowski   | U.S. Geological Survey, UMESC                              |
| Randy Schultz    | Iowa Department of Natural Resources                       |
| Megan Moore      | Minnesota Department of Natural Resources [on the phone]   |
| Matt Vitello     | Missouri Department of Conservation                        |
| Jim Fischer      | Wisconsin Department of Natural Resources                  |
| Marty Adkins     | Natural Resources Conservation Service                     |

**Others In Attendance**

|                     |   |
|---------------------|---|
| Thatch Shepard      | U.S. Army Corps of Engineers, MVD                       |
| Ben Robinson        | U.S. Army Corps of Engineers, MVD                       |
| Jim Cole            | U.S. Army Corps of Engineers, MVD                       |
| Chris Erickson      | U.S. Army Corps of Engineers, MVP                       |
| Shahin Khazrajafari | U.S. Army Corps of Engineers, MVP                       |
| Andy Barnes         | U.S. Army Corps of Engineers, MVR                       |
| Marshall Plumley    | U.S. Army Corps of Engineers, MVR                       |
| Jodi Creswell       | U.S. Army Corps of Engineers, MVR                       |
| Julie Millhollin    | U.S. Army Corps of Engineers, MVR                       |
| Karen Hagerty       | U.S. Army Corps of Engineers, MVR                       |
| Brian Johnson       | U.S. Army Corps of Engineers, MVS                       |
| Brian Markert       | U.S. Army Corps of Engineers, MVS                       |
| Greg Kohler         | U.S. Army Corps of Engineers, MVS                       |
| Brandon Schneider   | U.S. Army Corps of Engineers, MVS                       |
| Jasen Brown         | U.S. Army Corps of Engineers, MVS                       |
| Kat McCain          | U.S. Army Corps of Engineers, MVS                       |
| Justin Sexton       | U.S. Fish and Wildlife Service, UMR Refuges             |
| Scott Morlock       | U.S. Geological Survey, UMESC                           |
| Jennie Sauer        | U.S. Geological Survey, UMESC                           |
| Sandy Morrison      | U.S. Geological Survey, UMESC                           |
| Kelly Warner        | U.S. Geological Survey, UMESC                           |
| Verlon Barnes       | Natural Resources Conservation Service                  |
| Kristopher Maxson   | Illinois Natural History Survey                         |
| Maisah Khan         | Missouri Coalition for the Environment                  |
| Brad Walker         | Nicollet Island Coalition                               |
| Rick Stoff          | Our Mississippi   |
| Mike Klingner       | Quincy Bay Area Restoration and Enhancement Association |
| Gretchen Benjamin   | The Nature Conservancy                                  |
| Kirsten Wallace     | Upper Mississippi River Basin Association               |
| Andrew Stephenson   | Upper Mississippi River Basin Association               |
| Mark Ellis          | Upper Mississippi River Basin Association               |
| Lauren Salvato      | Upper Mississippi River Basin Association               |

## **ATTACHMENT B**

### **Regional Management and Partnership Collaboration**

- **UMRR Quarterly Budget Reports (8/5/2019)** (B-1 to B-3)
- **UMRR Five Year Plan** (B-4)
- **Statements of Significance for the Illinois River Basin Ecosystem**
  - **Excerpt from the Illinois River Basin Restoration Comprehensive Plan (3/2007)** (B-5 to B-9)  
*[Note: The full report is available at <https://www.mvr.usace.army.mil/Missions/Environmental-Protection-and-Restoration/Illinois-River-Basin-Restoration/Documents-and-Reports/>]*
  - **Excerpts from Resource Significance Protocol for Environmental Project Planning (7/1997)**  
*[Note: The full report is available at <https://www.iwr.usace.army.mil/portals/70/docs/iwrreports/97r04.pdf>]*
    - **Questions to Assist in Identifying Potentially Significant Resources** (B-10)
    - **Checklist to Evaluate Effectiveness of Significance Statements** (B-11)
  - **Resource Significance: A New Perspective for Environmental Project Planning (12/1994)**  
*[Note: The full report is available at <https://planning.erd.c.dren.mil/toolbox/library/IWRServer/95-R-10.pdf>. This document includes examples of descriptions of environmental resource significance.]*
- **Summary of the February 27, 2019 UMRR Communications Meeting** (B-12 to B-13)



# UMRR Quarterly Budget Report: St. Paul District

FY2019 Q3; Report Date: Mon Aug 05 2019

## Habitat Projects

| Project Name                               | Cost Estimates |              |              | FY2019 Financials |             |                 |                    |
|--|----------------|--------------|--------------|-------------------|-------------|-----------------|--------------------|
|  | Non-Federal    | Federal      | Total        | Carry In          | Allocation  | Funds Available | Actual Obligations |
| Bass Ponds, Marsh, and Wetland             | -              | \$5,500,000  | \$5,500,000  | \$34,331          | \$300,000   | \$334,331       | \$768,581          |
| Capoli Slough                              | -              | \$9,450,000  | \$9,450,000  | -                 | -           | -               | \$3,263            |
| Conway Lake                                | -              | \$7,413,000  | \$7,413,000  | \$56,630          | \$525,000   | \$581,630       | \$19,101           |
| Harpers Slough                             | -              | \$13,675,000 | \$13,675,000 | -                 | -           | -               | \$88,840           |
| Lower Pool 10 Island and Backwater Complex | -              | \$17,000,000 | \$17,000,000 | -                 | \$300,000   | \$300,000       | \$265,155          |
| McGregor Lake                              | -              | \$18,450,000 | \$18,450,000 | -                 | \$6,545,000 | \$6,545,000     | \$172,015          |
| Reno Bottoms                               | -              | \$10,000,000 | \$10,000,000 | -                 | -           | -               | \$133,513          |
| <b>Total</b>                               | -              | \$81,488,000 | \$81,488,000 | \$90,961          | \$7,670,000 | \$7,760,961     | \$1,450,468        |

## Habitat Rehabilitation

| Subcategory                 | FY2019 Financials |            |                 |             |
|-----------------------------|-------------------|------------|-----------------|-------------|
|                             | Carry In          | Allocation | Funds Available | Obligations |
| District Program Management | -                 | -          | -               | \$659,944   |
| <b>Total</b>                | -                 | -          | -               | \$659,944   |

## Regional Program Administration

| Subcategory             | FY2019 Financials |            |                 |             |
|-------------------------|-------------------|------------|-----------------|-------------|
|                         | Carry In          | Allocation | Funds Available | Obligations |
| Habitat Eval/Monitoring | -                 | -          | -               | \$206,530   |
| <b>Total</b>            | -                 | -          | -               | \$206,530   |

|                       | Carry In | Allocation  | Funds Available | Actual Obligations |
|-----------------------|----------|-------------|-----------------|--------------------|
| <b>St. Paul Total</b> | \$90,961 | \$7,670,000 | \$7,760,961     | \$2,316,942        |

# UMRR Quarterly Budget Report: Rock Island District

FY2019 Q3; Report Date: Mon Aug 05 2019

## Habitat Projects

| Project Name          | Cost Estimates |               |               | FY2019 Financials |             |                 |                    |
|-----------------------|----------------|---------------|---------------|-------------------|-------------|-----------------|--------------------|
|                       | Non-Federal    | Federal       | Total         | Carry In          | Allocation  | Funds Available | Actual Obligations |
| Beaver Island         | -              | \$25,288,000  | \$25,288,000  | \$7,622           | \$6,000,000 | \$6,007,622     | <b>-\$162,522</b>  |
| Huron Island          | -              | \$15,773,000  | \$15,773,000  | -                 | \$275,000   | \$275,000       | \$223,220          |
| Keithsburg Division   | -              | \$29,643,000  | \$29,643,000  | -                 | \$450,000   | \$450,000       | \$308,930          |
| Lower Pool 13         | -              | \$25,288,000  | \$25,288,000  | \$69,271          | \$400,000   | \$469,271       | \$148,234          |
| Pool 12 Overwintering | -              | \$20,870,822  | \$20,870,822  | -                 | \$220,000   | \$220,000       | \$129,824          |
| Rice Lake, IL         | \$7,280,000    | \$13,459,763  | \$20,739,763  | -                 | \$50,000    | \$50,000        | \$57,160           |
| Steamboat Island      | -              | \$41,977,000  | \$41,977,000  | \$75,000          | \$300,000   | \$375,000       | \$452,663          |
| <b>Total</b>          | \$7,280,000    | \$188,899,585 | \$196,179,585 | \$151,893         | \$7,695,000 | \$7,846,893     | \$1,157,509        |

## Habitat Rehabilitation

| Subcategory                 | FY2019 Financials |            |                 |             |
|-----------------------------|-------------------|------------|-----------------|-------------|
|                             | Carry In          | Allocation | Funds Available | Obligations |
| District Program Management | -                 | -          | -               | \$526,953   |
| <b>Total</b>                | -                 | -          | -               | \$526,953   |

## Regional Program Administration

| Subcategory                       | FY2019 Financials |             |                 |             |
|-----------------------------------|-------------------|-------------|-----------------|-------------|
|                                   | Carry In          | Allocation  | Funds Available | Obligations |
| Adaptive Management               | -                 | \$200,000   | \$200,000       | -           |
| Habitat Eval/Monitoring           | -                 | \$975,000   | \$975,000       | \$171,415   |
| Model Certification/Regional HREP | -                 | \$100,000   | \$100,000       | \$21,725    |
| Public Outreach                   | -                 | \$50,000    | \$50,000        | \$12,067    |
| Regional Program Management       | -                 | \$1,050,000 | \$1,050,000     | \$740,314   |
| Regional Project Sequencing       | -                 | \$450,000   | \$450,000       | \$43,841    |
| <b>Total</b>                      | -                 | \$2,825,000 | \$2,825,000     | \$989,361   |

## Regional Science and Monitoring

| Subcategory                                  | FY2019 Financials |             |                 |             |
|--|-------------------|-------------|-----------------|-------------|
|  | Carry In          | Allocation  | Funds Available | Obligations |
| Long Term Resource Monitoring                | -                 | \$4,920,000 | \$4,920,000     | \$2,001,559 |
| Science in Support of Restoration/Management | -                 | \$3,750,000 | \$3,750,000     | \$3,388,710 |
| <b>Total</b>                                 | -                 | \$8,670,000 | \$8,670,000     | \$5,390,269 |

|                          | Carry In  | Allocation   | Funds Available | Actual Obligations |
|--------------------------|-----------|--------------|-----------------|--------------------|
| <b>Rock Island Total</b> | \$151,893 | \$19,190,000 | \$19,341,893    | \$8,064,092        |

# UMRR Quarterly Budget Report: St. Louis District

FY2019 Q3; Report Date: Mon Aug 05 2019

## Habitat Projects

| Project Name                 | Cost Estimates |               |               | FY2019 Financials |             |                 |                    |
|------------------------------|----------------|---------------|---------------|-------------------|-------------|-----------------|--------------------|
|                              | Non-Federal    | Federal       | Total         | Carry In          | Allocation  | Funds Available | Actual Obligations |
| Clarence Cannon              | -              | \$25,800,000  | \$25,800,000  | \$10,000          | \$4,485,000 | \$4,495,000     | \$912,106          |
| Crains Island                | -              | \$36,562,000  | \$36,562,000  | -                 | \$425,000   | \$425,000       | \$179,820          |
| Harlow Island                | -              | \$37,971,000  | \$37,971,000  | \$13,738          | \$300,000   | \$313,738       | \$87,809           |
| Oakwood Bottoms              | -              | \$29,000,000  | \$29,000,000  | -                 | \$200,000   | \$200,000       | \$289,227          |
| Piasa - Eagle's Nest Islands | -              | \$26,746,000  | \$26,746,000  | -                 | \$370,000   | \$370,000       | \$61,513           |
| Rip Rap Landing              | \$2,848,000    | \$6,464,000   | \$9,312,000   | -                 | \$80,000    | \$80,000        | \$17,641           |
| Ted Shanks                   | -              | \$29,506,000  | \$29,506,000  | -                 | \$450,000   | \$450,000       | \$182,101          |
| <b>Total</b>                 | \$2,848,000    | \$192,049,000 | \$194,897,000 | \$23,738          | \$6,310,000 | \$6,333,738     | \$1,730,217        |

## Habitat Rehabilitation

| Subcategory                 | FY2019 Financials |            |                 |             |
|-----------------------------|-------------------|------------|-----------------|-------------|
|                             | Carry In          | Allocation | Funds Available | Obligations |
| District Program Management | \$33,732          | -          | \$33,732        | \$309,271   |
| <b>Total</b>                | \$33,732          | -          | \$33,732        | \$309,271   |

## Regional Program Administration

| Subcategory             | FY2019 Financials |            |                 |             |
|-------------------------|-------------------|------------|-----------------|-------------|
|                         | Carry In          | Allocation | Funds Available | Obligations |
| Habitat Eval/Monitoring | -                 | -          | -               | \$104,368   |
| <b>Total</b>            | -                 | -          | -               | \$104,368   |

|                        | Carry In | Allocation  | Funds Available | Actual Obligations |
|------------------------|----------|-------------|-----------------|--------------------|
| <b>St. Louis Total</b> | \$57,470 | \$6,310,000 | \$6,367,470     | \$2,143,856        |



# UMRR FIVE YEAR PLAN

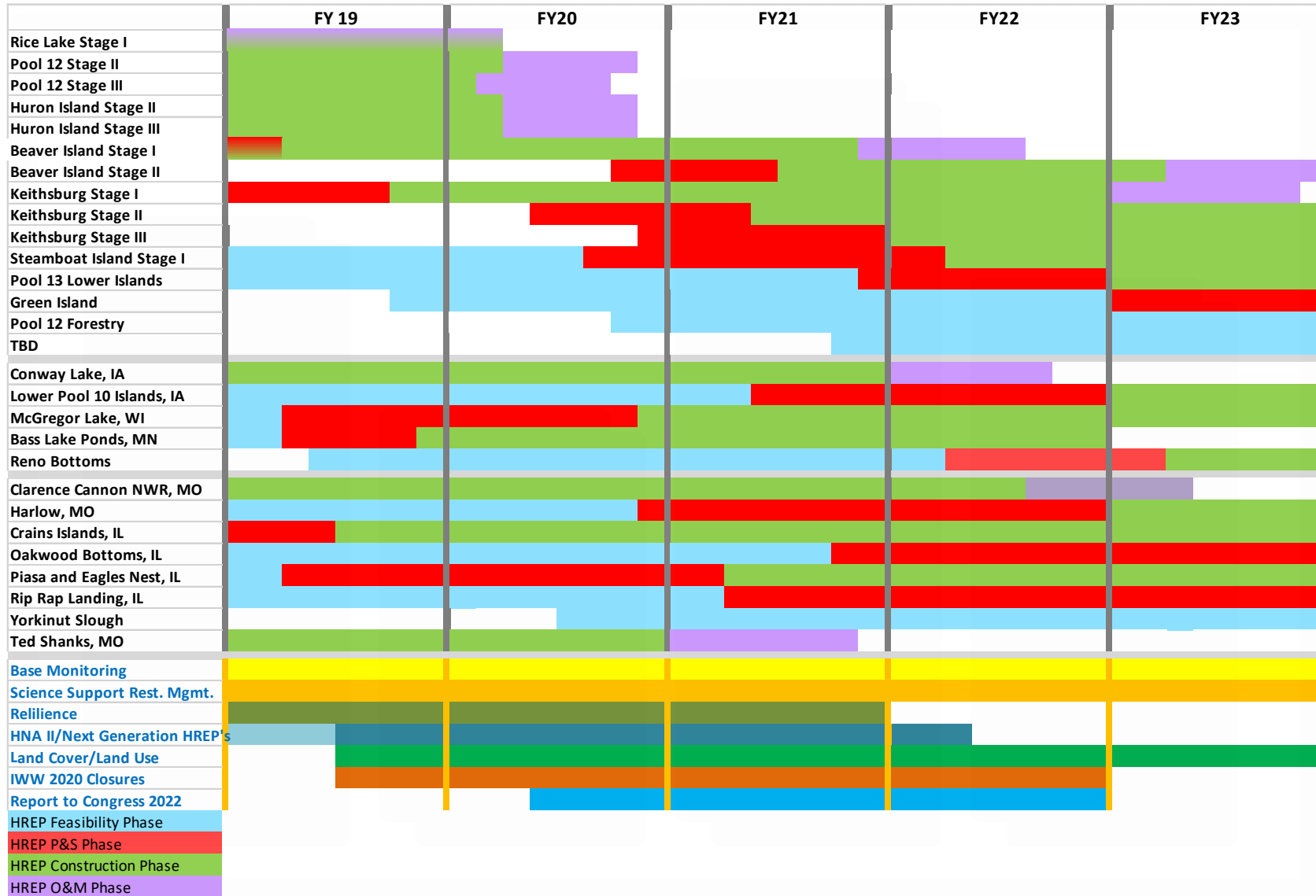


MVR

MVP

MVS

LTRM+



## SIGNIFICANCE OF THE ILLINOIS RIVER BASIN ECOSYSTEM

The benefits of ecosystem restoration and protection projects are difficult to measure in monetary terms. When determining Federal interest, it is important that the significance of the resources being studied for restoration be clearly identified. The Corps of Engineers' *Principles and Guidelines* defines significance in terms of institutional, public, and technical recognition of the resources. For years, the State of Illinois and other agencies have been engaged in activities that clearly demonstrate the institutional, public, and technical recognition of the resources of the Illinois River Basin.

