Virtual Meeting

# Upper Mississippi River Restoration Program Coordinating Committee

## Quarterly Meeting

## May 20, 2020

# Agenda

with
Background
and
Supporting Materials

# UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
# COORDINATING COMMITTEE

## May 20, 2020

### 8:00 a.m. – 2:00 p.m. CDT

### AGENDA

[**Note:** The states, U.S. Army Corps of Engineers, and the Department of the Interior will arrange their respective pre-meetings via conference call prior to the May 20, 2020 quarterly meeting.]

## Wednesday, May 20 UMRR Coordinating Committee Quarterly Meeting

| Time | Attachment | Topic | Presenter |
|---|---|---|---|
| **8:00 a.m.** | | **Welcome and Introductions** | ***Sabrina Chandler**, USFWS* |
| **8:05** | **A1-13** | **Approval of Minutes of February 26, 2020 Meeting** | |
| **8:10** | | **Regional Management and Partnership Collaboration** | ***Marshall Plumley**, USACE* |
| | **B1-3** | ▪ FY 2020 Fiscal Update and FY 2021 Outlook<br>– COVID-19-related challenges<br>▪ Statements of UMRS Significance<br>▪ 2015-2025 Strategic and Operational Plan Review<br>▪ UMRR Communications Pilot Project<br>▪ External Communications and Outreach Events | <br><br><br><br>***Andrew Stephenson**, UMRBA*<br>***All*** |
| **9:00** | | **UMRR Showcase Presentations**<br>▪ Harlow Island<br>▪ Projected Climate Change Impacts and Vulnerabilities in the Upper Mississippi River Basin | <br>***Jasen Brown**, USACE*<br>***John Delaney**, USGS* |
| **9:45** | | **Break** | |
| **10:15** | **C1-15** | **Long Term Resource Monitoring and Science**<br>▪ LTRM FY 2020 2nd Quarter Highlights<br>▪ Status and Trends Report 3rd Edition<br>▪ USACE LTRM Update | <br>***Jeff Houser**, USGS*<br><br>***Karen Hagerty**, USACE* |
| | **C16-17** | ▪ FY 2020 Science Proposals<br>▪ A-Team Report<br>▪ Consideration of Endorsement of Science Proposals | ***Jeff Houser**, USGS*<br>***Nick Schlesser**, MN DNR*<br>***Jeff Houser**, USGS* and ***Karen Hagerty**, USACE* |
| **12:15 p.m.** | | **Lunch** | |
| **12:45** | | **Habitat Restoration**<br>▪ District Reports | <br>***District HREP Managers*** |
| | **D1-11** | ▪ FWWG/RRF Project Recommendation<br>▪ HREP Selection Process: Insights and Improvements | ***Marshall Plumley**, USACE* |
| **1:50** | | **Other Business** | |
| | **E1** | ▪ Future Meeting Schedule | |
| **2:00 p.m.** | | **Adjourn** | |

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

**Continued on next page for remote connection information**

**Remote Connection Information:**

**May 20**
**UMRR Coordinating Committee Quarterly Meeting** (8:00 a.m. to 2:00 p.m. CDT)

- Web conferencing:
  https://umrba.my.webex.com/umrba.my/j.php?MTID=me864e265b248f7794acaf281bc883f1d

- Dial-in: 408-418-9388

  [Note: In the event that the call line provided is experiencing a high volume of calls, you may also connect by dialing 312-535-8110 or 469-210-7159.]

  — Access code: 624 812 307

  — Password: 1234

# ATTACHMENT A

## Minutes of the February 26, 2020
## UMRR Coordinating Committee Quarterly Meeting

*(A-1 to A-13)*

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

**February 26, 2020**
**Quarterly Meeting**

**Virtual Meeting**

Brian Chewning of the U.S. Army Corps of Engineers called the meeting to order at 1:05 p.m. on February 26, 2019. Chewning said the meeting was being held virtually due to forecasted inclement weather and expressed appreciation to the Coordinating Committee for their flexibility in arrangements. UMRR Coordinating Committee representatives present on the virtual meeting were Sabrina Chandler (USFWS), Mark Gaikowski (USGS), Randy Schultz (IA DNR), Dave Glover (IL DNR), Megan Moore (MN DNR), Matt Vitello (MO DoC), Jim Fischer (WI DNR), and Ken Westlake (USEPA). A complete list of attendees follows these minutes.

**Minutes of the October 30, 2019 Meeting**

Megan Moore moved and Matt Vitello seconded a motion to approve the draft minutes of the October 30, 2019 UMRR Coordinating Committee meeting as written. The motion carried unanimously.

**Regional Management and Partnership Collaboration**

Marshall Plumley said the St. Paul District participated in the 2020 Da Vinci Fest on January 25, 2020 that was attended by 2,500 people. District staff highlighted UMRR's successful restoration of Pool 8 Islands as well as other aspects of the program. Plumley noted that the Rock Island District is working to provide local museums with updated UMRR materials. The Missouri History Museum updated some exhibits and materials related to the program.

Plumley said he provided an overview of UMRR at a meeting of the Friends of Port Louisa National Wildlife Refuge. He also attended the January 14-16, 2020 UMRR LTRM Science Meeting at UMESC and said it brought passionate and knowledgeable folks together to discuss future science efforts for the program.

*FY 2020 Budget Outlook*

Plumley reported that the FY 20 appropriations measure was enacted on December 20, 2019 for the entire federal government. It included $33.17 million for UMRR, which was the level included in the President's FY 20 budget and House and Senate FY 20 appropriations measures. UMRR has obligated $9 million of its FY 20 funds to-date.

Plumley outlined UMRR's FY 20 internal allocations are as follows:

- Regional Administration and Program Efforts – $1,250,000
- Regional Science and Monitoring – $10,500,000
  - Long term resource monitoring – $5,000,000
  - Regional science in support of restoration – $3,800,000
  - Regional science staff support – $200,000
  - Habitat project evaluations – $1,125,000
  - HNA II/regional project sequencing – $375,000

- Habitat Restoration – $21,420,000
  - Rock Island District – $7,280,000
  - St. Louis District – $6,940,000
  - St. Paul District – $7,100,000
  - Model certification – $100,000

[Note: The allocation of HREP funds among the three districts reflects repayment for transfers in recent years.]

Plumley recalled that, due to challenges awarding Bass Ponds in 2019, the program re-allocated funds between program elements. Plumley said dollars would be restored this year to hopefully award Bass Ponds. Plumley noted that the construction contract for Crains Island was awarded and represents a significant construction project. Other significant contracts expected to be awarded this year include McGregor Lake and Bass Ponds.

Plumley reported that, on February 10, 2020, the President's FY 21 budget was released and includes $33.17 million for UMRR. He said program execution in FY 21 will be similar to FY 20, though regional science and monitoring would receive $100,000 less due to completion of HNA-II and the HREP selection process. Plumley said the program will soon initiate development of the next report to Congress.