**1. Institutional.** The formal recognition of the Illinois River Basin in laws, adopted plans, and other policy statements of public agencies and private groups illustrates the significance of the basin to a variety of institutions. At the Federal level, the Illinois River's importance as an environmental and economic resource has long been recognized by congressional action and through the activities of several agencies. The U.S. Congress recognized the Illinois River, part of the Upper Mississippi River System (UMRS), as a unique, "...nationally significant ecosystem and a nationally significant commercial navigation system..." in Section 1103 of the Water Resources Development Act of 1986 (WRDA 86). The Upper Mississippi River System - Environmental Management Program (UMRS- EMP) was established in 1986 and has been conducting monitoring and habitat restoration activities along portions of the main stem of the Illinois River. The EMP brings together the expertise of the U.S. Army Corps of Engineers, the U. S. Fish and Wildlife Service (USFWS), the U.S. Geological Survey, and the U.S. Environmental Protection Agency (EPA). Congress reaffirmed the significance of the Upper Mississippi River System by reauthorizing the UMRS-EMP in 1999. The U.S. Department of Agriculture selected the Illinois River Basin as one of the first seven areas in the country for the Conservation Reserve and Enhancement Program (CREP), a program allowing enhanced Federal and State partnership opportunities to implement land conservation practices.

The Midwest Natural Resources Group (MVRG) is an ongoing partnership of 12 Federal Agencies, bringing focus and excellence to Federal activities supporting the vitality and sustainability of natural resources and the environment. On May 10, 2000, the U.S. Departments of Agriculture (USDA), Army, and Interior; the U.S. EPA, Federal Highway Administration, Maritime Administration and the U.S. Coast Guard signed an Intergovernmental Partnership Agreement stating that they shall work, in partnership with State and local governments, non-governmental organizations, private landowners and individuals, to restore and protect the ecological integrity of the Illinois River Basin in a manner consistent with reducing flood damage, protection of private property rights and maintaining an effective navigation system.

The State of Illinois has clearly demonstrated its institutional recognition of the Illinois River Basin as a significant resource. The state has developed, adopted, and begun implementation of the *Integrated Management Plan for the Illinois River Watershed* (1997); enacted the Illinois River Watershed Restoration Act; invested \$51 million to match \$271 million in Federal dollars in implementing the CREP on 110,000 acres with the potential to expand to 232,000 acres; and set the vision for Illinois Rivers 2020, a proposed \$2.5 billion, 20-year Federal and State program to restore the Illinois River Basin.

The *Integrated Management Plan for the Illinois River Watershed* (1997) was the culmination of several years of effort by local and State governments in Illinois to build a consensus-based partnership with citizens and interest groups to address the issues that face the Illinois River Basin. The plan identifies 33 goals addressing restoration, economics, recreation, etc. Conservation groups, environmental groups, industry, and Federal, State, regional and local governments participated in shaping a vision for the future of the basin.

In July 1997, the State of Illinois enacted the Illinois River Watershed Restoration Act. The legislative purposes of the Act are to: (1) create a group of leaders representing agriculture, business, conservation, and the environment to encourage the implementation of efforts to restore the Illinois River Watershed in accordance with the recommendations of the *Integrated Management Plan for the Illinois River Watershed Technical Report*; (2) work with local communities to develop projects and regional strategies; and (3) make recommendations to appropriate State and Federal agencies.

More than \$450 million in Federal and State funding has been targeted to improve the Illinois River through the CREP, which uses State funding to enhance existing USDA Conservation Reserve Program (CRP) activities. The CREP initiative will help preserve up to 232,000 acres of sensitive land surrounding the Illinois River and its tributaries, including upland areas. From 1998 to 2004, 110,000 acres were enrolled in Federal CRP easements and 73,000 acres in state CREP easements. While most state assets were acquired on lands enrolled in the Federal program, the State also acquired State-only easements on numerous adjacent areas and now holds roughly 28,000 acres in these State-only easements. In August 2005, the State of Illinois announced that its budget for the upcoming year included \$10 million to leverage \$40 million in Federal funds allowing for CREP easements on approximately 15,000 more acres.

In 2000, the Governor of Illinois set the vision for the Illinois Rivers 2020, a proposed \$2.5 billion restoration effort. Illinois Rivers 2020 seeks to bring together the efforts of the Illinois Department of Natural Resources (DNR), Illinois Department of Agriculture, and Illinois EPA with Federal agencies. It is a voluntary, incentive-based approach that is much broader and more inclusive for the entire Illinois River and its tributaries than previous efforts. The support for implementation of Illinois Rivers 2020 is very broad, including hundreds of individuals, elected officials, organizations, and businesses that officially support this effort.

In addition to Federal and State recognition, local communities, counties, and non-governmental organizations have also focused attention on the Illinois River Basin. More than 35 management plans have been developed that call for restoration of all or a portion of the Illinois River Basin. Many communities and groups have begun implementation of restoration projects. Both The Nature Conservancy and The Wetlands Initiative have made major investments by purchasing levee and drainage districts for the purpose of restoration. In total, they have recently acquired more than 11,000 acres of Illinois River floodplain and adjacent habitats. This is in addition to the 135,000 acres in State and Federal ownership within the Illinois River Basin.

Another example of the institutional significance is the Tenth Biennial Governor's Conference on the Management of the Illinois River System was held from October 4<sup>th</sup> through the 6, 2005, in Peoria, Illinois. The conference focused on a systems approach to river management. Over 250 individuals from Federal, State, and local governments, as well as private citizens, attended the conference. The diversity of the groups attending demonstrates the importance of the Illinois River Basin to not only policy makers, but to the public as well.

**2. Public.** The Illinois River Basin is significant based on wide public recognition of the environmental resources present in the basin. The basin is noteworthy in that, while encompassing approximately 44 percent of the land area of the State, it includes nearly 90 percent of Illinois' population approximately 11 million people. Some level of significance of the Illinois River Basin to the public is measured through the actions of elected officials and policy makers who have forwarded legislation and enacted laws mentioned above to protect and enhance the watershed.

A further recognition of the value of the basin is the amount of participation by landowners in conservation programs. Approximately 138,000 acres of land have been enrolled in the Federal and

*Final*

State CREP and CRP programs. Each year, more Illinois landowners apply for the CREP program than are accepted. This demonstrates a willingness on the part of the landowners to set aside farmland to aid in the conservation of the Illinois River Basin.

Another example of public recognition is the participation by individuals and organizations in the State of Illinois' Conservation 2000 (C2000) program, which provides funding for streambank stabilization, wetland restoration, prairie restoration, riparian buffers, vegetative covers on construction sites, and restoration of oxbows in tributaries of the Illinois River. As of 2005, \$61 million had been invested in all C2000 ecosystem projects. Although the program does not require matching, 52 percent of the program's overall value came from citizens and groups that invested additional money, land, and time to see projects completed. The strong public interest in restoration has resulted in State dollars consistently being matched or exceeded.

Recreation in the Illinois River Basin includes water-dependent activities such as fishing, waterfowl hunting, boating, and swimming. Recreation also includes activities that are enhanced by the proximity to water, such as hiking, picnicking, bird watching, and camping. These types of recreation are provided by local, State, and Federal agencies such as park districts, forest preserve districts, the DNRs, and the USFWS. Many private concerns also provide similar recreation opportunities. The Illinois DNR owns or leases hundreds of outdoor recreation sites throughout the State including: State parks, conservation areas, nature preserves, natural areas, fish and wildlife areas, greenways, trails, and forests. The average annual attendance over the last 5 years at these sites was estimated to be over 42 million. This translates to about \$500 million a year spent on trips to State parks and other recreational sites, leading to \$790 million in economic output, 8,500 jobs, and \$240.5 million in earnings. According to the 2001 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, outdoor recreation activities contribute significantly to Illinois' economy—more than \$4 billion in economic output, 42,000 jobs, and \$315 million in State and local taxes.

The Illinois River Basin contains some of the most productive agricultural soils in the world. These soils, combined with favorable climate, excellent transportation via water, highway and rail, and highly productive farming systems, make the Illinois River Basin a world leader in agriculture and a major exporter of agricultural products, producing more crops than 40 other states. In 2000, the farms in the basin produced approximately \$2.6 billion in crops, 50 percent of the Illinois State total (Illinois Agricultural Statistics Service, <http://www.agstats.state.il.us/>). The basin also produced more than \$600 million in livestock.

**3. Technical.** Numerous scientific analyses and long-term evaluations of the Illinois River Basin have documented its significant ecological resources. Since the early 20<sup>th</sup> century, researchers, government agencies, and private groups have studied the large river floodplain system and proposed ecosystem restoration in the Illinois River Basin. A few examples of the efforts to identify, quantify, and understand the ecological significance of the basin are described in the following text.

In a 1995 report, the U.S. Department of the Interior (DOI) listed large streams and rivers as endangered ecosystems in the United States. The U.S. DOI documented an 85 to 98 percent decline in this ecosystem type since European settlement. In particular, large floodplain-river ecosystems, , have become increasingly rare worldwide. Two of the large floodplain-river ecosystems lie within the UMRS, namely, the Upper Mississippi and Illinois Rivers. These two ecosystems still retain seasonal flood pulses, and more than half of their original floodplains remain unveeved and open to the rivers (Sparks et al. 1998). The UMRS is one of the few areas in the developed world where ecosystem restoration can be implemented on large floodplain-river ecosystems (Sparks 1995).

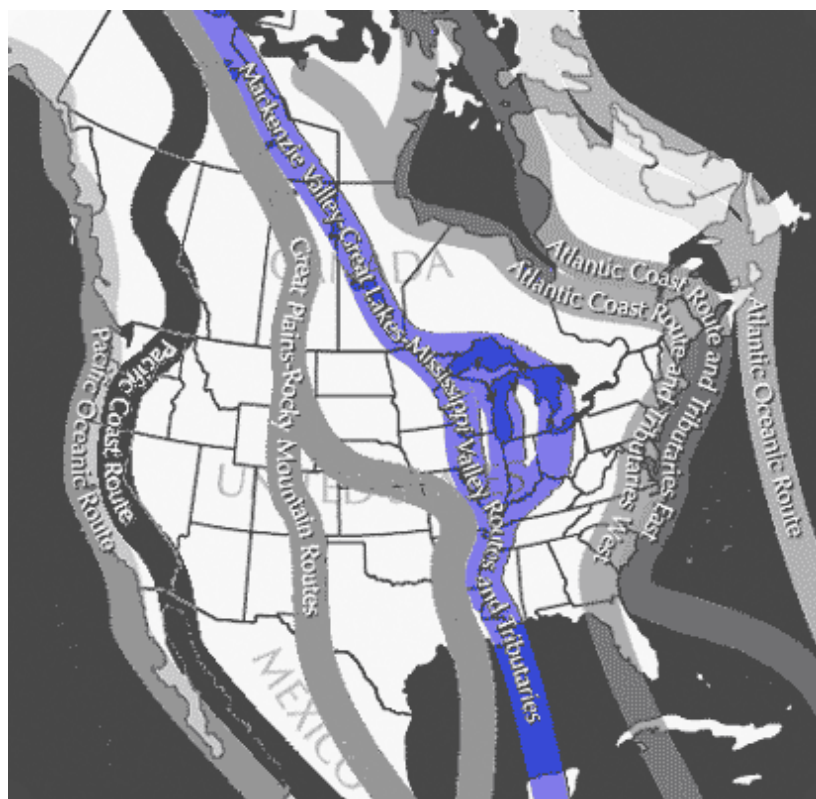
The Nature Conservancy (TNC) has developed basin-level planning documents to guide restoration efforts. In these documents, the TNC states, "The Illinois River remains one of a handful of world- class

floodplain-river ecosystems. These include the Nile, Amazon, the Mekong and portions of the Mississippi, where biological productivity is enhanced by annual flood pulses that advance and retreat over the floodplain and temporarily expand backwaters and floodplain lakes.” (TNC 1998)

The UMRS-EMP conducted a Habitat Needs Assessment (HNA) in 2000 to help guide future habitat projects on the UMRS. The HNA highlighted the need to restore depth to 25 percent of the existing backwaters on the Illinois River, increase depth diversity and connectivity, and restore hydrologic conditions needed to restore and maintain backwater habitats.

The Illinois River has historically hosted a vast fishery, including numerous ancient fishes, and, at the turn of the century, produced 10 percent of the nation’s catch of freshwater fish (yielding 178 pounds per acre in 1908). The Illinois River and its tributaries are currently home to over 100 species of fish. Side channels and backwaters serve as nurseries and spawning areas. Sport fish at home in the Illinois include: white bass, largemouth bass, bluegill, black crappie, channel catfish, carp, buffalo, bullhead, walleye, sauger, and many other warm-water species. Game fish in the upper river include largemouth bass, black bullheads and white bass, especially around Starved Rock State Park in Utica, IL. The middle river has historically been the most productive because of the aquatic habitat in the backwater lakes and wetlands along its banks. The lower river, from Beardstown to Grafton, features approximately the same mix of fish species as the middle river, but populations are smaller.

The Illinois River is a major component of the internationally significant Mississippi River Flyway, a route followed by migratory waterfowl between Canada and the Gulf Coast. The Mississippi River Flyway, shown on figure 2-2 as the Mackenzie Valley-Great Lakes-Mississippi Valley Rivers and Tributaries, is utilized by 40 percent of all North American waterfowl and 326 total bird species, representing 60 percent of all species in North America. A survey conducted by the Illinois Natural History Survey in the fall of 1994 found that 81 percent of the fall waterfowl migration in the Mississippi Flyway utilized the Illinois River. Approximately 20 species of waterfowl, primarily



**Figure 2-2.** North American Flyways



ducks and geese, make their home in the Illinois River Basin. Hundreds of thousands of birds migrate along the Illinois River each year, resting temporarily in the wetlands, sloughs, and backwater lakes in the basin.

The Illinois River has also been historically important to a multitude of avian species. The backwaters of the Illinois River serve as habitat for 20 to 30 species of shorebirds, 15 species of gulls and terns, and several species of marsh birds. The cottonwoods and black willows along the middle and lower river and its wetlands are host to various types of herons, egrets, plovers, sandpipers, and other migrating wading shorebirds, as well as gulls and terns. Wading shorebirds represent the farthest ranging visitors to the Illinois River Valley, traveling annually between the Arctic and South America, specifically Chile and Argentina. The river valley is a major wintering ground for the endangered bald eagle. In recent years, as many as 375 bald eagles have been counted annually, which represents about 3 percent of the total wintering population of bald eagles in the lower 48 states.

Over 4.26 million acres of Illinois land is in forest. Much of it is located adjacent to the Illinois River and its tributaries. Forest product utilization and management is important to the Illinois economy and environment. Forested riparian areas adjacent to the Illinois River and its tributaries provide a necessary buffer for surface water drainage and serve as the transition zone between land and water. Water quality benefits associated with the riparian forest are critical to the well-being of the tributary watershed. Many aquatic and terrestrial wildlife species utilize and depend upon the riparian forest found in the Illinois River Valley.

The Illinois River also serves as one of the sources for the public water supply system serving Peoria, which uses three well fields. The cities of Aurora, Elgin, Kankakee, Pontiac, Streator, Decatur, Taylorville, Springfield, Jacksonville, and Canton use water from tributaries of the Illinois River. Numerous industrial and utility providers also utilize Illinois River Basin waters for cooling purposes.

The Illinois River is a major conduit for the transport of treated wastewater throughout Illinois. It is estimated that 2,109 outfalls are currently located in the Illinois River Basin. Illinois has taken significant steps to obtain compliance for effluent limitations by dischargers in the basin. From the municipal facility perspective, approximately \$5.6 billion has been expended for treatment facility construction in the Illinois River Basin alone. It can be safely estimated that several hundred million dollars have also been expended by industrial dischargers. Although the Illinois River ranks among Illinois' top recreational resources, at one time it was a primary channel for the transport of human, animal, industrial, and agricultural waste.

Archaeological and historical sites and fossil localities are found throughout the basin. Archaeological sites—localities once occupied by prehistoric or historic peoples—have been documented along the river shoreline, on the floodplain, and in valley margin and upland settings. Camps and villages established near the river by Native Americans are buried in river-deposited sediment. Major villages were often established along the river valley margin. Over the millennia, sediments eroding from nearby bluffs slowly accumulated. Preserved in these deposits, separated by lenses of sediment, are the remains of village sites representing centuries of cultural development.

## **Exhibit 2-2. Questions to Assist in Identifying Potentially Significant Resources in Internal Scoping Meetings**

- What is (are) the environmental resource(s) related to the restoration problem or opportunity?
- Why is it important to protect or restore that resource?
- What is special about the resource that makes it not only important to us individually but also to us as a society?
- Is the resource considered threatened or endangered?
- Is the resource listed or proposed for listing on a protected list (Federal or state)?
- Has the resource received any national or international designations (e.g., Wetland of International Importance)?
- Does the resource contribute to the enhancement of a larger system (e.g., watershed, ecosystem, or landscape) or other species?
- Are there existing laws or regulations (local, state, regional, or Federal) that serve to protect a particular type of habitat or species?
- How does the local government view the resource?
- How does the state government view the resource?
- How do various interest groups (e.g., environmental organizations, recreation user groups, and fish and wildlife groups) view the resource?
- Have state or local governments spent money in the past to protect or restore the resource?
- Have any interest groups spent money (directly or in cooperation with government agencies through contributions or cost sharing) to protect or restore the resource?
- Do neighboring states or local governments have similar priorities with respect to the resource?
- Is there a nationally recognized effort to protect or restore the resource (e.g., the Upper Mississippi River System Environmental Management Program)?
- Are there existing or planned efforts among national nonprofit organizations (e.g., The Nature Conservancy and the National Audubon Society) to protect or restore the resource or similar resources?

Exhibit 5-1 presents a checklist to assist the interdisciplinary planning team in evaluating whether they have prepared an effective significance statement. An effective significance statement is one that convincingly answers the question: Why are the resources associated with the proposed project significant enough for this project to receive Federal funding? The significance statement should help justify Federal involvement in a restoration project by bringing value information to the “is it worth it” question.

### Exhibit 5-1. Checklist to Evaluate Effectiveness of Significance Statements

**Is this a "winning" significance statement?**



Does it convincingly answer the question: Why are the resources associated with the proposed project significant enough for this project to receive Federal funding?

Does it focus on the most significant resources associated with the study area for the proposed project?

Does it clearly establish a Federal interest in the proposed project?

Does it demonstrate significance from a national or regional perspective?

Does it support national or regional significance with other information about significance at the state and local levels?

Does it adequately address statements for the three different types of significance (institutional, public, and technical) and clearly explain the sources of significance for each type?

Does it clearly establish a link between significance and prioritization of environmental resources and Corps policy and planning considerations?

Does it clearly explain the components of the proposed project that are relevant to the significant environmental resources?

Is it concise and well organized?

**Joint Meeting of the  
UMRR Coordinating Committee  
and the UMRR Communications Team**

**February 27, 2019 — Bloomington, Minnesota**

**2015-2025 UMRR Strategic Plan**

Kirsten Wallace reviewed Goal 3 of the 2015-2025 UMRR Strategic Plan for the purposes of providing context to the UMRR Communications Team regarding the plan's objectives and strategies. Wallace explained how Goal 3 evolved from an initial SWOT analysis to a PAIR analysis – i.e., identification of desired products, actions, issues, and results. In addition, she provided a more detailed overview of the associated operational plan and the specific actions and roles and responsibilities.

Wallace explained that the strategic planning team focused on how investment in external communications (i.e., outside of the program's implementing partnership) would ultimately advance the new vision for the Upper Mississippi River and mission for the program. [Note: the vision is for a healthier and more resilient river ecosystem.] This led the planning team to deemphasize its focus on the general public and to increase its focus on those individuals and organizations having influence in that vision, whether positive or negative. For example, are there organizations in the watershed and floodplain affecting hydrology or sediment or water quality? The team concluded that outreach to those individuals and groups should be targeted based on level of influence and ability to change the top primary drivers affecting the ecosystem. The team did not name those drivers, but recognized that the ecosystem resilience and HNA-II results could inform that prioritization. The action-oriented operational planning team considered a range of potential actions and ultimately agreed that a communications plan would be needed given that this goal represented a new area of work and way of thinking for the program.

*Other Observations and Reflections*

**Collaboration in Project Development** – Jim Fischer emphasized the strategic planning team's desire to align UMRR's priorities with agencies or groups that have authorities outside the purview of UMRR. For example, linking HREP projects to NRCS's priority watersheds for reducing nutrient and sediment runoff. Marty Adkins said this would require establishing more regular communication between UMRR and NRCS. Gretchen Benjamin agreed, and added that the intent is to maximize ROI by leveraging other authorities and funding opportunities. Adkins suggested that the Corps convene NRCS and the respective state agency and/or other project sponsors during a project's planning phase to discuss potential opportunities for collaboration. In response to a suggestion by Andrew Stephenson, Marshall Plumley agreed that the Green Island HREP might provide a helpful case study. Benjamin cited larger ecosystem restoration programs that are collaborative and consider factors in the upstream watershed. She added that TNC could help make connections.

**Audience** – Angie Freyermuth highlighted the importance of identifying audiences for various messaging efforts. Sam Heilig said that public education/communication efforts raise awareness of issues and efforts but do not typically result in action, and suggested a targeted outreach approach to specific "change makers" to address a specific issue(s). Neal Jackson asked who is ultimately responsible for implementing communications goals – i.e., UMRR as a program, individual Coordinating Committee members, others. Adkins said he envisions communications channels occurring at three different levels of engagement: the public, the practitioners, and leadership. Wallace explained her view that the

responsible party is program and agency leadership, who will create the desired environment for ongoing communications occurring at practitioner- and public-levels.

Adkins asked whether other UMR states have an intrastate water-related convening entity similar to the Iowa Water Resources Coordinating Council, suggesting that it serve as a potential forum for UMRR collaboration within the states. State UMRR Coordinating Committee members pointed to various intrastate agency technical committees that may serve in that capacity.

Karen Hagerty suggested engaging UMRBA's Water Quality Executive Committee (WQEC) or Task Force (WQTF) given that they often discuss relevant information to UMRR. Fischer agreed the WQEC might be a good collaborator with UMRR, but stressed the need to identify what the "ask" is of this group before approaching them. For example, topics of interest to the WQEC and UMRR may include identifying gaps in monitoring along tributaries. UMRR may be interested in seeking information for, and potentially providing expertise to, UMRBA's proposed UMR Water Quality Improvement Act.

### **Communications Pilot Project**

To inform priorities re UMRR's communications efforts based on ecosystem challenges, Jeff Houser presented on the insights from the ecological resilience conceptual models and the HNA-II. Houser observed that all of the District-based river teams prioritized the top four indicators from HNA-II to be aquatic functional classes, aquatic vegetation diversity, floodplain functional class diversity, and floodplain vegetation diversity, and explained the respective drivers affecting their condition. Sam Heilig suggested creating one-pagers for the website that explain how UMRR has worked to address each issue over the last 32 years. Houser said some of the major drivers in the system were discharge, sediment, and invasive species.

Following discussion, the UMRR Coordinating Committee and Communications Team agreed to develop a communications strategy focusing on total suspended solids (TSS) in the Illinois Waterway in the HNA-II Lower Illinois Reach. Participants identified Illinois Farm Bureau, Illinois EPA, and NRCS as initial targeted audiences. Plumley suggested identifying the key messages that would be compelling for each targeted audience, including the benefit that UMRR can offer. For example, UMRR could release a statement of support for an organization's activities that help decrease runoff and sediment loading to the rivers or offer UMRR monitoring data relevant to their priorities/work.

The second location for consideration of a targeted communications effort is for Pool 3, given ongoing work to reduce sediment and nutrient loading from the Minnesota River. Glenn Skuta and David Wall of the Minnesota Pollution Control Agency were identified as initial points of contact.

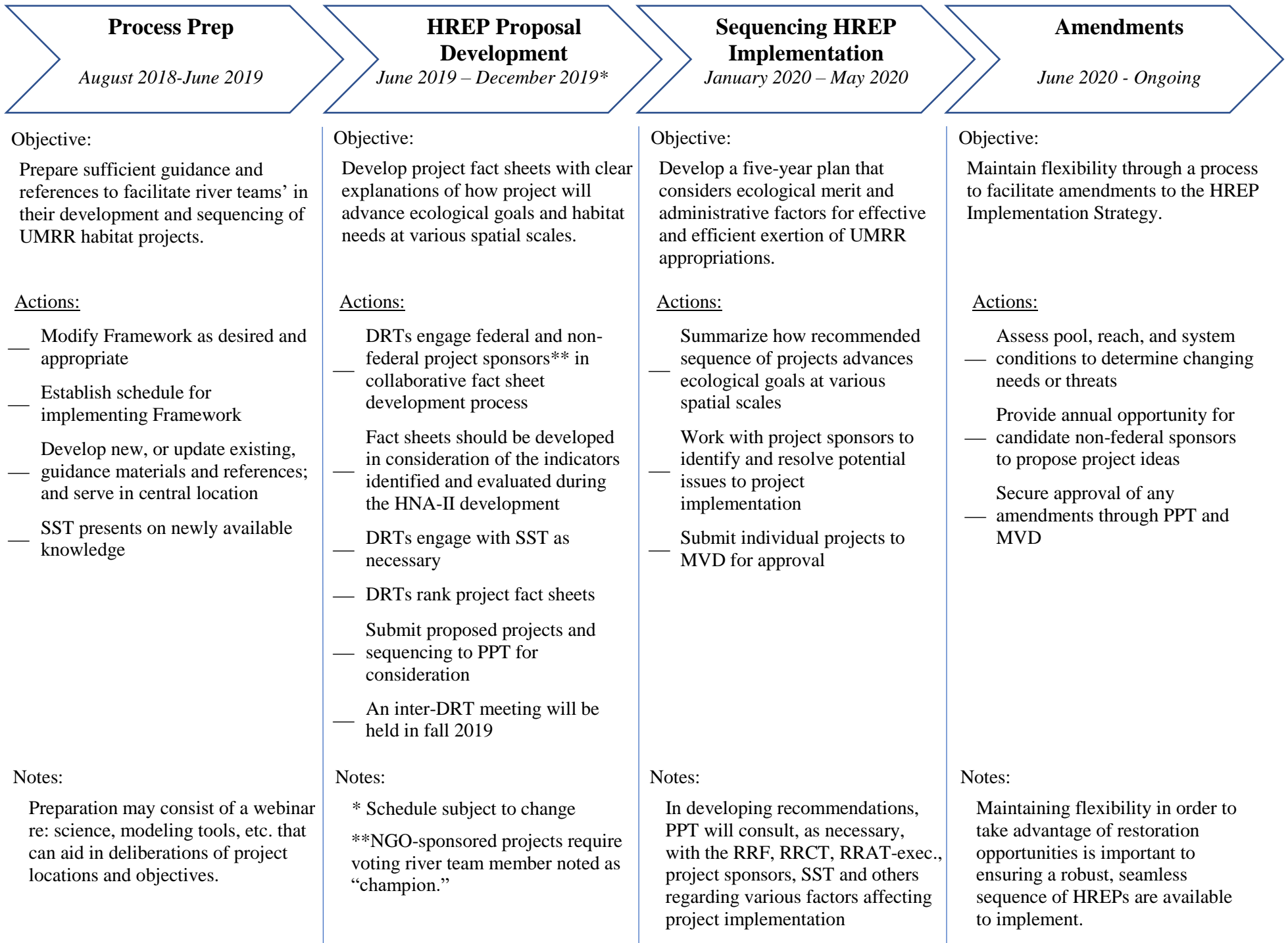
### **Attendance List**

|                   |               |                  |       |
|-------------------|---------------|------------------|-------|
| Mike McClelland   | Illinois DNR  | Marshall Plumley | USACE |
| Randy Schultz     | Iowa DNR      | Jasen Brown      | USACE |
| Megan Moore       | Minnesota DNR | Angie Freyermuth | USACE |
| Matt Vitello      | Missouri DoC  | Karen Hagerty    | USACE |
| Jim Fischer       | Wisconsin DNR | Sam Heilig       | USACE |
| Marty Adkins      | NRCS          | Brian Markert    | USACE |
| Gretchen Benjamin | TNC           | Erica Stephens   | USACE |
| Kirsten Wallace   | UMRBA         | Sabrina Chandler | USFWS |
| Andrew Stephenson | UMRBA         | Jeff Houser      | USGS  |
|                   |               | Jennie Sauer     | USGS  |

## **ATTACHMENT C**

### **Long Term Resource Monitoring and Science**

- **UMRR HREP Selection Process Diagram & Schedule** (C-1)
- **Base Monitoring Scope of Work thru 3rd Quarter of FY 2019 (8/1/2019)** (C-2 to C-5)
- **FY 2019 UMRR Science Activities in Support of Restoration and Management (8/1/2019)** (C-6 to C-16)
- **FY 2017 UMRR Science Activities in Support of Restoration and Management (7/25/2019)** (C-17)
- **FY 2014 and FY 2015 UMRR Science Activities in Support of Restoration and Management (7/25/2019)** (C-18)



Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
FY2019 Base Scope of Work

| Tracking number   | Milestone   | Original Target Date | Modified Target Date | Date Completed | Comments                                      | Lead  |
|---|---|----------------------|----------------------|----------------|---|---|
| <b>Aquatic Vegetation Component</b>   |   |                      |                      |                |   |   |
| 2019A1  | Complete data entry and QA/QC of 2018 data; 1250 observations.  |                      |                      |                |   |   |
|   | a. Data entry completed and submission of data to USGS  | 30-Nov-18            |                      | 30-Nov-18      |   | Lund, Drake, Bales  |
|   | b. Data loaded on level 2 browsers  | 15-Dec-18            |                      | 15-Dec-18      |   | Schlifer  |
|   | c. QA/QC scripts run and data corrections sent to Field Stations  | 28-Dec-18            |                      | 28-Dec-18      |   | Sauer, Schlifer   |
|   | d. Field Station QA/QC with corrections to USGS   | 15-Jan-19            |                      | 15-Jan-19      |   | Lund, Drake, Bales  |
|   | e. Corrections made and data moved to public Web Browser  | 30-Jan-19            |                      | 30-Jan-19      |   | TBD, Sauer, Schlifer, Caucutt   |
| 2018A2  | Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2017 data  | 31-Jul-18            |                      |                | Programming code being checked and re-written | TBD, Rogala, Schlifer   |
| 2019A2  | Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2018 data  | 31-Jul-19            |                      |                |   | TBD, Rogala, Schlifer   |
| 2019A3  | Wisconsin DNR annual summary report 2018 that combines current year observations from LTRM with previous years' data, for the fish, aquatic vegetation, and water quality components. | 30-Sep-19            |                      |                |   | Drake, Bartels, Hoff, Kalas   |
| 2019A4  | Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1)   | 31-Aug-19            |                      |                |   | TBD, Lund, Drake, Bales   |
| 2019A5  | Pool 4: Graphical summary and maps of aquatic vegetation current status and long-term trends.   | 30 Dec. 2019         |                      |                |   | Lund  |
| 2019A6  | Pool 8: Graphical summary and maps of aquatic vegetation current status and long-term trends.   | 30 Dec. 2019         |                      |                |   | Drake, Carhart  |
| <b>Intended for distribution</b>  |   |                      |                      |                |   |   |
| Manuscript: Have the recent increases in aquatic vegetation in Pools 5 and 8 been the result of water level management drawdowns, HREPs, or natural fluctuations? (2009APE1a; Yin) (in USGS review) (With Sauer for revision) |   |                      |                      |                |   |   |
| Manuscript: A statistical model of species occupancy using the LTRM aquatic vegetation data (2013A7; Yin) (in USGS review) (With Sauer for revision)  |   |                      |                      |                |   |   |
| <b>Fisheries Component</b>  |   |                      |                      |                |   |   |
| 2019B1  | Complete data entry, QA/QC of 2018 fish data; ~1,590 observations   | 30-Nov-18            |                      | 30-Nov-18      |   |   |
|   | a. Data entry completed and submission of data to USGS  | 15-Dec-18            |                      | 15-Dec-18      |   | DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson                         |
|   | b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations   | 28-Dec-18            |                      | 28-Dec-18      |   | Ickes, Schlifer   |
|   | c. Field Station QA/QC with corrections to USGS   | 15-Jan-19            |                      | 30-Jan-19      |   | DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson                         |
|   | d. Corrections made and data moved to public Web Browser  | 30-Jan-19            |                      | 7-Mar-19       |   | Ickes, Sauer, and Schlifer  |
| 2019B2  | Update Graphical Browser with 2018 data on Public Web Server.   | 31-May-19            |                      | 7-Mar-19       |   | Ickes, Sauer, and Schlifer  |
| 2019B3  | Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1)  | 31-Oct-19            |                      |                |   | Ickes, Sauer, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Maxson, Schlifer |
| 2019B4  | Summary Letter: Floodplain fisheries sampling   | 31-Oct-19            |                      |                |   | West  |
| 2019B5  | IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2018  | 30-Jun-19            |                      | 30-May-19      |   | Bowler  |
| 2019B6  | Sample collection, database increment on Asian carp age and growth: collection of cleithral bones   | 31-Jan-19            |                      | 31-Jan-19      |   | Solomon, Maxson   |



Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
FY2019 Base Scope of Work

| Tracking number   | Milestone   | Original Target Date | Modified Target Date | Date Completed | Comments | Lead  |
|---|---|----------------------|----------------------|----------------|----------|---|
| 2019B8(D)   | Database increment: Stratified random day electrofishing samples collected in Pools 9–11  | 30-Sep-19            |                      |                |          | Bowler  |
| 2019B9(D)   | Database increment: Stratified random day electrofishing samples collected in Pools 16–18   | 30-Sep-19            |                      |                |          | Bowler  |
| 2019B10   | Database increment and Summary letter: Evaluating the Fish Community in a rare Backwater Habitat in the Middle Mississippi River 2019 | 30 Dec. 2019         |                      |                |          | West  |
| On-Going  |   |                      |                      |                |          |   |
| 2018B10   | Summary Letter: Open River Chevron Dike monitoring  | 31-Oct-18            |                      | 21-Dec-18      |          | West  |
| 2018B11   | Summary letter: Evaluating the Fish Community in a rare Backwater Habitat in the Middle Mississippi River 2017                        | 31-Oct-18            |                      | 21-Dec-18      |          | West  |
| Intended for distribution   |   |                      |                      |                |          |   |
| Completion report: LTRM Fisheries Component collection of six darter species from 1989–2004. (2006B13; Ridings) (in USGS review)  |   |                      |                      |                |          |   |
| LTRM Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) (in USGS review)   |   |                      |                      |                |          |   |
| LTRM Fact Sheet: Tree map tool for visualizing fish data, with example of native versus non-native fish biomass (2013B16) (Programming code for TreeMap being re-written; once completed Fact Sheet will be edited) |   |                      |                      |                |          |   |
| <b>Water Quality Component</b>  |   |                      |                      |                |          |   |
| 2019D1  | Complete calendar year 2018 fixed-site and SRS water quality sampling   | 31-Dec-18            |                      | 31-Dec-18      |          | Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni         |
| 2019D2  | Complete laboratory sample analysis of 2018 fixed site and SRS data; Laboratory data loaded to Oracle data base.                      | 15-Mar-19            |                      | 15-Mar-19      |          | Yuan, Schlifer  |
| 2019D3  | 1st Quarter of laboratory sample analysis (~12,600)   | 30-Dec-19            |                      |                |          | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni            |
| 2019D4  | 2nd Quarter of laboratory sample analysis (~12,600)   | 30-Mar-19            |                      | 30-Mar-19      |          | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni      |
| 2019D5  | 3rd Quarter of laboratory sample analysis (~12,600)   | 29-Jun-19            |                      | 29-Jun-19      |          | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni      |
| 2019D6  | 4th Quarter of laboratory sample analysis (~12,600)   | 28-Sep-19            |                      |                |          | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni      |
| 2018D7  | Complete QA/QC of calendar year 2018 fixed-site and SRS data.   |                      |                      |                |          |   |
|   | a. Data loaded on level 2 browsers; QA/QC scripts run; SAS QA/QC programs updated and sent to Field Stations with data.               | 30-Mar-19            |                      | 30-Mar-19      |          | Schlifer, Rogala, Jankowski   |
|   | b. Field Station QA/QC; USGS QA/QC.   | 15-Apr-19            |                      | 15-Apr-19      |          | Jankowski, Rogala, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
|   | c. Corrections made and data moved to public Web Browser  | 30-Apr-19            |                      | 30-Apr-19      |          | Rogala, Schlifer, Jankowski   |
| 2018D8  | Complete FY2019 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool                              | 30-Sep-19            |                      |                |          | Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni         |
| 2018D9  | WEB-based annual Water Quality Component Update w/ 2018 data on Server.   | 30-May-19            |                      | 30-May-19      |          | Rogala  |

Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
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| Tracking number  | Milestone  | Original Target Date  | Modified Target Date | Date Completed | Comments                          | Lead  |
|--|--|---|----------------------|----------------|-----------------------------------|---|
| 2019D10  | Operational Support to the UMRR LTRM Element. Serve as in-house Field Station for USGS for consultation and support on various LTRM-wide topics                                      | 30-Sep-19   |                      |                |                                   | Kalas, Hoff, Bartel, Drake                            |
| 2019D11  | Summary letter: Assessment of Phytoplankton Samples collected by the Upper Mississippi River Restoration Program-Long Term Resource Monitoring Water Quality Component               | 30-Sep-19   |                      |                |                                   | Fulgoni and Jankowski                                 |
| 2019D12  | Draft LTRM Completion Report: Assessment of Phytoplankton Samples collected by the Upper Mississippi River Restoration Program-Long Term Resource Monitoring Water Quality Component | 30-Aug-20   |                      |                |                                   | Fulgoni and Jankowski                                 |
| On-Going   |  |   |                      |                |                                   |   |
| 2017D10  | Final LTRM Completion report: Evaluation of water quality data from automated sampling platforms   | 30-Sep-17   | 30-Sep-19            |                | Draft with Team Leader for review | Soeken-Gittinger, Lubinski, Chick, Houser             |
| Intended for distribution  |  |   |                      |                |                                   |   |
| Completion report: Examining nitrogen and phosphorus ratios N:P in the unimpounded portion of the Upper Mississippi River (2006D9; Hrabik & Crites) (in USGS review)                                       |  |   |                      |                |                                   |   |
| Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (in USGS review)   |  |   |                      |                |                                   |   |
| Manuscript: Nutrients and dissolved oxygen in the UMRS: improving our understanding of winter conditions and their implications for structure and function of the river (2014D12; Houser) (in USGS review) |  |   |                      |                |                                   |   |
| Land Cover/Land Use with GIS Support   |  |   |                      |                |                                   |   |
| 2019LC1  | Maintenance ArcGIS server  | 30-Sep-19   |                      |                |                                   | Hlavacek, Fox, Rohweder                               |
| 2019LC2  | Aerial Photo scanning (ILR)  | 30-Sep-19   |                      |                |                                   | Hlavacek  |
| 2019LC3  | Updates on progress for land cover products listed.  | New progress reported in the quarterly activities. Percent complete updated 30 Sept 2019. |                      |                |                                   | Robinson  |
| Data Management  |  |   |                      |                |                                   |   |
| 2019M1   | Update vegetation, fisheries, and water quality component field data entry and correction applications.  | 30-May-19   |                      | 30-May-19      |                                   | Schlifer  |
| 2019M2   | Load 2018 component sampling data into Database tables and make data available on Level 2 browsers for field stations to QA/QC.  | 30-Jun-19   |                      | 30-Jun-19      |                                   | Schlifer  |
| 2019M3   | Assist LTRM Staff with development and review of metadata and databases in conjunction with publishing of reports and manuscripts  | On-going  |                      |                |                                   | Schlifer  |
| Status and Trends 3rd edition  |  |   |                      |                |                                   |   |
| 2019ST1  | Initial draft outline of Third Status and Trends   | 31-Jul-19   |                      | 31-Jul-19      |                                   | Houser, Hagerty, Jankowski, Ickes, (others as needed) |
| 2019ST2  | Draft outline of Third Status and Trends   | 30-Sep-19   |                      |                |                                   | Houser, Hagerty, Jankowski, Ickes, (others as needed) |
| Quarterly Activities   |  |   |                      |                |                                   |   |
| 2019QR1  | Submittal of quarterly activities  | 30-Jan-19   |                      | 30-Jan-19      |                                   | All LTRM staff  |
| 2019QR2  | Submittal of quarterly activities  | 13-Apr-19   |                      | 13-Apr-19      |                                   | All LTRM staff  |
| 2019QR3  | Submittal of quarterly activities  | 13-Jul-19   |                      |                |                                   | All LTRM staff  |
| 2019QR4  | Submittal of quarterly activities  | 12-Oct-19   |                      |                |                                   | All LTRM staff  |

Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
FY2019 Base Scope of Work

| Tracking number            | Milestone                       | Original Target Date | Modified Target Date | Date Completed | Comments | Lead                 |
|----------------------------|---------------------------------|----------------------|----------------------|----------------|----------|----------------------|
| <b>Equipment Inventory</b> |                                 |                      |                      |                |          |                      |
| 2019ER1                    | Property inventory and tracking | 15-Nov-19            |                      |                |          | LTRM staff as needed |

Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
FY2019 Science in Support of Restoration and Management Scope of Work

| Tracking number   | Milestone   | Original Target Date | Modified Target Date | Date Completed   | Comments  | Lead  |
|---|---|----------------------|----------------------|--|---|---|
| <b>Developing and Applying Indicators of Ecosystem Resilience to the UMRS</b>   |   |                      |                      |  |   |   |
| 2019R1  | Updates provided at quarterly UMRR CC meeting and A team meeting  | Various              |                      |  |   | Bouska, Houser  |
| 2019R2  | Submit research framework for specified resilience to the Resilience Working Group  | 30-Mar-19            |                      | 15-Mar-19  |   | Bouska, Houser  |
| 2019R3  | Submit alternative regimes manuscript for peer-review publication   | 30-Mar-19            |                      | 15-Mar-19  |   | Bouska  |
| 2019R4  | Submit draft manuscript of specified resilience analysis to RWG   | 30-Sep-19            |                      |  |   | Bouska  |
| <b>Intended for Distribution</b>  |   |                      |                      |  |   |   |
| Manuscript: Bouska, K. L., J. Houser, N De Jager, M. Van Appledorn, and J. Rogala. 2019. Applying principles of general resilience to large river ecosystems: case study from the Upper Mississippi and Illinois River. <b>Completed, Ecological Indicators, V. 101: 1094-1110. <a href="https://doi.org/10.1016/j.ecolind.2019.02.002">https://doi.org/10.1016/j.ecolind.2019.02.002</a></b> |   |                      |                      |  |   |   |
| <b>Modelling and mapping current and projected future habitats of the Upper Mississippi River System (HNA-II)</b>   |   |                      |                      |  |   |   |
| 2019HNA1  | Final Indicators report (USGS Open File Report)   | 30-Dec-18            |                      | 13-Dec-18  | <a href="https://doi.org/10.3133/ofr20181143">https://doi.org/10.3133/ofr20181143</a>   | De Jager, Rogala, Bouska, Houser, Van Appledorn, Rohweder, Fox, Ruhser, Jankowski |
| 2019HNA2  | Final HNA-II Linking Science to Management Perspectives   | 30-Dec-18            |                      | 13-Dec-18  | <a href="https://usace.contentdm.oclc.org/utis/geotfile/collection/p266001coll1/id/8323">https://usace.contentdm.oclc.org/utis/geotfile/collection/p266001coll1/id/8323</a> | McCain, Schmuecker, De Jager  |
| <b>Assessing recent rates of sedimentation in the backwaters of Pools 4, 8, and 13 to support river restoration and the Habitat Needs Assessment-II</b>   |   |                      |                      |  |   |   |
| 2018ST1   | Reestablishment of horizontal and vertical temporary benchmarks, and a data base for horizontal and vertical benchmarks (Continuation of 2017ST1) | 30-Mar-18            | 1-Feb-19             |  | Poor conditions in Pool 13  | Rogala, Moore, Kalas, Bierman   |
| 2018ST2   | Open-water nearshore surveys completed and a database (Continuation of 2017ST2)   | 31-Dec-18            | 2-Jan-19             |  | Poor conditions in Pool 13  | Rogala, Moore, Kalas, Bierman   |
| 2018ST3   | Over-ice surveys completed and a database (Continuation of 2017ST3)   | 30-Mar-18            | 30-Mar-19            |  | Poor conditions in Pool 13  | Rogala, Moore, Kalas, Bierman   |
| 2018ST4   | Data analysis and completion report on sedimentation rates along transects (Continuation of 2017ST4)  | 30-Sep-18            | 30-Mar-19            | Analysis completed for transects resurveyed; report delayed until Pool 13 resurveys [30-Sept-19] |   | Rogala, Moore, Kalas, Bierman   |