Plumley acknowledged the many partners involved in making UMRR successful and said their hard work is reflected in the program receiving full funding over the last five years.

*UMRR Ten-Year Plan*

Plumley said updates to UMRR's 10-year outlook since the October 30, 2019 UMRR Coordinating Committee quarterly meeting reflect delays to project construction and planning as a result of prolonged high water conditions. Plumley noted that almost all projects in construction were delayed in some way due to multiple flood events in 2019. The document also incorporates anticipated progress related to HREPs in progress, monitoring, adaptive management, and science activities given assumptions based on recent funding trends. Future updates will include HREPs identified in the recent selection process, pending UMRR Coordinating Committee endorsement. Plumley said the program hopes to achieve 65,000 additional acres restored over the next decade.

In response to a question from Mike Klinger, Plumley said the targeted feasibility for newly identified HREPs is FY 21-25. Brian Chewning said MVD is working with UMRR and other programs to determine scope and scale of impacts from high water and suggested impacts to completed projects be acknowledged in the upcoming report to Congress.

Plumley said Dennis Hamilton is scheduled to retire in spring 2020. Plumley, Kirsten Wallace, and Jim Fischer expressed appreciation for his leadership, contributions to UMRR, and advocacy within the Corps on behalf of the program.

Hamilton said it was very rewarding to be involved with the partnership. He noted the program has a bright future as the group continues to adjust and move forward, always looking for new ways to do things and improve how to restore the river. Hamilton added that the program has grown tremendously over time and not only changed the trajectory of the environment on the UMR but also the trajectory of ecosystem restoration globally.

*Statements of UMRS Significance*

Plumley outlined UMRR Coordinating Committee's past conversations around development of statements of UMRS significance. He said that, in November 2019, the UMRR Coordinating Committee identified an approach to developing statements of UMRS significance beginning with a broad picture of the significance of the UMRS and then honing in on areas that UMRR can affect. Plumley said he had provided a draft set of statements organized in categories of public, technical, and institutional significance. The Coordinating Committee discussed reframing the text in the categories of partnership, natural resources, culture, reactional, navigation, and other economic benefits. Plumley said partners provided feedback about what is significant about the UMRS from their agency mission or perspective and suggested more clearly articulating the linkage between navigation and ecosystem degradation that the program is trying to address. Plumley reviewed a condensed version of the statements:

> *"The UMRS is significant because it provides simultaneous value historically, culturally, ecologically, and economically. It is historically significant because of its prominence in our country's development, its use by Native Americans and European settlers. It is culturally significant as it is part of our American identity; woven into American song lyrics and literature. It is ecologically significant as it supports a complex web of life supported by the diverse and varied habitats. It is economically significant as it provides jobs through commercial navigation, commercial fisheries, and a robust tourism industry; it also provides power supply and drinking water to some communities."*

Plumley said the UMRR Coordinating Committee is scheduled to convene a March 24, 2020 conference call regarding further development of statements of significance. On the call, Committee members will review the revised draft statements organized in the following categories: partnership, natural resources, culture, recreational, navigation, and other economic benefits.

*Report to Congress*

Plumley said the program will soon initiate development of the next report to Congress in calendar year 2020. He recalled that Jim Fischer mentioned 2020 represents the halfway point in the 2015-2020 UMRR Strategic Plan and it would be good to review the program's progress to date. Plumley said a review of the strategic plan and development of the statements of significance conducted over the next six to ten months would help identify important aspects to feature in the 2022 report to Congress. The report will also likely describe efforts over the recent six years related to HNA-II, desired future condition, third edition of the LTRM status and trends report, LTRM resource monitoring, HREPs, and any recommendations to Congress about the program.

Gretchen Benjamin said the Mississippi River is a north-south oriented river and may provide much needed relief to species threatened by climate change. She added that, over past three decades, UMRR has restored many areas that serve as refuges and spaces for species to thrive. Plumley agreed and said that concept ties in well with the statements of significance.

*UMRR Lower Illinois River Communication Pilot Project*

Andrew Stephenson reported the Lower Illinois River communications pilot *ad hoc* team has shared resources via email, but has not met since the October 30, 2019 meeting. In response to a question from Stephenson, Plumley said Angie Freyermuth's position will not be backfilled, but other regional planning office staff may be available to assist in this effort. Stephenson said the pilot communication project had

a lot of support and provides a good example of how UMRR can put its 2015-2025 Strategic Plan into action.

*ProjectWise*

Plumley said the Corps' ProjectWise software can be used to facilitate collaboration on document development across program partners. Plumley said he can provide a username and secure password that are required to access the program through a web-interface and assured no software installation is required. ProjectWise allows for storage of static documents. Plumley suggested the Coordinating Committee identify a project to use as a pilot test of the ProjectWise software in the coming months.

In response to a question from Kara Mitvalsky, Plumley said a pilot case would help identify any issues that need to be overcome for other partners. In response to a question from Stephenson, Plumley said the ProjectWise web-interface allows for storage of static documents and for collaboration and track changes in documents being developed. In response to a question from Chewning, Plumley said next steps for implementing a pilot test case would be to identify a project, which could be done in April, 2020. Julie Millhollin said ProjectWise is typically used for work with architectural and engineering contractors, but permissions can be made available to anyone. Jim Fischer expressed appreciation for the potential solution and suggested work on the statements of significance be considered as well as an HREP project as they would include folks from a variety of agencies and most aspects of the partnership.

*External Communications*

UMRR partners reported on the following communication and outreach activities since the October 30, 2020 UMRR Coordinating Committee meeting:

- Megan Moore reported that, on November 11, 2019, Rob Burdis of MN DNR presented to Lake City's City Council about field station and LTRM research collected over the last 30 years. She said MN DNR staff will also present February 27, 2020 at the Lake City public library about the impact of UMRR in the area and locally. Moore said she presented on climate change and impacts to biota using LTRM data at the October 29, 2019 UMRBA Board's quarterly meeting and at East De Pere High School and UW-Eau Claire.

- Sabrina Chandler said pull-up banners and business cards featuring UMRR were displayed at the Minnesota Valley National Wildlife Refuge visitor center and the visitor center in Fountain City. Chandler said the banners have been very useful for outreach events and expressed appreciation to Karen Hagerty for providing them. Chandler said she has had numerous conversations with Senator Chuck Grassley's office to discuss existing and potential new HREPs.

**UMRR Showcase Presentations**

*Functional changes in the UMRS fish community over the last 30 years*

Brian Ickes provided a summary of functional changes in the UMRS fish community over the last 30 years. Descriptions of community ecology before 2003 consisted of empirical observation only, whereas community ecology work from 2003 to 2018 considered faunistic (individual species) community patterns, their environmental associations, the role of invasives on faunistic-defined communities. Current research efforts applied a functional community approach by assigning guild classes (habitat, feeding, reproductive) to each species based on their life history to investigate if function community expressions are changing over time. Three models of functional community response to changes in the system were tested: homeostasis (slight random variation but stays in the same over time), rheostasis (years 1-3 in homeostasis and then the community shifts from shock in year 4 and years 5-9 are back to homeostasis), and non-random trajectory. Analysis of LTRM day electrofishing data from 1993-2014

showed clear and strong non-random trajectory in the functional responses of each of the three guilds (habitat, feeding, and reproductive) in all study reaches over time with the two exceptions of habitat and reproductive guilds in the Open River reach. Trajectories of change vary in direction and strength across reaches with functional dynamics converging in some reaches and diverging in others at various rates. Ickes said these results suggest the possibility of a resilience crisis in the future.

Megan Moore expressed appreciation for the research and said it provides a great avenue to understand these trajectories.

In response to a question from Lauren Salvato, Ickes said he and others are trying to get a better grasp of how Asian carp may be influencing current trajectories now and would if they become more prolific. He said water clarity and vegetation are the suspected drivers of change now, but noted quicker changes were observed in the open river and La Grange where carp are most abundant. He said next steps are to characterize the nature of the change and model what's driving the change.

In response to a question from Doug Blodgett, Ickes said observational data doesn't allow for identifying a shift until it occurs. Rather, you can know things are functionally changing over time and if they have reached tipping points, but you have to look at the literature to find the tipping points. In response to another question from Blodgett, Ickes said the data shows things are still moving and have not stabilized, but that state changes attributable to Asian carp would be investigated should that science proposal receive funding.

*UMRR HREP Story Map Initiative*

Michael Dougherty provided an overview of the new UMRR HREP Story Map Initiative that includes creation of an interactive webpage. The interactive map is a change from the past static map and now allows for viewing projects at various spatial scales and with various data layers, including historic maps, to explore relationships to other HREPs or environmental features. Additional features can be incorporated into the interface, such as the LTRM spatial data query tool or refuge boundaries available through ArcGIS online. Completed and active projects are included and can be searched for by district and project information is accessible through the interface. Project pages will include project details, features, key attributes, and photos. Dougherty said an early review of the interface from Jeff Janvrin received praise for the ability to identify project boundaries data in real time. This information will be valuable to PDTs as well the as the public and represents a shift in data management that may be considered for other program elements.

Jeff Houser commended the functionality of the interactive webpage and noted the value of the slider-graphic function developed by Kevin Hanson for the story maps. Dougherty said historic photos are not available for all projects but that a standard framework for project pages was a compromise for long-term familiarity with the tool and flexibility based on available project information.

Dougherty requested 8-10 photos of each project be submitted for project pages and noted they were planning drone footage of HREPs in the future. Bre Popkin suggested an interactive kiosk could be installed at the Dubuque River Museum. In response to a question from Mark Ellis, Dougherty said there are no constraints on data usage as data has been cleaned, financials are not included, and restoration features attributes are not of concern. In response to a question from Mark Gaikowski, Dougherty said post-project monitoring data is not available through the interface at this time. Jennie Sauer and Jim Fischer said it would be valuable to have a spatial data viewer or query available the interface. Sabrina Chandler acknowledged the value of the tool and said the refuge boundaries shapefile could be provided. Chandler also said DOI recently issued a stand-down for drone use on DOI lands that prohibits any drone use even if previously permitted, which represents a significant change to operations. In response,

Dougherty said the Corps has a rigorous clearance process for drone use, but that not work would be conducted on refuges until DOI policy changes.

**Habitat Restoration**

*District Reports*

Brian Markert said MVS had IPR for Oakwood Bottoms TSP with division and anticipates completion of the feasibility report in September 2020. The project management plan for Yorkinut slough has been completed and a planning charette will be held in the next few months to start feasibility. Other projects in planning include Rip Rap Landing and West Alton Islands. A design contract was awarded for Phase 1 Crains Island, which is the first HREP on the open river. Phase II Crains Island plans and specs design is in progress. Other design priorities include Piasa and Eagles Nest and Harlow Island. A contract award for plans and specs for Piasa and Eagles is anticipated this fiscal year and work continues on a plans and specs package for award in the fourth quarter of this year, depending on available funds. Markert said Oak Hill Contractors LLC was awarded their first Corps contract for construction of Phase 1 Crains Island. Clarence Cannon Refuge has multiple contractors on site to complete work delayed by flooding in 2019. Reforestation work continues at Ted Shanks. Markert expressed appreciation to all partners and stakeholders who supported the development of the new HREP fact sheets.

Julie Millhollin said MVR's planning priorities include Steamboat Island, Lower Pool 13, and Green Island. The Lower Pool 13 PDT held an open house and is discussing water level management in feasibility. A kick-off meeting for Green Island was held December 3, 2019. Millhollin said design work for Keithsburg Division Stage II is at 35 percent and work continues on all project features. High water continued to delay progress on Pool 12 Overwintering Stage 2, Huron Island Stages II and III, and Keithsburg Division Stage I. Construction was completed on Pool 12 Overwintering Stage 3 and it will be closed out. A vegetation review with ERDC is planned for spring to determine survival. Contractors were pulled off Beaver Island due to winter and ice, but plan to dredge again as conditions allow.

Angela Deen said that Tom Novak is retiring February 28, 2020 and that she would be serving as MVP's District Program Manager. Deen reported that MVP kicked off planning for Reno Bottoms in 2019 and plans to have a TSP for Lower Pool 10 by fall 2020. Design priorities for the district include McGregor Lake and Bass Ponds. Deen said channel maintenance funds will be used to move sand from McMillan channel to the top of McGregor Lake. Plans and specs are nearly finished for Bass Ponds and include a stop log structure for water level management. A construction contract for Conway Lake was awarded in 2018, but the contractor deferred starting until this spring. MVP plans to award construction contracts for Bass Ponds in May 2020 and McGregor Lake in July-August 2020. Draft evaluation reports were completed for Ambrough Slough and Trempealeau and submitted to partners for review. A team was assembled to discuss repairs to Harpers Slough Island W-2 and a letter report may be completed. Harpers Slough HREP was completed in 2017, but suffered two years of consecutive high water resulting in a 2000-foot breach on the island.

In response to a question from Jim Fischer, Deen said the Conway Lake contractor had two years to complete the work but may need a modification to the contract if high water continues. In response to a question from Stephenson, Deen explained a letter report is a smaller version of a feasibility report. In response to a question from Ken Westlake, Deen said surveys at Island W-2 were completed in January 2020 to determine the extent of material moved and that early internal discussions about repairs included extending rock and reinforcing the island to avoid future damage. In response to a question from Chewning, Deen said MVP hopes to advertise Bass Ponds in two weeks.

Plumley thanked Tom Novak and noted his involvement in the program has spanned nearly three decades, including serving as the St. Paul District program manager.