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| Tracking number   | Milestone  | Original Target Date | Modified Target Date | Date Completed | Comments  | Lead                                   |
|---|--|----------------------|----------------------|----------------|---|--|
| <b>Landscape Pattern Research and Application</b>   |  |                      |                      |                |   |  |
| <b>On-Going</b>   |  |                      |                      |                |   |  |
| 2016L3  | Draft Manuscript: Review of Landscape Ecology on the UMR   | 30-Sep-16            | 30-Sep-19            |                | Priority switch to Indicators Report and HNA-II | De Jager                               |
| <b>Intended for distribution</b>  |  |                      |                      |                |   |  |
| Manuscript: N. De Jager. Modelling Forest succession in the UMRS (2018L1). <i>(submitted to Journal)</i>  |  |                      |                      |                |   |  |
| <b>Eco-hydrologic Research</b>  |  |                      |                      |                |   |  |
| 2019EH01  | Draft manuscript reviewing mapping inundation approaches   | 30-Sep-19            |                      |                |   | Van Appledorn, De Jager,               |
| 2019EH02  | Sensitivity analysis of UMRS inundation regimes  | 30-Sep-19            |                      |                |   | Van Appledorn                          |
| 2019EH03  | Development of UMRS inundation model query tool  | 30-Sep-19            |                      |                |   | Van Appledorn, Fox, Rohweder, De Jager |
| <b>On-Going</b>   |  |                      |                      |                |   |  |
| Manuscript: Van Appledorn, M., De Jager, N.R., Johnson, K. Considerations for improving floodplain research and management by integrating inundation modeling, ecosystem studies, and ecosystem services (2016L5)   |  |                      |                      |                |   |  |
| <b>Intended for distribution</b>  |  |                      |                      |                |   |  |
| Van Appledorn, Molly; DeJager, Nathan R.; Rohweder, Jason. Modeling and mapping inundation regimes for ecological and management applications: a case study of the Upper Mississippi River floodplain, USA <i>(submitted to Journal, under revision)</i>  |  |                      |                      |                |   |  |
| Van Appledorn, Molly. Data release: UMRS Floodplain Inundation Attribute Raster <a href="https://www.sciencebase.gov/catalog/item/5b2a51b9e4b059207627d168">https://www.sciencebase.gov/catalog/item/5b2a51b9e4b059207627d168</a> <i>(Completed)</i>  |  |                      |                      |                |   |  |
| DeJager, Nathan R.;Van Appledorn, Molly; Fox, Timothy J.; Rohweder, Jason; Guyon, Lyle J.;Meier, Andrew R.;Cosgriff, Robert J.;Vandermyde, and Benjamin J. Spatially explicit modeling of floodplain forest succession: A case study in the Upper Mississippi River floodplain, USA <i>(In-Press; Ecological Modelling)</i> |  |                      |                      |                |   |  |
| <b>Aquatic Vegetation, Fisheries, and Water Quality Research</b>  |  |                      |                      |                |   |  |
| <b>On-Going</b>   |  |                      |                      |                |   |  |
| <b>Aquatic Vegetation</b>   |  |                      |                      |                |   |  |
| 2015A7  | Data compilation and analysis: Aquatic macrophyte communities and their potential lag time in response to changes in physical and chemical variables                                   | 30-Jun-15            | 31-Dec-18            | 31-Dec-18      | Original PI M. Moore; transferred to Lund       | Lund                                   |
| 2015A8  | Draft completion report or manuscript: Aquatic macrophyte communities and their potential lag time response to changes in physical and chemical variables in the LTRM vegetation pools | 30-Jun-16            | 30-Dec-18            | 24-Jan-18      | Original PI M. Moore; transferred to Lund       | Lund                                   |

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|--|---|----------------------|----------------------|----------------|----------|--------------------------------------|
| 2016A7   | Draft completion report: How many years did the effects of the 2001-2002 Pool 8 drawdown on arrowheads ( <i>Sagittaria latifolia</i> and <i>S. rigida</i> ) last?     | 30-May-16            | 30-Sep-19            |                |          | Sauer (Yin)                          |
| <b>Fisheries</b>   |   |                      |                      |                |          |                                      |
| 2019B11  | Technical support for USACE Fish Community Model  | 30-Sep-19            |                      |                |          | Ickes                                |
| 2019B12  | Draft LTRM Completion Report: Developing a biochronology of smallmouth buffalo growth for the Upper Mississippi and Illinois Rivers (tied to 2018SMBF4)               | 30-Jul-19            |                      |                |          | Ickes with Solomon                   |
| 2019B13  | Draft Manuscript: Evidence of functionally defined non-random fish community responses over 25 years in a large river system (replacing 2015B17 and 2016B17)          | 30-Sep-19            |                      |                |          | Ickes                                |
| 2016B14  | Draft completion report: Exploring Years with Low Total Catch of Fishes in Pool 26  | 30-Sep-16            | 30-Jun-19            |                |          | Gittinger, Ratcliff, Lubinski, Chick |
| <b>Water Quality</b>   |   |                      |                      |                |          |                                      |
| 2019D12  | Draft Summary Paper: Expanding the international engagement and recognition of UMRR LTRM (replacing 2014P1)   | 30-Sep-19            |                      |                |          | Jankowski                            |
| 2019D13  | Draft manuscript: Ice and snow cover affect winter limnological conditions differently across a connectivity gradient in a large floodplain river (replacing 2018D13) | 30-Sep-19            |                      |                |          | Jankowski, Rogala, Houser            |
| <b>Intended for Distribution</b>   |   |                      |                      |                |          |                                      |
| Burdis, Rob. Manuscript: Trends in water quality and biota in segments of Pool 4, above and below Lake Pepin (2015D16; in review)  |   |                      |                      |                |          |                                      |
| <b>Statistical Evaluation</b>  |   |                      |                      |                |          |                                      |
| <b>On-Going</b>  |   |                      |                      |                |          |                                      |
| 2016E2   | Draft manuscript: How well do trends in LTRM percent frequency of occurrence SAV statistics track trends in true occurrence?  | 30-Sep-16            | 30-Sep-19            |                |          | Gray                                 |
| <b>Intended for distribution</b>   |   |                      |                      |                |          |                                      |
| Draft manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1) <b>withdrew the paper from the journal after it had been with the journal for six months, will be re-evaluated in FY19 by BGray</b> |   |                      |                      |                |          |                                      |

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| Tracking number  | Milestone  | Original Target Date | Modified Target Date | Date Completed   | Comments   | Lead                         |
|--|--|----------------------|----------------------|--|--|------------------------------|
| Advancing our understanding of habitat requirements of fish assemblages using multi-species models |  |                      |                      |  |  |                              |
| 2019FA1  | Draft Manuscript on period-specific inferences on environmental gradients and species-environment associations by period ((Expands on 2017FA1-FA2) | 1-May-19             | 30-Sep-19            | Delayed due to graduate student changes at Kansas University             |  | Bouska, Gray                 |
| Mapping the thermal landscape of the Upper Mississippi River: A Pilot Study                        |  |                      |                      |  |  |                              |
| 2017TL2  | Final LTRM Completion report and data distribution   | 30-Mar-18            | 30-Mar-19            | Report complete; waiting on data/metadata review for final USGS approval |  | Jankowski, Robinson, Ruhser  |
| Pool 12 Overwintering HREP Adaptive Management Fisheries Response Monitoring                       |  |                      |                      |  |  |                              |
| Fisheries Population Monitoring  |  |                      |                      |  |  |                              |
| 2019P13a   | Collect annual increment of pool-wide electrofishing data  | 1-Nov-18             |                      | 1-Nov-18   |  | Bierman and Bowler           |
| 2019P13b   | Collect annual increment of fyke netting data from backwater lakes   | 15-Nov-18            |                      | 15-Nov-18  |  | Bierman and Bowler           |
| 2019P13c   | Perform otolith extraction from bluegills for aging  | 1-Dec-18             |                      | 1-Dec-18   |  | Bierman and Bowler           |
| 2019P13d   | Age determination of bluegills collected in Fall 2018  | 1-Feb-19             |                      | 1-Feb-19   |  | Bierman and Bowler           |
| 2019P13e   | In-house project databases updated   | 31-Mar-19            |                      | 31-Mar-19  |  | Bierman and Bowler           |
| 2019P13f   | Summary letter compiled and made available to program partners   | 30-Sep-19            |                      |  |  | Bierman and Bowler           |
| Pool 4 - Peterson Lake HREP Water Quality Monitoring – Pre and Post-Adaptive Management Evaluation |  |                      |                      |  |  |                              |
| 2017PL3  | Collection of post-construction winter water quality data  | Feb. 2020            |                      |  | Construction delayed                             | Burdis, DeLain, Lund, Dawald |
| 2017PL4  | Collection of post-construction summer water quality data  | Aug. 2020            |                      |  |  | Burdis, DeLain, Lund, Dawald |
| 2017PL5  | Summary letter: Tabular and graphical summary of water quality data  | Dec. 2020            |                      |  |  | Burdis, Lund, Moore          |
| UMRR LTRM Component Meetings   |  |                      |                      |  |  |                              |
| 2019N1   | Component Meetings   | March 26-27, 2019    |                      | March 26-27, 2019  |  | All LTRM                     |
| Update UMRR LTRM Fact Sheet  |  |                      |                      |  |  |                              |
| 2019FS1  | Draft UMRR LTRM Fact Sheet   | 30-Apr-19            | TBD                  |  | Will be integrated with Status and Trends Report | Sauer and All LTRM as needed |
| 2019FS2  | Final UMRR LTRM Fact Sheet   | 30 Sept. 2019        | TBD                  |  |  | Sauer and All LTRM as needed |

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|--|---|----------------------|----------------------|----------------|---|--|
| <b>FY18 Funded Science in Support of Restoration and Management Proposals</b>  |   |                      |                      |                |   |  |
| <b>Conceptual Model and Hierarchical Classification of Hydrogeomorphic Settings in the UMRS</b>  |   |                      |                      |                |   |  |
| 2019CM2  | Summary of workshop findings and minutes; internal document   | 31-Dec-18            |                      | 30-Jan-19      | Delayed due to Furlough   | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer        |
| 2019CM3  | Presentation to Focal Area 1 workgroup, LTRM researchers, HREP designers, and state resource agency partners                                    | 31-Aug-19            |                      |                |   | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Stone |
| 2019CM4  | GIS data base and query tool  | 31-Dec-19            |                      |                |   | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Stone |
| 2019CM5  | Submit draft LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system                                  | 31-Dec-19            |                      |                |   | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Stone |
| 2019CM6  | Submit Final LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system                                  | 30-Jun-20            |                      |                |   | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Stone |
| <b>Develop a better understanding of geomorphic changes through repeated measurement of bed elevation and overlay of land cover data</b> |   |                      |                      |                |   |  |
| <b><i>Determine geomorphic changes in selected side channels of selected reaches using hydroacoustics</i></b>                            |   |                      |                      |                |   |  |
| 2019GC2  | Complete geodatabase of previous surveys and begin updating as needed. Begin developing and apply change detection methods.                     | 1-Dec-18             |                      | 30-Jan-19      | Delayed due to furlough   | Stone, Rogala  |
| 2019NEW  | Complete Side Channel Surveys   | 30-Sep-19            |                      |                |   | Stone, Wallace, Klingman                             |
| 2019GC3  | Submit draft LTRM Completion report   | 1-Mar-20             |                      |                |   | Rogala, Stone  |
| <b><i>Establish a network of transects in backwaters to measure sedimentation</i></b>  |   |                      |                      |                |   |  |
| 2019GC4  | Begin setting monuments at existing transects. Establish, survey and monument new transects as needed   | 1-Oct-18             | 1-Jun-19             | 1-Jun-19       | Delayed due to securing of state permits; permits now secured.  | Kalas, Rogala  |
| 2019GC5  | Establish methods. Determine database structure and begin entering data into database (including transect maps, description of monuments, etc.) | 1-Dec-18             |                      | 1-Dec-18       | Field methods developed along with database structure and associated recorded data. Will continue as data is acquired for new transects | Rogala, Kalas  |
| 2019GC6  | Complete setting monuments and surveying remaining transects  | 30-Sep-20            |                      |                |   | Kalas  |
| 2019GC7  | Complete database for all transects.  | 30-Sep-20            |                      |                |   | Kalas  |



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|--|---|----------------------|----------------------|----------------|---|----------------------------|
| Determine recent planform changes using UMRR LCU datasets  |   |                      |                      |                |   |                            |
| 2019GC8  | Submit draft LTRM Completion Report on recent planform changes using UMRR LCU datasets  | 1-Jul-19             |                      |                |   | Rogala                     |
| Water Exchange Rates and Change in UMRS Channels and Backwaters, 1980 to Present                     |   |                      |                      |                |   |                            |
| 2019WE1  | Data Analysis   | 31-Mar-19            | 30-Sep-19            |                | Delayed with flooding issues in summer 2019 | Hendrickson                |
| 2019WE2  | Base Maps of Discharge Measurement Location   | 31-May-19            | 30-Sep-19            |                |   | Le Claire                  |
| 2019WE3  | Submit draft LTRM Completion Report   | 30-Sep-19            |                      |                |   | Hendrickson                |
| 2019WE4  | Submit Final LTRM Completion Report   | 30-Mar-20            |                      |                |   | Hendrickson                |
| Intrinsic and extrinsic regulation of water clarity over a 950-km longitudinal gradient of the UMRS  |   |                      |                      |                |   |                            |
| 2019IE1  | Database complete   | 30-Apr-19            |                      | 30-Apr-19      |   | Carhart, Drake, others     |
| 2019IE2  | Draft analysis and annual progress summary  | 31-Dec-19            |                      |                |   | Drake, Carhart and others  |
| 2019IE3  | Submit Draft manuscript   | 30-Mar-20            |                      |                |   | Drake, Carhart and others  |
| 2019IE4  | Submit Final manuscript   | 30-Dec-20            |                      |                |   | Drake, Carhart and others  |
| Effectiveness of Long Term Resource Monitoring vegetation data to quantify waterfowl habitat quality |   |                      |                      |                |   |                            |
| 2019WF3  | Collect data in Pool 8 using benthic core sampling  | 30-Apr-19            | 30-Apr-19            |                |   | Winter                     |
| 2019WF4  | Submit preliminary report with results from data collected in the summer and fall of 2018, and data collected in the spring of 2019 | 30-Jul-19            | 1-Jul-19             |                |   | Schmidt, Straub, Schultz   |
| 2019WF5  | Collect data in Pools 4, 8, 13 using LTRM methodology   | 30-Aug-19            |                      |                |   | Winter, Lund, Drake, Bales |
| 2019WF6  | Collect data in Pools 4, 8, 13 using benthic core sampling  | 30-Oct-19            |                      |                |   | Winter                     |
| 2019WF7  | Conduct final analyses, submit draft LTRM Completion report   | 30-May-20            |                      |                |   | Schmidt, Straub, Schultz   |
| 2019WF8  | Submit Final LTRM Completion Report   | 30-Sep-20            |                      |                |   | Schmidt, Straub, Schultz   |