*HREP Selection Process*

Bre Popkin overviewed the PPT's guidance to the river teams for selecting new HREPs:

- Develop 3 to 5 projects of varying size and complexity.
- Limit fact sheets to 4 pages (excluding maps), pointing to references such as technical reports, other project fact sheets, white papers, journal articles, etc.
- Consult with federal, state, and nonprofit organization sponsors. Nonprofit or local organization participation will be facilitated through a "champion" voting member on the river team.
- Develop decision support tools as needed and, upon request, use decision logs and record discussions.
- Use decision logs and record discussions throughout the process to ensure transparency, adequate understanding and buy-in, and to inform future project selection efforts.
- Invite candidate cost-sharing non-profit organizations to consider submitting an HREP proposal.
- Use a structured decision-making exercise to describe whether and how projects will maintain or improve for each respective HNA-II indicator.

Popkin described the FWIC and RRCT's process for selecting new HREPs from June 2019 to November 2019. Roles in the process included FWIC members, agency POCs, fact sheet champions to assist non-traditional sponsors, and the RRCT Exec who endorsed fact sheets. The FWIC convened a two-day, in-person workshop that included a review of the guidance documents, an overview of the HNA II indicators and UMR ecological resilience conceptual models, and a brief discussion to begin thinking about screening criteria. The group completed a structured mapping exercise that included identifying known resources, unique features, areas to maintain or improve, and potential areas to target and grouping that information into potential projects with associated problems, opportunities, and constraints identified. Agency sponsors and fact sheet leads were identified to further develop eight draft fact sheets. Popkin said the FWIC compared final fact sheets using a matrix that include both ecological (HNA-II) and non-ecological components as well as a paired-comparison exercise. The FWIC recommended eight projects to the RRCT in three tiers:

Tier 1: FWIC recommends project implementation in the near term.

Tier 2: FWIC recommends project implementation during through FY 2025.

Tier 3: These project fact sheets should remain in the queue and be provided to RRCT, but should continue to be further developed/refined, revisiting scaling to include additional pools (i.e. forestry), where warranted, and re-submitted during next fact sheet selection process (2025) or when fact sheet merits further action.

After review, the RRCT recommended six of the eight projects across three tiers be considered by the UMRR Coordinating Committee for endorsement.

Kat McCain explained the RRAT and RRAT-Exec's process for selecting new HREPs from June 2019 to January 2020. The RRAT held an informational webinar in June 2019 to overview the guidance provided by the PPT. It then held a face-to-face meeting in August 2019 to generate project ideas. The in-person meeting included a virtual trip down the river to identify potential future project locations and revisit existing project ideas including those developed under other programs such as Regulating Works, NESP, and BiOp. After initial screening based, seven of the 24 initial project ideas were selected for further development. McCain said the RRAT-Exec used a matrix to further evaluate projects based on how well they address HNA-II indicators and other non-ecological criteria. The RRAT-Exec recommended six of the seven fact sheets be considered by the UMRR Coordinating Committee for endorsement.

Stephen Winter described the FWWG and RRF's process for selecting new HREPs from April 2019 to February 2020. The FWWG held two in-person discussions on April 4, 2019 and June 17, 2019 to review the PPT's guidance documents and strategize for identifying new fact sheets. FWWG members were asked to submit project ideas from June to August 2019, resulting in 66 potential fact sheets. Screening of projects impact on HNA-II indicators and other factors winnowed the list to five. Winter said the Pool 8 Poolwide Forestry fact sheet replaced a fact sheet focusing on Trempealeau NWR due to concerns over an existing, non-functioning HREP at Trempealeau needing to be resolved first. USFWS and WI DNR are developing an issue paper and letter to MVP regarding the existing Trempealeau HREP and impacts to future HREPs. Winter said the FWWG submitted a prioritized list of four fact sheets to the RRF for endorsement and noted a fifth fact sheet would be developed and submitted prior to the May 20, 2020 quarterly meeting of the UMRR Coordinating Committee.

In response to a question from Megan Moore, Sabrina Chandler said the existing HREP at Trempealeau NWR has never been fully utilized as intended and that a letter detailing the issues would be submitted to the UMRR Coordinating Committee when it was finalized. In response to a question from Gretchen Benjamin, Marshall Plumley said the City of Davenport proposal is not moving forward at this time because of cost-share issues associated with PPAs and that the QBAREA Board is aware of what's required of sponsors to move forward on projects. Mike Klinger expressed appreciation to Popkin for working with QBAREA throughout the process and that QBAREA is willing to proceed with the current PPA requirements. Rome Frericks thanked Plumley and Dave Glover for their guidance through the process and in developing the fact sheet. Klinger added that QBAREA is excited to see this project move forward and alleviate sediment concerns in the area.

In response to a question from Jim Fischer, Plumley said project sponsorship is mostly related to who owns the land and that, for projects on Corps owned land managed by another agency, O&M is the responsibility of the land manager. Jim Fischer suggested including those who collaborated in a fact sheet's development in addition to the sponsoring agency to demonstrate that fact sheets are the result of partnership effort. Chandler agreed that other collaborators could be identified on fact sheets, but noted the need for clarity in who the project sponsor is as that comes with cost implications.

Plumley explained that this HREP selection process was intended to develop projects for implementation in FY 21-25 to show UMRR's momentum when fully funded. Plumley expressed appreciation for the hard work from all the partners in identifying quality projects in a tight timeline. He said that, throughout the process, we collaborated in new ways as a partnership with new sponsors, moved toward more fully integrating all program staff, and used the HNA-II to inform project development. He noted that the projects presented represent a diversity of restoration techniques, scale, scope & cost, and sponsorship.

Matt Vitello motioned and Megan Moore seconded for the UMRR Coordinating Committee to endorse the 16 fact sheets recommended by the executive-level District-based river teams, as follows:

RRCT

- Multi-Pool Habitat Protection
- Lower Pool 11
- Upper Pool 13
- Geneva and Hershey Islands
- Quincy Bay
- Pool 18 Forestry

RRAT-exec

- East Cape
- Gilbert Lake Division
- Gilead Slough
- Slim Island Division
- Spunky Bottoms Sterling Island Complex

RRF

- Lower Pool 4 – Big Lake, Robinson Lake, and Tank Pond
- Bank Stabilization and Natural Levee
- Lower Pool 5 and Weaver Bottoms
- Black River Bottoms Forest Restoration

The UMRR Coordinating Committee unanimously endorsed the fact sheets for submittal to MVD for review and approval.

Plumley said river team chairs will document their respective teams' HREP selection processes and provide them to the Program Planning Team along with insights on what did or did not go well throughout the process and any suggested improvements to the HREP selection process guidance documents. The PPT will meet to discuss possible modifications to the guidance documents. The resulting guidance documents will be codified as the UMRR Coordinating Committee reviews and updates the 2013 Joint Charter of UMRR's consultative bodies later this year. [Note: The PPT will meet virtually May 6-7, 2020 to review guidance documents.]

**Long Term Resource Monitoring and Science**

*FY 2020 1st Quarter Report*

Jeff Houser said accomplishments of the second quarter of FY 20 include publication of the following:

- Completion report, "Developing methods of estimating submersed aquatic vegetation biomass in the Upper Mississippi River to expand capabilities within the UMRR program and improve the utility of the long-term vegetation data."
- Manuscripts:
  - "Decadal trends and ecological shifts in backwater lakes of a large floodplain river: Upper Mississippi River."
  - "Invasive silver carp is empirically linked to declines of native sport fish in the Upper Mississippi River System."
  - "Status, trends, and population demographics of selected sportfish species in the La Grange Reach of the Illinois River."

*2020 UMRR Science Meeting*

Houser reported the 2020 UMRR Science Meeting was held January 14-16, 2020 in La Crosse. The format was similar to the 2018 science meeting, and focused on assessing current information needs for the understanding, management, and restoration of the UMRS and developing proposals for research using 2020 funds. Approximately 90 people attended the meeting. Attendees self-selected into working groups:

| **Working Group** | **Working Group Lead(s)** |
|---|---|
| WG1: Hydrologic and geomorphic changes | Jim Rogala (UMESC), Jon Hendrickson (USACE), Molly Van Appledorn (UMESC) |
| WG2: Side channels | Molly Sobotka (MDC) |
| WG3: Aquatic vegetation and wildlife | Danelle Larson (UMESC) |
| WG4: UMRS fish community dynamics | Brian Ickes (UMESC) |
| WG5: Water quality and eutrophication | KathiJo Jankowksi (UMESC) |
| WG6: Floodplain ecology | Nathan De Jager (UMESC) |

Working groups at the meeting considered what the river will look like in 50-100 years and the distribution and abundance of habitat and biota as well as the restoration and management implications. The meeting facilitated more direct interaction between restoration practitioners, natural resource managers, and research scientists and fostered a collaborative approach around development of larger proposals. Houser said resultant proposals will be ranked by the A-Team, USGS, and the Corps in

April 2020 and then presented to the UMRR Coordinating Committee at the May 20, 2020 quarterly meeting. Houser expressed appreciation to Jennie Sauer, Karen Hagerty, Carol Lowenberg, the working group leads and attendees. Houser summarized the results of a post-meeting survey indicating people liked the structure and organization of the meeting, time spent in small groups, having a clear goal, opportunities for collaboration and interaction among agencies and fields of expertise, meeting new people and making new connections, and the overall positive energy and enthusiasm at the meeting. Houser said respondents also provided suggestions for improving future science meetings.

Andrew Stephenson expressed appreciation to Houser for arranging the meeting and the opportunity to have face-to-face conversations about the science proposals. Karen Hagerty agreed and said the effort involved in planning and coordination was evident and the meeting was a benefit to everyone involved in the program.

*Status and Trends 3rd Edition*

Houser said the LTRM Status and Trends Report chapter authors are scheduled to meet in early April 2020 to discuss initial results and finalize details on formatting and layout. Writing and analysis will be completed during FY 20. Findings will be included in the 2022 report to Congress.

*USACE LTRM Report*

Hagerty said UMRR's FY 20 LTRM allocation under full funding includes $6.3 million ($5.0 million for base monitoring and $1.3 million for analysis). An additional $2.5 million is available for science in support of restoration and management. Hagerty said these funds will cover monitoring during the Illinois Waterway closure, development of wind fetch products, moving LTRM spatial data to web mapping services, continuing ecohydrology work for two years, and reintroducing chloride monitoring for three years (2020-2023) to allow comparisons to historic data and establish change over time. Hagerty said funding available for science proposals totals $1.9 million. Proposals are due March 20, 2020 and will be considered by the UMRR Coordinating Committee at the May 20, 2020 quarterly meeting.

*A-Team Report*

Nick Schlesser reported that the A-Team met in-person in conjunction with the January 14-16, 2020 UMRR science meeting. It began planning a process for ranking the proposals that come out of the Science Meeting. Schlesser said the A-Team is planning a conference call for the week of April 6, 2020 to ask questions to project PI(s) ahead of ranking proposals. The A-Team is scheduled to meet on April 22, 2020 to rank proposals.

**Other Business**

Megan Moore expressed concern that the LTRM discussions have been compressed in recent meetings and proposed extending the meeting timeframe to allow for adequate discussion over each of the important elements of the program. Sabrina Chandler agreed and recalled past discussions noting that periodically the HREP and LTRM agenda items are exchanged to ensure one element is not compressed regularly. Plumley and Chewning also agreed, noting the importance of all program elements.

Plumley said Jim Rogala is retiring in March 2020. Plumley expressed appreciation for his contributions to UMRR since the program's inception. Houser said Rogala's contributions were often behind the scenes but that his leadership, creativity, and institutional knowledge are invaluable and thanked him for his work ensuring the program's success over the years.

Upcoming quarterly meetings are as follows:

- **May 2020 – [Note: These meetings will be held remotely due to the ongoing coronavirus pandemic.]**
  - UMRBA quarterly meeting – May 19
  - **UMRR Coordinating Committee quarterly meeting – May 20**
- **August 2020 – La Crosse**
  - UMRBA quarterly meeting – August 11
  - **UMRR Coordinating Committee quarterly meeting – August 12**
- **October 2020 – St. Paul**
  - UMRBA quarterly meeting – October 27
  - **UMRR Coordinating Committee quarterly meeting – October 28**

With no further business, the meeting adjourned at 4:55 p.m.

**UMRR Coordinating Committee Virtual Attendance List**

**February 26, 2020**

**UMRR Coordinating Committee Members**

| | |
|---|---|
| Brian Chewning | U.S. Army Corps of Engineers, MVD |
| Sabrina Chandler | U.S. Fish and Wildlife Service, UMR Refuges |
| Mark Gaikowski | U.S. Geological Survey, UMESC |
| Dave Glover | Illinois Department of Natural Resources |
| Randy Schultz | Iowa Department of Natural Resources |
| Megan Moore | Minnesota Department of Natural Resources |
| Matt Vitello | Missouri Department of Conservation |
| Jim Fischer | Wisconsin Department of Natural Resources |
| Ken Westlake | U.S. Environmental Protection Agency, Region 5 |