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|---|---|----------------------|--|---|--|---|
| <b>Understanding constraints on submersed vegetation distribution in the UMRS: the role of water level fluctuations and clarity</b> |   |                      |  |   |  |   |
| 2019SVD1  | Retrieve existing systemic datasets for elevation gages, topobathy and water clarity.   | 30-Dec-18            |  | 1-Dec-18  |  | Kalas, Carhart, Rogala,   |
| 2019SVD2  | Estimate/interpolate photic zone and generate predicted SAV bands systemically.   | 30-Jun-19            |  | 2-Jul-19  |  | Kalas, Carhart, Rogala,   |
| 2019SVD3  | Submit annual progress summary  | 30-Sep-19            |  |   |  | Kalas, Carhart,   |
| 2019SVD4  | Spatial coverages and databases complete, begin draft report.   | 30-Oct-19            |  |   |  | Kalas, Carhart, Rohweder  |
| 2019SVD5  | Submit draft manuscript   | 30-Sep-20            |  |   |  | Kalas, Carhart, Drake, Rogala, Rohweder                               |
| 2019SVD6  | Webpage to house database information   | 30-Sep-20            |  |   |  | Kalas, Carhart, Rogala, Rohweder                                      |
| <b>Systemic analysis of hydrogeomorphic influences on native freshwater mussels</b>   |   |                      |  |   |  |   |
| 2019FM1   | Design pool-wide surveys in Pools 8 and 13  | 30-Sep-19            | 30-Sep-19                              |   |  | Jim Rogala, Teresa Newton, Mike Davis                                 |
| 2019FM2   | Explore existing (and perhaps create additional?) geomorphic indices within the aquatic areas data set that may influence mussel assemblages and begin assessing patterns in mussel assemblages across a gradient of geomorphic conditions in existing data (Pools 3, 5, 6, and 18) | 30-Sep-19            | 9/30/2020 (will now include all pools) | Delayed since lead technician who was to perform most of the analyses took a new position and all USGS hires have been substantially delayed. |  | Jim Rogala, Jason Rohweder, Teresa Newton                             |
| 2019FM3   | Conduct pool-wide surveys for mussels in Pools 8 and 13   | 30-Sep-19            | 30-Sep-19                              |   |  | Mike Davis, Teresa Newton   |
| 2019FM4   | Annual progress summary   | 30-Dec-19            | 30-Dec-19                              |   |  | Teresa Newton   |
| 2019FM5   | Calculate pool-wide population estimates of native mussels in Pools 8 and 13, finish assessing patterns in mussel assemblages across a gradient of geomorphic indices (all pools), begin conducting statistical analyses  | 30-Sep-20            | 30-Sep-21                              |   |  | Jason Rohweder, Teresa Newton, Catherine Murphy                       |
| 2019FM6   | Annual progress summary   | 30-Dec-20            | 30-Dec-21                              |   |  | Teresa Newton   |
| 2019FM7   | Complete statistical analyses and prepare geospatial maps   | 30-Sep-21            | 30-Sep-22                              |   |  | Teresa Newton, Catherine Murphy, Jason Rohweder                       |
| 2019FM8   | Draft LTRM completion report  | 30-Sep-21            | 30-Sep-22                              |   |  | Teresa Newton   |
| 2019FM9   | Final LTRM completion report  | 30-Jan-23            |  |   |  | Teresa Newton   |
| <b>Using dendrochronology to understand historical forest growth, stand development, and gap dynamics</b>                           |   |                      |  |   |  |   |
| 2019DD1   | Annual progress summary   | 31-Dec-18            |  | 25-Feb-19   |  | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde                  |
| 2019DD2   | Data collection   | 11-31-2018           |  | 11-31-2018  | Sample size low due to high water levels | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde, Robert Cosgriff |

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|--|---|----------------------|----------------------|----------------|----------|--|
| 2019DD3  | Growth-ring chronologies and forest vegetation demographic and biophysical data                               | 31-Jul-19            |                      |                |          | Dr. Harley, MS students                                      |
| 2019DD4  | Plot-level 3-dimensional subsurface floodplain sedimentation maps for each study site                         | 31-Jul-19            |                      |                |          | Dr. Maxwell, MS students                                     |
| 2019DD5  | Annual progress summary   | 31-Dec-19            |                      |                |          | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde         |
| 2019DD6  | Baseline dataset for promoting resilience of hard mast forest communities along the UMRS                      | 30-Jun-20            |                      |                |          | Dr. Harley, Dr. Maxwell, MS students                         |
| 2019DD7  | Submit draft manuscript   | 30-Sep-20            |                      |                |          | Dr. Harley, Dr. Maxwell, MS students                         |
| <b>Forest canopy gap dynamics: quantifying forest gaps and understanding gap – level forest regeneration</b> |   |                      |                      |                |          |  |
| 2019FG1  | Completion of polygon layer of canopy gaps for Study Area with associated tabular and FGDC-compliant metadata | 30-Apr-19            |                      |                |          | Strassman, Sattler, Hoy                                      |
| 2019FG2  | Annual progress summary   | 31-Dec-18            |                      | 27-Dec-18      |          | Meier, Strassman   |
| 2019FG3  | Data collection   | 31-Oct-19            |                      |                |          | Thomsen, Vandermyde, Guyon                                   |
| 2019FG4  | Annual progress summary   | 31-Dec-19            |                      |                |          | Meier, Strassman   |
| 2019FG5  | Submit draft LTRM Completion Report   | 30-Sep-20            |                      |                |          | Guyon, Thomsen, Meier, Strassman                             |
| 2019FG6  | Baseline dataset complete   | 30-Sep-20            |                      |                |          | Guyon, Thomsen, Meier, Strassman, DeJager                    |
| 2019FG7  | Submit draft manuscript   | 30-Sep-21            |                      |                |          | Guyon, Thomsen, Meier, Strassman, DeJager                    |
| <b>Investigating vital rate drivers of UMRS fishes to support management and restoration</b>                 |   |                      |                      |                |          |  |
| 2019VR1  | Data collection will occur during regular LTRM fish field sampling (Completed)                                | 15-Oct-18            |                      | 15-Oct-18      |          | LTRM Fish Component Leads                                    |
| 2019VR2  | Processing of samples   | 2018 through 2021    |                      |                |          | Quinton Phelps, Greg Whitledge                               |
| 2019VR3  | Annual progress summary   | 31-Dec-18            | 28-Feb-19            | 11-Feb-19      |          | Andy Bartels, Kristen Bouska, Quinton Phelps                 |
| 2019VR4  | Data collection will occur during regular LTRM fish field sampling  | 15-Oct-19            |                      |                |          | LTRM Fish Component Leads                                    |
| 2019VR5  | Annual progress summary   | 31-Dec-19            |                      |                |          | Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge |
| 2019VR6  | Data collection will occur during regular LTRM fish field sampling  | 15-Oct-20            |                      |                |          | LTRM Fish Component Leads                                    |
| 2019VR7  | Annual progress summary   | 31-Dec-20            |                      |                |          | Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge |
| 2019VR8  | Data set complete (data delivered to Ben Schlifer, physical structures delivered to BRWFS)                    | 30-Sep-21            |                      |                |          | Quinton Phelps   |

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|-----------------|--|----------------------|----------------------|----------------|----------|--------------------------------|
| 2019VR9         | Submit draft manuscript (Vital rates)            | 31-Dec-21            |                      |                |          | Quinton Phelps, Kristen Bouska |
| 2019VR10        | Submit draft manuscript (Drivers of vital rates) | 31-Dec-21            |                      |                |          | Quinton Phelps, Kristen Bouska |
| 2019VR11        | Submit draft manuscript (Microchemistry)         | 31-Dec-21            |                      |                |          | Greg Whitledge                 |

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|--|--|----------------------|----------------------|----------------|----------|-------------------------|
| <b>FY19 Funded Science in Support of Restoration and Management</b>  |  |                      |                      |                |          |                         |
| <b>Development of a standardized monitoring program for vegetation and fish response to Environmental Pool Management practices in the Upper Mississippi River System</b>          |  |                      |                      |                |          |                         |
| 2019epm1   | Progress Report  | 30-Dec-19            |                      |                |          | Chick and McGuire       |
| 2019epm2   | Progress Report  | 30-Dec-20            |                      |                |          | Chick and McGuire       |
| 2019epm3   | Draft LTRM Completion  | 30-Jun-21            |                      |                |          | Chick and McGuire       |
| 2019epm4   | Final LTRM Completion  | 30-Dec-21            |                      |                |          | Chick and McGuire       |
| <b>Combining <span style="color: red;">genetics</span>, otolith microchemistry, and vital rate estimation to inform restoration and management of fish populations in the UMRS</b> |  |                      |                      |                |          |                         |
| 2019gen1   | Progress Report  | 30-Dec-19            |                      |                |          | Larson, Bartels, Bouska |
| 2019gen2   | Progress Report  | 30-Dec-20            |                      |                |          | Larson, Bartels, Bouska |
| 2019gen3   | Draft Manuscript   | 30-Dec-21            |                      |                |          | Larson, Bartels, Bouska |
| <b>Reforestation UMRS forest canopy openings occupied by invasive species</b>  |  |                      |                      |                |          |                         |
| 2019ref1   | Progress Report  | 30-Dec-19            |                      |                |          | Guyon and Cosgriff      |
| 2019ref2   | Progress Report  | 30-Dec-20            |                      |                |          | Guyon and Cosgriff      |
| 2019ref3   | Draft LTRM Completion  | 30-Apr-21            |                      |                |          | Guyon and Cosgriff      |
| 2019ref4   | Final LTRM Completion  | 30-Sep-21            |                      |                |          | Guyon and Cosgriff      |
| <b>A year of zooplankton community data from the habitats and pools of the UMR</b>   |  |                      |                      |                |          |                         |
| 2019zoo1   | Progress Report  | 30-Dec-19            |                      |                |          | Sobotka and Fulgoni     |
| 2019zoo2   | Draft LTRM Completion report on utility of zooplankton community monitoring for HREP assessment  | 30-Dec-20            |                      |                |          | Sobotka and Fulgoni     |
| 2019zoo3   | Final LTRM Completion report on utility of zooplankton community monitoring for HREP assessment  | 30-Jun-21            |                      |                |          | Sobotka and Fulgoni     |
| 2019zoo4   | Draft LTRM Completion report on detailing differences between pools and habitats. Report will also investigate the potential impacts of Asian carp on the zooplankton community. | 30-Dec-20            |                      |                |          | Sobotka and Fulgoni     |
| 2019zoo5   | Final LTRM Completion report on detailing differences between pools and habitats. Report will also investigate the potential impacts of Asian carp on the zooplankton community. | 30-Jun-21            |                      |                |          | Sobotka and Fulgoni     |
| <b>The Role of Large Wood in The Restoration of Habitat in the Upper Mississippi River System</b>  |  |                      |                      |                |          |                         |
| 2019LW1  | Progress Report  | 31-Dec-19            |                      |                |          | Thomsen, Jankowski      |
| 2019LW2  | Draft LTRM Completion Report   | 31-Dec-20            |                      |                |          | Thomsen, Jankowski      |
| 2019LW3  | Final LTRM Completion Report   | 30-Apr-21            |                      |                |          | Thomsen, Jankowski      |

Upper Mississippi River Restoration  
Long Term Resource Monitoring Element  
FY2019 Science in Support of Restoration and Management Scope of Work

| Tracking number  | Milestone   | Original Target Date                | Modified Target Date | Date Completed | Comments | Lead  |
|--|---|-------------------------------------|----------------------|----------------|----------|---|
| <b>FY19 Funded Illinois Waterway 2020 Lock Closure</b>   |   |                                     |                      |                |          |   |
| <b>Aquatic Vegetation: Navigation Closure Study</b>  |   |                                     |                      |                |          |   |
| 2019SAV1   | Field sampling - before lock closure  | 30-Aug-19                           |                      |                |          | Lund, Drake, Bales, others                          |
| 2019SAV2   | Progress Report   | 30-Dec-19                           |                      |                |          | Lund, Drake, Bales                                  |
| <b>Pre- and Post-Maintenance Aerial Imagery for Illinois River's Alton through Brandon Lock and Dams, 2019-2020.</b> |   |                                     |                      |                |          |   |
| 2019AER1   | Acquire 4-band aerial imagery 2019  | late-August/early-September of 2019 |                      |                |          | Lubinski, Robinson, and Hop                         |
| 2019AER2   | Complete Orthomosaics and metadata 2019 Flight                                  | 31-Dec-19                           |                      |                |          | Robinson and Hop                                    |
| <b>Fish Community Response to the 2020 Illinois Waterway Lock Closure</b>  |   |                                     |                      |                |          |   |
| 2019FSH1   | Field sampling - before lock closure  | 30-Oct-19                           |                      |                |          | Lamer and Solomon                                   |
| 2019FSH2   | Progress Report   | 30-Dec-19                           |                      |                |          | Lamer and Solomon                                   |
| <b>Water Clarity and the IWW Lock Closures</b>   |   |                                     |                      |                |          |   |
| 2019WC1  | Background data collection on barge -driven wave action and sediment suspension | 30-Dec-19                           |                      |                |          | Jankowski (collaborating with Fish and SAV studies) |
| 2019WC2  | Spatial survey of phytoplankton biomass   | 30-Dec-19                           |                      |                |          | Jankowski (collaborating with Fish and SAV studies) |

**UMRR Science in Support of Restoration and Management**  
**FY2017 Work Plan Scope of Work**  
**Aug 2019 Status**

| Tracking number  | Milestone  | Original Target Date | Modified Target Date | Date Completed | Comments   | Lead                |
|--|--|----------------------|----------------------|----------------|--|---------------------|
| <b>Developing methods of estimating SAV biomass in the UMR to expand the capabilities within the UMRR program and improve the utility of the long-term vegetation data</b> |  |                      |                      |                |  |                     |
| 2018BIO1   | Completion of USFWS collaborative field work, data entry, laboratory work and LTRM additional field data collection  | 30-Aug-17            |                      | 30-Aug-17      |  | Drake, Holman, Lund |
| 2018BIO2   | Draft LTRM Completion Report: Estimating biomass of submersed aquatic vegetation in the UMR  | 30-Mar-18            |                      | 17-Apr-18      |  | Drake, Holman, Lund |
| 2018BIO3   | Final LTRM Completion report: Estimating biomass of submersed aquatic vegetation in the UMR  | 30-Oct-18            |                      | 10-Sep-18      | Report review complete. Data review underway.  | Drake, Holman, Lund |
| <b>Plankton community dynamics in Lake Pepin - the role of crustacean zooplankton</b>  |  |                      |                      |                |  |                     |
| 2018PLK1   | Three year (2012-2014) data set of Lake Pepin crustacean zooplankton data. Crustacean zooplankton samples collected at four fixed sites in Lake Pepin will be processed to obtain species composition and biomass estimates  | 30-Mar-18            | 31-May-18            | 11-Jun-18      |  | Burdis              |
| 2018PLK2   | Analysis: Data would be paired with existing rotifer (2015D15) and phytoplankton (2015LPP2)  | 31-Dec-18            | 30-Sep-19            |                |  | Burdis              |
| <b>4-Band aerial camera acquisition, integration, and testing for the 2020 LCU mission</b>   |  |                      |                      |                |  |                     |
| 2018CAM1   | Collection of test 4-band imagery, evaluation of image quality and image processing using HT Condor distributed processing software.   | Summer 2018          |                      | 30-Sep-18      | 4-band imagery collected of various HREP sites between Pools 4 and 14 to test processing workflow/image quality. | Robinson            |
| 2018CAM2   | Collection and evaluation of sample floodplain at various resolutions above and below Lock and Dam 13 (where the Upper Mississippi River transitions from a floodplain composed complex aquatic vegetation above to a more channelized system that is largely agrarian in nature below). | Summer 2019          |                      |                |  | Robinson            |
| 2018CAM3   | Draft LTRM Completion report detailing integration and testing procedures and recommendations of optimal image resolution for the 2020 systemic imagery collection.  | Fall 2019            |                      |                |  | Robinson            |
| 2018CAM4   | Final LTRM Completion report with sample images detailing integration and testing procedures and recommendations of optimal image resolution and final flight plan for the 2020 systemic imagery collection.   | Winter 2019          |                      |                |  | Robinson            |
| <b>UMRR LTRM WQ lab modernization</b>  |  |                      |                      |                |  |                     |
| 2018LM1  | Contract design work   | 30-Sep-18            | 30-Jan-19            | 29-Jan-19      |  | Goede, Yuan, Sauer  |
| 2018LM2  | Purchase of walk-in refrigerator/freezer   | 30-Sep-18            | 31-Jan-20            |                |  | Yuan                |
| 2018LM3  | Construction complete  | 30-Sep-20            | TBD                  |                |  | Goede, Yuan, Sauer  |