**Others In Attendance**

| | |
|---|---|
| Thatch Shephard | U.S. Army Corps of Engineers, MVD |
| LeeAnn Riggs | U.S. Army Corps of Engineers, MVD |
| Angela Deen | U.S. Army Corps of Engineers, MVP |
| Col. Steve Sattinger | U.S. Army Corps of Engineers, MVR |
| Marshall Plumley | U.S. Army Corps of Engineers, MVR |
| Andy Barnes | U.S. Army Corps of Engineers, MVR |
| Dennis Hamilton | U.S. Army Corps of Engineers, MVR |
| Kim Thomas | U.S. Army Corps of Engineers, MVR |
| Karen Hagerty | U.S. Army Corps of Engineers, MVR |
| Jodi Creswell | U.S. Army Corps of Engineers, MVR |
| Bre Popkin | U.S. Army Corps of Engineers, MVR |
| Erica Stephens | U.S. Army Corps of Engineers, MVR |
| Kara Mitvalsky | U.S. Army Corps of Engineers, MVR |
| Julie Millhollin | U.S. Army Corps of Engineers, MVR |
| Jesse Ray | U.S. Army Corps of Engineers, MVR |
| Michael Dougherty | U.S. Army Corps of Engineers, MVR |
| Kayleigh Thomas | U.S. Army Corps of Engineers, MVR |
| Heather Schroeder | U.S. Army Corps of Engineers, MVR |
| Keri Diedrich | U.S. Army Corps of Engineers, MVR |
| Brian Markert | 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 |
| Greg Kohler | U.S. Army Corps of Engineers, MVS |
| Kat McCain | U.S. Army Corps of Engineers, MVS |
| Brian Johnson | U.S. Army Corps of Engineers, MVS |
| Chuck Theiling | U.S. Army Corps of Engineers, ERDC |
| Kraig McPeek | U.S. Fish and Wildlife Service, RIFO |
| Sara Schmuecker | U.S. Fish and Wildlife Service, RIFO |
| Tyler Porter | U.S. Fish and Wildlife Service, RIFO |
| Matt Mangan | U.S. Fish and Wildlife Service, RIFO |
| Stephen Winter | U.S. Fish and Wildlife Service, UMR Refuges |
| Jeff Houser | U.S. Geological Survey, UMESC |
| Jennie Sauer | U.S. Geological Survey, UMESC |
| Brian Ickes | U.S. Geological Survey, UMESC |
| Kristen Bouska | U.S. Geological Survey, UMESC |
| Jayme Strange | U.S. Geological Survey, UMESC |
| Amy Shields | U.S. Environmental Protection Agency |

| | |
|---|---|
| Nick Schlesser | Minnesota Department of Natural Resources |
| Gretchen Benjamin | The Nature Conservancy |
| Doug Blodgett | The Nature Conservancy |
| Mike Klinger | Quincy Bay Area Restoration and Enhancement Association |
| Rome Frericks | Quincy Bay Area Restoration and Enhancement Association |
| Jill Crafton | Izaak Walton League |
| Angela Love | Wood |
| 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 (5/1/2020)** *(B-1 to B-3)*

# UMRR Quarterly Budget Report: Rock Island District

FY2020 Q2; Report Date: Fri May 01 2020

## Habitat Projects

| Project Name | Cost Estimates | | | FY2020 Financials | | | |
|---|---|---|---|---|---|---|---|
| | Non-Federal | Federal | Total | Carry In | Allocation | Funds Available | Actual Obligations |
| Beaver Island | - | $25,288,000 | $25,288,000 | - | $2,955,000 | $2,955,000 | $142,182 |
| Green Island, IA | - | $16,600,000 | $16,600,000 | $46,000 | $450,000 | $496,000 | $111,848 |
| Huron Island | - | $15,773,000 | $15,773,000 | - | $100,000 | $100,000 | $67,578 |
| Keithsburg Division | - | $29,643,000 | $29,643,000 | $83,658 | $2,550,000 | $2,633,658 | $271,632 |
| Lower Pool 13 | - | $25,288,000 | $25,288,000 | $45,522 | $425,000 | $470,522 | $204,316 |
| Pool 12 (Forestry) | - | - | - | - | $400,000 | $400,000 | - |
| Pool 12 Overwintering | - | $20,870,822 | $20,870,822 | - | $50,000 | $50,000 | -$410,934 |
| Rice Lake, IL | $7,280,000 | $13,459,763 | $20,739,763 | - | - | - | $3,170 |
| Steamboat Island | - | $41,977,000 | $41,977,000 | - | $350,000 | $350,000 | $289,764 |
| **Total** | $7,280,000 | $188,899,585 | $196,179,585 | $175,180 | $7,280,000 | $7,455,180 | $679,557 |

## Habitat Rehabilitation

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| District Program Management | - | - | - | $89,374 |
| **Total** | - | - | - | $89,374 |

## Regional Program Administration

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| Adaptive Management | - | $200,000 | $200,000 | $36,041 |
| Habitat Eval/Monitoring | - | $1,125,000 | $1,125,000 | $103,307 |
| Model Certification/Regional HREP | - | $100,000 | $100,000 | $1,236 |
| Public Outreach | - | $50,000 | $50,000 | $1,842 |
| Regional Program Management | - | $1,200,000 | $1,200,000 | $607,729 |
| Regional Project Sequencing | - | $375,000 | $375,000 | $36,736 |
| **Total** | - | $3,050,000 | $3,050,000 | $786,891 |

## Regional Science and Monitoring

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| Long Term Resource Monitoring | - | $5,000,000 | $5,000,000 | $56,954 |
| Science in Support of Restoration/Management | - | $3,800,000 | $3,800,000 | $1,418,434 |
| **Total** | - | $8,800,000 | $8,800,000 | $1,475,387 |

| | Carry In | Allocation | Funds Available | Actual Obligations |
|---|---|---|---|---|
| **Rock Island Total** | $175,180 | $19,130,000 | $19,305,180 | $3,031,210 |

# UMRR Quarterly Budget Report: St. Louis District

FY2020 Q2; Report Date: Fri May 01 2020

## Habitat Projects

| Project Name | Cost Estimates | | | FY2020 Financials | | | |
|---|---|---|---|---|---|---|---|
| | Non-Federal | Federal | Total | Carry In | Allocation | Funds Available | Actual Obligations |
| Clarence Cannon | - | $29,800,000 | $29,800,000 | $4,325 | $1,500,000 | $1,504,325 | $528,924 |
| Crains Island | - | $36,562,000 | $36,562,000 | - | $3,330,000 | $3,330,000 | $3,298,289 |
| Harlow Island | - | $37,971,000 | $37,971,000 | - | $425,000 | $425,000 | $111,427 |
| Oakwood Bottoms | - | $29,000,000 | $29,000,000 | $38,103 | $310,000 | $348,103 | $294,803 |
| Piasa - Eagle's Nest Islands | - | $26,746,000 | $26,746,000 | - | $335,000 | $335,000 | $115,709 |
| Rip Rap Landing | $2,848,000 | $6,464,000 | $9,312,000 | - | $75,000 | $75,000 | $5,596 |
| Ted Shanks | - | $29,506,000 | $29,506,000 | - | $300,000 | $300,000 | $110,544 |
| Yorkinut Slough, IL | - | $8,500,000 | $8,500,000 | $749 | $325,000 | $325,749 | $81,288 |
| **Total** | $2,848,000 | $214,049,000 | $216,897,000 | $46,872 | $6,940,000 | $6,986,872 | $4,546,578 |