**UMRR Science in Support of Restoration and Management**  
**FY2014 and FY2015 Scopes of Work**  
**August 2019 Status**

| Tracking number   | Milestone   | Original Target Date | Modified Target Date | Date Completed | Comments  | Lead                               |
|---|---|----------------------|----------------------|----------------|---|------------------------------------|
| <b>Development of Mussel Vital Rates</b>                            |   |                      |                      |                |   |                                    |
| 2014MVR1  | Brief summary report  | 30-Sep-15            |                      | 30-Sep-15      | completed, in UMESC review  | Newton, Zigler, Davis              |
| 2014MVR2  | Progress update   | 30-Sep-16            |                      | 30-Sep-16      |   | Newton, Zigler, Davis              |
| 2014MVR3  | Completion report on a vital rates of native mussels at West Newton Chute, UMRS | 30-Sep-17            | 30-Oct-17            | 13-Apr-18      | completed   | Newton, Zigler, Davis              |
| <b>Effects of Nutrient Concentrations on Zoo- and Phytoplankton</b> |   |                      |                      |                |   |                                    |
| 2014NC1   | Counting of phytoplankton samples   | 13-Mar-15            |                      | 2-Mar-15       |   | Giblin, Campbell, Houser, Manier   |
| 2014NC2   | Database completed and analysis completed                                       | 13-Mar-16            | 28-Feb-18            | 28-Feb-18      | Working With UWL staff. Analysis partially complete.                  | Giblin, Campbell, Houser, Manier   |
| 2014NC3   | Full manuscript completed   | 13-Mar-18            | 13-Mar-20            |                | led by former LTRM FS staff   | Giblin, Campbell, Houser, Manier   |
| <b>Plankton community dynamics in Lake Pepin</b>                    |   |                      |                      |                |   |                                    |
| 2015LPP1  | Phytoplankton processing; species composition, biovolume                        | 30-Dec-15            |                      | 22-Oct-15      |   | Burdis                             |
| 2015LPP2  | draft manuscript: Plankton community dynamics in Lake Pepin                     | 30-Sep-16            | 30-Jun-20            |                | underway but delayed to workload conflicts                            | Burdis                             |
| <b>Predictive Aquative Cover Type Model - Phase 2</b>               |   |                      |                      |                |   |                                    |
| 2015AQ1   | Develop 2-D hydraulic model of upper Pool 4                                     | 30-Sep-15            |                      | 30-Sep-15      |   | Libbey (MVP H&H)                   |
| 2015AQ2   | Apply model to Pool 4 and resolve discrepancies                                 | 31-Dec-15            | 31-Mar-16            | 31-Mar-16      |   | Yin, Rogala                        |
| 2015AQ3   | Detailed summary of work for Phases I & II                                      | 31-Dec-15            | TBD                  |                | PI has resigned. Working to complete this product as soon as feasible | Sauer (for Yin), Rogala, Ingvalson |



## **ATTACHMENT D**

### **Additional Items**

- **Future Meeting Schedule** *(D-1)*
- **Frequently Used Acronyms (5/2/2019)** *(D-2 to D-7)*
- **UMRR Authorization, As Amended (1/27/2015)** *(D-8 to D-11)*
- **UMRR (EMP) Operating Approach (5/2006)** *(D-12)*

**QUARTERLY MEETINGS  
FUTURE MEETING SCHEDULE**

| <b>OCTOBER 2019</b>        |   |
|----------------------------|---|
| <u>St. Paul, Minnesota</u> |   |
| October 29                 | UMRBA Quarterly Meeting                       |
| October 30                 | UMRR Coordinating Committee Quarterly Meeting |

| <b>FEBRUARY 2020</b>                           |   |
|--|---|
| <u>TBD: Quad Cities, Dubuque, or Muscatine</u> |   |
| February 25                                    | UMRBA Quarterly Meeting                       |
| February 26                                    | UMRR Coordinating Committee Quarterly Meeting |

## **Acronyms Frequently Used on the Upper Mississippi River System**

|         |   |
|---------|---|
| AAR     | After Action Report   |
| A&E     | Architecture and Engineering  |
| ACRCC   | Asian Carp Regional Coordinating Committee                            |
| AFB     | Alternative Formulation Briefing                                      |
| AHAG    | Aquatic Habitat Appraisal Guide                                       |
| AHRI    | American Heritage Rivers Initiative                                   |
| AIS     | Aquatic Invasive Species  |
| ALC     | American Lands Conservancy  |
| ALDU    | Aquatic Life Designated Use(s)  |
| AM      | Adaptive Management   |
| ANS     | Aquatic Nuisance Species  |
| AP      | Advisory Panel  |
| APE     | Additional Program Element  |
| ARRA    | American Recovery and Reinvestment Act                                |
| ASA(CW) | Assistant Secretary of the Army for Civil Works                       |
| A-Team  | Analysis Team   |
| ATR     | Agency Technical Review   |
| AWI     | America's Watershed Initiative  |
| AWO     | American Waterways Operators  |
| AWQMN   | Ambient Water Quality Monitoring Network                              |
| BA      | Biological Assessment   |
| BATIC   | Build America Transportation Investment Center                        |
| BCR     | Benefit-Cost Ratio  |
| BMPs    | Best Management Practices   |
| BO      | Biological Opinion  |
| CAP     | Continuing Authorities Program  |
| CAWS    | Chicago Area Waterways System   |
| CCC     | Commodity Credit Corporation  |
| CCP     | Comprehensive Conservation Plan                                       |
| CERCLA  | Comprehensive Environmental Response, Compensation, and Liability Act |
| CEQ     | Council on Environmental Quality                                      |
| CFR     | Code of Federal Regulations   |
| CG      | Construction General  |
| CIA     | Computerized Inventory and Analysis                                   |
| CMMP    | Channel Maintenance Management Plan                                   |
| COE     | Corps of Engineers  |
| COPT    | Captain of the Port   |
| CPUE    | Catch Per Unit Effort   |
| CRA     | Continuing Resolution Authority                                       |
| CREP    | Conservation Reserve Enhancement Program                              |
| CRP     | Conservation Reserve Program  |
| CSP     | Conservation Security Program   |
| CUA     | Cooperative Use Agreement   |
| CWA     | Clean Water Act   |
| DALS    | Department of Agriculture and Land Stewardship                        |
| DED     | Department of Economic Development                                    |
| DEM     | Digital Elevation Model   |

|          |  |
|----------|--|
| DET      | District Ecological Team   |
| DEWS     | Drought Early Warning System   |
| DMMP     | Dredged Material Management Plan   |
| DNR      | Department of Natural Resources  |
| DO       | Dissolved Oxygen   |
| DOA      | Department of Agriculture  |
| DOC      | Department of Conservation   |
| DOER     | Dredging Operations and Environmental Research   |
| DOT      | Department of Transportation   |
| DPR      | Definite Project Report  |
| DQC      | District Quality Control/Quality Assurance   |
| DSS      | Decision Support System  |
| EA       | Environmental Assessment   |
| ECC      | Economics Coordinating Committee   |
| EEC      | Essential Ecosystem Characteristic   |
| EIS      | Environmental Impact Statement   |
| EMAP     | Environmental Monitoring and Assessment Program  |
| EMAP-GRE | Environmental Monitoring and Assessment Program-Great Rivers Ecosystem                               |
| EMP      | Environmental Management Program [Note: Former name of Upper Mississippi River Restoration Program.] |
| EMP-CC   | Environmental Management Program Coordinating Committee  |
| EO       | Executive Order  |
| EPA      | Environmental Protection Agency  |
| EPR      | External Peer Review   |
| EQIP     | Environmental Quality Incentives Program   |
| ER       | Engineering Regulation   |
| ERDC     | Engineering Research & Development Center  |
| ESA      | Endangered Species Act   |
| EWMN     | Early Warning Monitoring Network   |
| EWP      | Emergency Watershed Protection Program   |
| FACA     | Federal Advisory Committee Act   |
| FEMA     | Federal Emergency Management Agency  |
| FERC     | Federal Energy Regulatory Commission   |
| FDR      | Flood Damage Reduction   |
| FFS      | Flow Frequency Study   |
| FONSI    | Finding of No Significant Impact   |
| FRM      | Flood Risk Management  |
| FRST     | Floodplain Restoration System Team   |
| FSA      | Farm Services Agency   |
| FTE      | Full Time Equivalent   |
| FWCA     | Fish & Wildlife Coordination Act   |
| FWIC     | Fish and Wildlife Interagency Committee  |
| FWS      | Fish and Wildlife Service  |
| FWWG     | Fish and Wildlife Work Group   |
| FY       | Fiscal Year  |
| GAO      | Government Accountability Office   |
| GEIS     | Generic Environmental Impact Statement   |
| GI       | General Investigations   |
| GIS      | Geographic Information System  |

|         |   |
|---------|---|
| GLC     | Governors Liaison Committee   |
| GLC     | Great Lakes Commission  |
| GLMRIS  | Great Lakes and Mississippi River Interbasin Study  |
| GPS     | Global Positioning System   |
| GREAT   | Great River Environmental Action Team   |
| GRP     | Geographic Response Plan  |
| HAB     | Harmful Algal Bloom   |
| HEL     | Highly Erodible Land  |
| HEP     | Habitat Evaluation Procedure  |
| HNA     | Habitat Needs Assessment  |
| HPSF    | HREP Planning and Sequencing Framework  |
| HQUSACE | Headquarters, USACE   |
| H.R.    | House of Representatives  |
| HREP    | Habitat Rehabilitation and Enhancement Project  |
| HU      | Habitat Unit  |
| HUC     | Hydrologic Unit Code  |
| IBA     | Important Bird Area   |
| IBI     | Index of Biological (Biotic) Integrity  |
| IC      | Incident Commander  |
| ICS     | Incident Command System   |
| ICWP    | Interstate Council on Water Policy  |
| IDIQ    | Indefinite Delivery/Indefinite Quantity   |
| IEPR    | Independent External Peer Review  |
| IIA     | Implementation Issues Assessment  |
| IIFO    | Illinois-Iowa Field Office (formerly RIFO - Rock Island Field Office)                                     |
| ILP     | Integrated License Process  |
| IMTS    | Inland Marine Transportation System   |
| IRCC    | Illinois River Coordinating Council   |
| IRPT    | Inland Rivers, Ports & Terminals  |
| IRTC    | Implementation Report to Congress   |
| IRWG    | Illinois River Work Group   |
| ISA     | Inland Sensitivity Atlas  |
| IWR     | Institute for Water Resources   |
| IWRM    | Integrated Water Resources Management   |
| IWTF    | Inland Waterways Trust Fund   |
| IWUB    | Inland Waterways Users Board  |
| IWW     | Illinois Waterway   |
| L&D     | Lock(s) and Dam   |
| LC/LU   | Land Cover/Land Use   |
| LDB     | Left Descending Bank  |
| LERRD   | Lands, Easements, Rights-of-Way, Relocation of Utilities or Other Existing Structures, and Disposal Areas |
| LiDAR   | Light Detection and Ranging   |
| LMR     | Lower Mississippi River   |
| LMRCC   | Lower Mississippi River Conservation Committee  |
| LOI     | Letter of Intent  |
| LTRM    | Long Term Resource Monitoring   |
| M-35    | Marine Highway 35   |
| MAFC    | Mid-America Freight Coalition   |

|           |   |
|-----------|---|
| MARAD     | U.S. Maritime Administration                            |
| MARC 2000 | Midwest Area River Coalition 2000                       |
| MICRA     | Mississippi Interstate Cooperative Resource Association |
| MIPR      | Military Interdepartmental Purchase Request             |
| MMR       | Middle Mississippi River                                |
| MMRP      | Middle Mississippi River Partnership                    |
| MNRG      | Midwest Natural Resources Group                         |
| MOA       | Memorandum of Agreement                                 |
| MoRAST    | Missouri River Association of States and Tribes         |
| MOU       | Memorandum of Understanding                             |
| MRAPS     | Missouri River Authorized Purposes Study                |
| MRBI      | Mississippi River Basin (Healthy Watersheds) Initiative |
| MRC       | Mississippi River Commission                            |
| MRCC      | Mississippi River Connections Collaborative             |
| MRCTI     | Mississippi River Cities and Towns Initiative           |
| MRRC      | Mississippi River Research Consortium                   |
| MR&T      | Mississippi River and Tributaries (project)             |
| MSP       | Minimum Sustainable Program                             |
| MVD       | Mississippi Valley Division                             |
| MVP       | St. Paul District                                       |
| MVR       | Rock Island District                                    |
| MVS       | St. Louis District                                      |
| NAS       | National Academies of Science                           |
| NAWQA     | National Water Quality Assessment                       |
| NCP       | National Contingency Plan                               |
| NIDIS     | National Integrated Drought Information System (NOAA)   |
| NEBA      | Net Environmental Benefit Analysis                      |
| NECC      | Navigation Environmental Coordination Committee         |
| NED       | National Economic Development                           |
| NEPA      | National Environmental Policy Act                       |
| NESP      | Navigation and Ecosystem Sustainability Program         |
| NETS      | Navigation Economic Technologies Program                |
| NGO       | Non-Governmental Organization                           |
| NGRREC    | National Great Rivers Research and Education Center     |
| NICC      | Navigation Interests Coordinating Committee             |
| NPDES     | National Pollution Discharge Elimination System         |
| NPS       | Non-Point Source  |
| NPS       | National Park Service                                   |
| NRC       | National Research Council                               |
| NRCS      | Natural Resources Conservation Service                  |
| NRDAR     | Natural Resources Damage Assessment and Restoration     |
| NRT       | National Response Team                                  |
| NSIP      | National Streamflow Information Program                 |
| NWI       | National Wetlands Inventory                             |
| NWR       | National Wildlife Refuge                                |
| O&M       | Operation and Maintenance                               |
| OHWM      | Ordinary High Water Mark                                |
| OMB       | Office of Management and Budget                         |

|         |  |
|---------|--|
| OMRR&R  | Operation, Maintenance, Repair, Rehabilitation, and Replacement  |
| OPA     | Oil Pollution Act of 1990  |
| ORSANCO | Ohio River Valley Water Sanitation Commission                    |
| OSC     | On-Scene Coordinator   |
| OSE     | Other Social Effects   |
| OSIT    | On Site Inspection Team  |
| P3      | Public-Private Partnerships                                      |
| PA      | Programmatic Agreement   |
| PAS     | Planning Assistance to States                                    |
| P&G     | Principles and Guidelines  |
| P&R     | Principles and Requirements                                      |
| P&S     | Plans and Specifications   |
| P&S     | Principles and Standards   |
| PCA     | Pollution Control Agency   |
| PCA     | Project Cooperation Agreement                                    |
| PCX     | Planning Center of Expertise                                     |
| PDT     | Project Delivery Team  |
| PED     | Preliminary Engineering and Design                               |
| PgMP    | Program Management Plan  |
| PILT    | Payments In Lieu of Taxes  |
| PIR     | Project Implementation Report                                    |
| PL      | Public Law   |
| PMP     | Project Management Plan  |
| PORT    | Public Outreach Team   |
| PPA     | Project Partnership Agreement                                    |
| PPT     | Program Planning Team  |
| QA/QC   | Quality Assurance/Quality Control                                |
| RCRA    | Resource Conservation and Recovery Act                           |
| RCP     | Regional Contingency Plan  |
| RCPP    | Regional Conservation Partnership Program                        |
| RDB     | Right Descending Bank  |
| RED     | Regional Economic Development                                    |
| RIFO    | Rock Island Field Office (now IIFO - Illinois-Iowa Field Office) |
| RM      | River Mile   |
| RP      | Responsible Party  |
| RPEDN   | Regional Planning and Environment Division North                 |
| RPT     | Reach Planning Team  |
| RRAT    | River Resources Action Team                                      |
| RRCT    | River Resources Coordinating Team                                |
| RRF     | River Resources Forum  |
| RRT     | Regional Response Team   |
| RST     | Regional Support Team  |
| RTC     | Report to Congress   |
| S.      | Senate   |
| SAV     | Submersed Aquatic Vegetation                                     |
| SDWA    | Safe Drinking Water Act  |
| SEMA    | State Emergency Management Agency                                |
| SET     | System Ecological Team   |

|         |   |
|---------|---|
| SONS    | Spill of National Significance  |
| SOW     | Scope of Work   |
| SRF     | State Revolving Fund  |
| SWCD    | Soil and Water Conservation District  |
| T&E     | Threatened and Endangered   |
| TEUs    | twenty-foot equivalent units  |
| TIGER   | Transportation Investment Generating Economic Recovery  |
| TLP     | Traditional License Process   |
| TMDL    | Total Maximum Daily Load  |
| TNC     | The Nature Conservancy  |
| TSP     | Tentatively selected plan   |
| TSS     | Total Suspended Solids  |
| TVA     | Tennessee Valley Authority  |
| TWG     | Technical Work Group  |
| UMESC   | Upper Midwest Environmental Sciences Center   |
| UMIMRA  | Upper Mississippi, Illinois, and Missouri Rivers Association  |
| UMR     | Upper Mississippi River   |
| UMRBA   | Upper Mississippi River Basin Association   |
| UMRBC   | Upper Mississippi River Basin Commission  |
| UMRCC   | Upper Mississippi River Conservation Committee  |
| UMRCP   | Upper Mississippi River Comprehensive Plan  |
| UMR-IWW | Upper Mississippi River-Illinois Waterway   |
| UMRNWFR | Upper Mississippi River National Wildlife and Fish Refuge   |
| UMRR    | Upper Mississippi River Restoration Program [Note: Formerly known as Environmental Management Program.] |
| UMRR CC | Upper Mississippi River Restoration Program Coordinating Committee                                      |
| UMRS    | Upper Mississippi River System  |
| UMWA    | Upper Mississippi Waterway Association  |
| USACE   | U.S. Army Corps of Engineers  |
| USCG    | U.S. Coast Guard  |
| USDA    | U.S. Department of Agriculture  |
| USFWS   | U.S. Fish and Wildlife Service  |
| USGS    | U.S. Geological Survey  |
| VTC     | Video Teleconference  |
| WCI     | Waterways Council, Inc.   |
| WES     | Waterways Experiment Station (replaced by ERDC)   |
| WHAG    | Wildlife Habitat Appraisal Guide  |
| WHIP    | Wildlife Habitat Incentives Program   |
| WIIN    | Water Infrastructure Improvements for the Nation Act  |
| WLMTF   | Water Level Management Task Force   |
| WQ      | Water Quality   |
| WQEC    | Water Quality Executive Committee   |
| WQTF    | Water Quality Task Force  |
| WQS     | Water Quality Standard  |
| WRDA    | Water Resources Development Act   |
| WRP     | Wetlands Reserve Program  |
| WRRDA   | Water Resources Reform and Development Act  |



## **Upper Mississippi River Restoration Program Authorization**

**Section 1103** of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by Section 405 of the Water Resources Development Act of 1990 (P.L. 101-640), Section 107 of the Water Resources Development Act of 1992 (P.L. 102-580), Section 509 of the Water Resources Development Act of 1999 (P.L. 106-53), Section 2 of the Water Resources Development Technical Corrections of 1999 (P.L. 106-109), and Section 3177 of the Water Resources Development Act of 2007 (P.L. 110-114).

## **Additional Cost Sharing Provisions**

**Section 906(e)** of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by Section 221 of the Water Resources Development Act of 1999 (P.L. 106-53).

### **SEC. 1103. UPPER MISSISSIPPI RIVER PLAN.**

(a)(1) This section may be cited as the "Upper Mississippi River Management Act of 1986".

(2) To ensure the coordinated development and enhancement of the Upper Mississippi River system, it is hereby declared to be the intent of Congress to recognize that system as a nationally significant ecosystem and a nationally significant commercial navigation system. Congress further recognizes that the system provides a diversity of opportunities and experiences. The system shall be administered and regulated in recognition of its several purposes.

(b) For purposes of this section --

(1) the terms "Upper Mississippi River system" and "system" mean those river reaches having commercial navigation channels on the Mississippi River main stem north of Cairo, Illinois; the Minnesota River, Minnesota; Black River, Wisconsin; Saint Croix River, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois;

(2) the term "Master Plan" means the comprehensive master plan for the management of the Upper Mississippi River system, dated January 1, 1982, prepared by the Upper Mississippi River Basin Commission and submitted to Congress pursuant to Public Law 95-502;

(3) the term "GREAT I, GREAT II, and GRRM studies" means the studies entitled "GREAT Environmental Action Team--GREAT I--A Study of the Upper Mississippi River", dated September 1980, "GREAT River Environmental Action Team--GREAT II--A Study of the Upper Mississippi River", dated December 1980, and "GREAT River Resource Management Study", dated September 1982; and

(4) the term "Upper Mississippi River Basin Association" means an association of the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, formed for the purposes of cooperative effort and united assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River System.

(c)(1) Congress hereby approves the Master Plan as a guide for future water policy on the Upper Mississippi River system. Such approval shall not constitute authorization of any recommendation contained in the Master Plan.

(2) Section 101 of Public Law 95-502 is amended by striking out the last two sentences of subsection (b), striking out subsection (i), striking out the final sentence of subsection (j), and redesignating subsection "(j)" as subsection "(i)".

(d)(1) The consent of the Congress is hereby given to the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, or any two or more of such States, to enter into negotiations for agreements, not in conflict with any law of the United States, for cooperative effort and mutual assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River system, and to establish such agencies, joint or otherwise, or designate an existing multi-State entity, as they may deem desirable for making effective such

agreements. To the extent required by Article I, section 10 of the Constitution, such agreements shall become final only after ratification by an Act of Congress.

(2) The Secretary is authorized to enter into cooperative agreements with the Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection to promote and facilitate active State government participation in the river system management, development, and protection.

(3) For the purpose of ensuring the coordinated planning and implementation of programs authorized in subsections (e) and (h)(2) of this section, the Secretary shall enter into an interagency agreement with the Secretary of the Interior to provide for the direct participation of, and transfer of funds to, the Fish and Wildlife Service and any other agency or bureau of the Department of the Interior for the planning, design, implementation, and evaluation of such programs.

(4) The Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection is hereby designated by Congress as the caretaker of the master plan. Any changes to the master plan recommended by the Secretary shall be submitted to such association or agency for review. Such association or agency may make such comments with respect to such recommendations and offer other recommended changes to the master plan as such association or agency deems appropriate and shall transmit such comments and other recommended changes to the Secretary. The Secretary shall transmit such recommendations along with the comments and other recommended changes of such association or agency to the Congress for approval within 90 days of the receipt of such comments or recommended changes.

(e) Program Authority

(1) Authority

(A) In general. The Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may undertake, as identified in the master plan

- (i) a program for the planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement; and
- (ii) implementation of a long-term resource monitoring, computerized data inventory and analysis, and applied research program, including research on water quality issues affecting the Mississippi River (including elevated nutrient levels) and the development of remediation strategies.

(B) Advisory committee. In carrying out subparagraph (A)(i), the Secretary shall establish an independent technical advisory committee to review projects, monitoring plans, and habitat and natural resource needs assessments.

(2) REPORTS. — Not later than December 31, 2004, and not later than December 31 of every sixth year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall submit to Congress a report that —

- (A) contains an evaluation of the programs described in paragraph (1);
- (B) describes the accomplishments of each of the programs;
- (C) provides updates of a systemic habitat needs assessment; and
- (D) identifies any needed adjustments in the authorization of the programs.

(3) For purposes of carrying out paragraph (1)(A)(i) of this subsection, there is authorized to be appropriated to the Secretary \$22,750,000 for fiscal year 1999 and each fiscal year thereafter.

(4) For purposes of carrying out paragraph (1)(A)(ii) of this subsection, there is authorized to be appropriated to the Secretary \$10,420,000 for fiscal year 1999 and each fiscal year thereafter.

(5) Authorization of appropriations.—There is authorized to be appropriated to carry out paragraph (1)(B) \$350,000 for each of fiscal years 1999 through 2009.

(6) Transfer of amounts.—For fiscal year 1999 and each fiscal year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may transfer not to exceed 20 percent of the amounts appropriated to carry out clause (i) or (ii) of paragraph (1)(A) to the amounts appropriated to carry out the other of those clauses.

(7)(A) Notwithstanding the provisions of subsection (a)(2) of this section, the costs of each project carried out pursuant to paragraph (1)(A)(i) of this subsection shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with the provisions of section 906(e) of this Act; except that the costs of operation and maintenance of projects located on Federal lands or lands owned or operated by a State or local government shall be borne by the Federal, State, or local agency that is responsible for management activities for fish and wildlife on such lands and, in the case of any project requiring non-Federal cost sharing, the non-Federal share of the cost of the project shall be 35 percent.

(B) Notwithstanding the provisions of subsection (a)(2) of this section, the cost of implementing the activities authorized by paragraph (1)(A)(ii) of this subsection shall be allocated in accordance with the provisions of section 906 of this Act, as if such activity was required to mitigate losses to fish and wildlife.

(8) None of the funds appropriated pursuant to any authorization contained in this subsection shall be considered to be chargeable to navigation.

(f) (1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, is authorized to implement a program of recreational projects for the system substantially in accordance with the recommendations of the GREAT I, GREAT II, and GRRM studies and the master plan reports. In addition, the Secretary, in consultation with any such agency, shall, at Federal expense, conduct an assessment of the economic benefits generated by recreational activities in the system. The cost of each such project shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with title I of this Act.

(2) For purposes of carrying out the program of recreational projects authorized in paragraph (1) of this subsection, there is authorized to be appropriated to the Secretary not to exceed \$500,000 per fiscal year for each of the first 15 fiscal years beginning after the effective date of this section.

(g) The Secretary shall, in his budget request, identify those measures developed by the Secretary, in consultation with the Secretary of Transportation and any agency established under subsection (d)(1) of this section, to be undertaken to increase the capacity of specific locks throughout the system by employing nonstructural measures and making minor structural improvements.

(h)(1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, shall monitor traffic movements on the system for the purpose of verifying lock capacity, updating traffic projections, and refining the economic evaluation so as to verify the need for future capacity expansion of the system.

(2) Determination.

(A) In general. The Secretary in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall determine the need for river rehabilitation and environmental enhancement and protection based on the condition of the environment, project developments, and projected environmental impacts from implementing any proposals resulting from recommendations made under subsection (g) and paragraph (1) of this subsection.

(B) Requirements. The Secretary shall

(i) complete the ongoing habitat needs assessment conducted under this paragraph not later than September 30, 2000; and

(ii) include in each report under subsection (e)(2) the most recent habitat needs assessment conducted under this paragraph.

(3) There is authorized to be appropriated to the Secretary such sums as may be necessary to carry out this subsection.

(i) (1) The Secretary shall, as he determines feasible, dispose of dredged material from the system pursuant to the recommendations of the GREAT I, GREAT II, and GRRM studies.

(2) The Secretary shall establish and request appropriate Federal funding for a program to facilitate productive uses of dredged material. The Secretary shall work with the States which have, within their boundaries, any part of the system to identify potential users of dredged material.

(j) The Secretary is authorized to provide for the engineering, design, and construction of a second lock at locks and dam 26, Mississippi River, Alton, Illinois and Missouri, at a total cost of \$220,000,000, with a first Federal cost of \$220,000,000. Such second lock shall be constructed at or in the vicinity of the location of the replacement lock authorized by section 102 of Public Law 95-502. Section 102 of this Act shall apply to the project authorized by this subsection.

#### **SEC. 906(e). COST SHARING.**

(e) In those cases when the Secretary, as part of any report to Congress, recommends activities to enhance fish and wildlife resources, the first costs of such enhancement shall be a Federal cost when--

(1) such enhancement provides benefits that are determined to be national, including benefits to species that are identified by the National Marine Fisheries Service as of national economic importance, species that are subject to treaties or international convention to which the United States is a party, and anadromous fish;

(2) such enhancement is designed to benefit species that have been listed as threatened or endangered by the Secretary of the Interior under the terms of the Endangered Species Act, as amended (16 U.S.C. 1531, et seq.), or

(3) such activities are located on lands managed as a national wildlife refuge.

When benefits of enhancement do not qualify under the preceding sentence, 25 percent of such first costs of enhancement shall be provided by non-Federal interests under a schedule of reimbursement determined by the Secretary. Not more than 80 percent of the non-Federal share of such first costs may be satisfied through in-kind contributions, including facilities, supplies, and services that are necessary to carry out the enhancement project. The non-Federal share of operation, maintenance, and rehabilitation of activities to enhance fish and wildlife resources shall be 25 percent.

## EMP OPERATING APPROACH

2006 marks the 20<sup>th</sup> anniversary of the Environmental Management Program (EMP). During that time, the Program pioneered many new ideas to help deliver efficient and effective natural resource programs to the Upper Mississippi River System (UMRS). These included the creation of an effective partnership of five states, five federal agencies, and numerous NGOs; a network of six field stations monitoring the natural resources of the UMRS; and the administrative structure to encourage river managers to use both new and proven environmental restoration techniques.

EMP has a history of identifying and dealing with both natural resource and administrative challenges. The next several years represent new opportunities and challenges as Congress considers authorization of the Navigation and Environmental Sustainability Program (NESP), possible integration or merger of EMP with NESP, and changing standards for program management and execution.

We will continue to learn from both the history of EMP and experience of other programs. Charting a course for EMP over the next several years is important to the continued success of the Program. EMP will focus on the key elements of partnership, regional administration and coordination, LTRMP, and HREPs.

The fundamental focus of EMP will not change, however the way we deliver our services must change and adapt. This will include:

- further refinements in regional coordination and management,
- refinement of program goals and objectives,
- increased public outreach efforts,
- development and use of tools such as the regional HREP database and HREP Handbook,
- exploring new delivery mechanisms for contracting,
- continued refinement of the interface between LTRMP and the HREP program components, and
- scientific and management application of LTRMP information and data.

The focus of these efforts must benefit the resources of the UMRS through efficient and effective management.