## Habitat Rehabilitation

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| District Program Management | - | - | - | $199,543 |
| **Total** | - | - | - | $199,543 |

## Regional Program Administration

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| Habitat Eval/Monitoring | - | - | - | $69,167 |
| **Total** | - | - | - | $69,167 |

| | Carry In | Allocation | Funds Available | Actual Obligations |
|---|---|---|---|---|
| St. Louis Total | $46,872 | $6,940,000 | $6,986,872 | $4,815,289 |

# UMRR Quarterly Budget Report: St. Paul District

FY2020 Q2; Report Date: Fri May 01 2020

## Habitat Projects

| Project Name | Cost Estimates | | | FY2020 Financials | | | |
|---|---|---|---|---|---|---|---|
| | Non-Federal | Federal | Total | Carry In | Allocation | Funds Available | Actual Obligations |
| Bass Ponds, Marsh, and Wetland | - | $6,300,000 | $6,300,000 | - | $100,000 | $100,000 | $169,903 |
| Conway Lake | - | $7,413,000 | $7,413,000 | - | $300,000 | $300,000 | $16,223 |
| Harpers Slough | - | $13,675,000 | $13,675,000 | - | - | - | $62,485 |
| Lower Pool 10 Island and Backwater Complex | - | $17,000,000 | $17,000,000 | $29,702 | $450,000 | $479,702 | $224,011 |
| McGregor Lake | - | $23,550,000 | $23,550,000 | $32,067 | $5,950,000 | $5,982,067 | $327,261 |
| Reno Bottoms | - | $10,000,000 | $10,000,000 | - | $300,000 | $300,000 | $111,737 |
| **Total** | - | $77,938,000 | $77,938,000 | $61,769 | $7,100,000 | $7,161,769 | $911,619 |

## Habitat Rehabilitation

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| District Program Management | - | - | - | $532,900 |
| **Total** | - | - | - | $532,900 |

## Regional Program Administration

| Subcategory | FY2020 Financials | | | |
|---|---|---|---|---|
| | Carry In | Allocation | Funds Available | Obligations |
| Habitat Eval/Monitoring | - | - | - | $137,484 |
| **Total** | - | - | - | $137,484 |

| | Carry In | Allocation | Funds Available | Actual Obligations |
|---|---|---|---|---|
| **St. Paul Total** | $61,769 | $7,100,000 | $7,161,769 | $1,582,004 |

# ATTACHMENT C

## Long Term Resource Monitoring and Science

- **Base Monitoring Scope of Work thru 2nd Quarter of FY 2020 (4/30/2020)** *(C-1 to C-3)*
- **FY 2020 UMRR Science Activities in Support of Restoration and Management (4/30/2020)** *(C-4 to C-13)*
- **FY 2017 UMRR Science Activities in Support of Restoration and Management (4/27/2020)** *(C-14)*
- **FY 2014 and FY 2015 UMRR Science Activities in Support of Restoration and Management (4/27/2020)** *(C-15)*
- **FY2020 UMRR Science Proposals Recommended for Funding** *(C-16)*
  The document containing the full versions of each recommended proposal can be found here: http://www.umrba.org/RecommendedFY2020ScienceProposals_UMRRCC_link.pdf.
- **Estimated Budgets for UMRR Science Proposals** *(C-17)*

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Aquatic Vegetation Component** | | | | | | |
| 2020A1 | Complete data entry and QA/QC of 2019 data; 1250 observations. | | | | | |
| | a. Data entry completed and submission of data to USGS | 30-Nov-2019 | | 30-Nov-2019 | | Lund, Drake, Bales |
| | b. Data loaded on level 2 browsers | 15-Dec-2019 | | 15-Dec-2019 | | Schlifer |
| | c. QA/QC scripts run and data corrections sent to Field Stations | 28-Dec-2019 | | 28-Dec-2019 | | Sauer, Schlifer |
| | d. Field Station QA/QC with corrections to USGS | 15-Jan-2020 | | 15-Jan-2020 | | Lund, Drake, Bales |
| | e. Corrections made and data moved to public Web Browser | 30-Jan-2020 | | 30-Jan-2020 | | Larson, Schlifer, Caucutt |
| 2020A2 | Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2019 data | 31-Jul-2020 | | | | Larson, Rogala, Schlifer |
| 2020A3 | Wisconsin DNR annual summary report 2019 that combines current year observations from LTRM with previous years' data, for the fish, aquatic vegetation, and water quality components. | 30-Sep-2020 | | | | Drake, Bartels, Hoff, Kalas, Carhart |
| 2020A4 | Complete aquatic vegetation sampling for Pools 4, 8, and 13 (Table 1) | 31-Aug-2020 | | | | Larson, Lund, Drake, Bales |
| 2020A5 | Pool 4: Graphical summary and maps of aquatic vegetation current status and long-term trends. | 30-Dec-2019 | | 2-Oct-2019 | | Lund |
| 2020A6 | Pool 8: Graphical summary and maps of aquatic vegetation current status and long-term trends. | 30-Dec-2019 | | 6-Sep-2019 | | Drake, Carhart |
| 2020A7 | Web-based: Update software coding for surface distribution maps of aquatic plants | 30-Sep-2020 | | | | Larson, Rogala |
| 2020A8 | Draft manuscript: Estimated annual summer submersed aquatic macrophyte standing stocks (1998 - 2018) in three large reaches of the Upper Mississippi River. | 30-Jun-2020 | | | | Drake, Lund, Bales, Kreiling |
| **Intended for distribution** | | | | | | |
| LTRM completion report: Evaluation of a "Trace" Plant Density Score in LTRM Vegetation Monitoring (New Milestone 2020BIO3a; Report under final USGS review) | | | | | | |
| **Fisheries Component** | | | | | | |
| 2020B1 | Complete data entry, QA/QC of 2019 fish data; ~1,590 observations | | | | | |
| | a. Data entry completed and submission of data to USGS | 31-Jan-2020 | | 1-Jan-2020 | | DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson |
| | b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations | 15-Feb-2020 | | 15-Jan-2020 | | Ickes, Schlifer |
| | c. Field Station QA/QC with corrections to USGS | 15-Mar-2020 | | 30-Jan-2020 | | DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson |
| | d. Corrections made and data moved to public Web Browser | 30-Mar-2020 | | 6-Feb-2020 | | Ickes and Schlifer |
| 2020B2 | Update Graphical Browser with 2019 data on Public Web Server. | 31-May-2020 | | 6-Feb-2020 | | Ickes and Schlifer |
| 2020B3 | Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool (Table 1) | 31-Oct-2020 | | | | DeLain, Bartels, Bowler, Hine, Gittinger, West, Solomon, Maxson |
| 2020B4 | Summary Letter: Floodplain fisheries sampling | 31-Oct-2020 | | | | West |
| 2020B5 | IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2019 | 30-Jan-2020 | | 3-Jan-2020 | | Bowler |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| 2020B6 | Sample collection, database increment on Asian carp age and growth: collection of cleithral bones | 31-Jan-2020 | | 31-Jan-2020 | | Solomon, Maxson |
| 2020B8(D) | Database increment: Stratified random day electrofishing samples collected in Pools 9–11 | 30-Sep-2020 | | | | Bowler |
| 2020B9(D) | Database increment: Stratified random day electrofishing samples collected in Pools 16–18 | 30-Sep-2020 | | | | Bowler |
| 2020B10 | Database increment: Evaluating the Fish Community in a rare Backwater Habitat in the Middle Mississippi River | 30 Dec. 2020 | | | | West |
| Intended for distribution | | | | | | |
| LTRM Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) (in USGS review; minor grammatical corrections needed then will be posted on LTRM Fish page) | | | | | | |
| 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) | | | | | | |
| **Water Quality Component** | | | | | | |
| 2020D1 | Complete calendar year 2019 fixed-site and SRS water quality sampling | 31-Dec-2019 | | 31-Dec-2019 | | Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| 2020D2 | Complete laboratory sample analysis of 2019 fixed site and SRS data; Laboratory data loaded to Oracle data base. | 15-Mar-2019 | | 15-Mar-2019 | | Yuan, Schlifer |
| 2020D3 | 1st Quarter of laboratory sample analysis (~12,600) | 30-Dec-2019 | | 30-Dec-2019 | | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Cook, Fulgoni |
| 2020D4 | 2nd Quarter of laboratory sample analysis (~12,600) | 30-Mar-2020 | | 30-Mar-2020 | | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| 2020D5 | 3rd Quarter of laboratory sample analysis (~12,600) | 29-Jun-2020 | | | | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| 2020D6 | 4th Quarter of laboratory sample analysis (~12,600) | 28-Sep-2020 | | | | Yuan, Manier, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| 2020D7 | Complete QA/QC of calendar year 2019 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-2020 | | 30-Mar-2020 | | Schlifer, Rogala, Jankowski |
| | b. Field Station QA/QC; USGS QA/QC. | 15-Apr-2020 | | 15-Apr-2020 | | Jankowski, Rogala, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| | c. Corrections made and data moved to public Web Browser | 30-Apr-2020 | | 15-Apr-2020 | | Rogala, Schlifer, Jankowski |
| 2020D8 | Complete FY2019 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool | 30-Sep-2020 | | | | Jankowski, Burdis, Kalas, Kueter, L. Gittinger, Kellerhals, Fulgoni |
| 2020D9 | WEB-based annual Water Quality Component Update w/ 2018 data on Server. | 30-May-2020 | | | | Rogala |
| 2020D10 | Operational Support to the UMRR LTRM Element. Serve as in-house Field Station for USGS for consultation and support on various LTRM- | 30-Sep-2020 | | | | Kalas, Hoff, Bartel, Drake |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| 2020D12 | Final LTRM Completion Report: Assessment of Phytoplankton Samples collected by the Upper Mississippi River Restoration Program-Long Term Resource Monitoring Water Quality Component | 30-Jan-2021 | | | | Fulgoni and Jankowski |
| **On-Going** | | | | | | |
| 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-Dec-2019 | 30-Sep-2020 | | Contractor delay | Fulgoni and Jankowski |
| 2017D10 | Draft LTRM Completion report: Evaluation of water quality data from automated sampling platforms | 30-Sep-2017 | 30-Sep-2020 | | Delayed, Lubinski took new position | Soeken-Gittinger, Lubinski, Chick, Houser |
| **Intended for distribution** | | | | | | |
| Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (in USGS review; minor grammatical corrections needed then will be posted on LTRM WQ page) | | | | | | |
| 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) (under revision) | | | | | | |
| **Land Cover/Land Use with GIS Support** | | | | | | |
| 2020LC1 | Maintenance ArcGIS server | 30-Sep-2020 | | | | Hlavacek, Fox, Rohweder |
| 2020LC2 | Aerial Photo scanning (ILR) | 30-Sep-2020 | | | | Hlavacek |
| 2020LC3 | Updates on progress for land cover products listed. | 30-Sep-2020 | | | | Robinson, Finley |
| **Data Management** | | | | | | |
| 2020M1 | Update vegetation, fisheries, and water quality component field data entry and correction applications. | 30-May-2020 | | | | Schlifer |
| 2020M2 | Load 2019 component sampling data into Database tables and make data available on Level 2 browsers for field stations to QA/QC. | 30-Jun-2020 | | | | Schlifer |
| 2020M3 | 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** | | | | | | |
| 2020ST1 | Final Outline including specific indicators that will be included in the report. | 1-Dec-2019 | | 1-Dec-2019 | | All |
| 2020ST2 | Draft Report for partner review | 28-Aug-2020 | | | | All |
| 2020ST3 | Revised draft to USGS publishing network | 15-Dec-2020 | | | | All |
| 2020ST4 | Draft S&T3 Fact Sheet | 30-Mar-2020 | | | | All |
| **Quarterly Activities** | | | | | | |
| 2020QR1 | Submittal of quarterly activities | 30-Jan-2020 | | 30-Jan-2020 | | All |
| 2020QR2 | Submittal of quarterly activities | 13-Apr-2020 | | 13-Apr-2020 | | All |
| 2020QR3 | Submittal of quarterly activities | 13-Jul-2020 | | | | All |
| 2020QR4 | Submittal of quarterly activities | 12-Oct-2020 | | | | All |
| **Equipment Inventory** | | | | | | |
| 2020ER1 | Property inventory and tracking | 15-Nov-2020 | | | | LTRM staff as needed |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Developing and Applying Indicators of Ecosystem Resilience to the UMRS** | | | | | | |
| 2020R1 | Updates provided at quarterly UMRR CC meeting and A team meeting | Various | | | | Bouska, Houser |
| 2020R2 | Submit fish regime manuscript for peer-review publication | 30-Dec-2019 | | 10-Oct-19 | accepted for publication | Bouska |
| 2020R3 | Submit aquatic vegetation resilience manuscript to RWG | 30-Sep-2020 | | | | Bouska |
| 2020R4 | Submit draft outline of resilience assessment synthesis to RWG | 30-Sep-2020 | | | | Bouska |
| **Intended for Distribution** | | | | | | |
| Manuscript: Bouska, K. L., J. N. Houser, N. R. De Jager, D. C. Drake, S. F. Collins, D. K. Gibson-Reinemer, and M. A. Thomsen. *In Review.* Conceptualizing alternate regimes in a large floodplain-river ecosystem. Journal of Environmental Management Volume 264 https://doi.org/10.1016/j.jenvman.2020.110516 | | | | | | |
| **Assessing recent rates of sedimentation in the backwaters of Pools 4, 8, and 13 to support river restoration and the Habitat Needs Assessment-II** | | | | | | |
| 2018ST1 | Reestablishment of horizontal and vertical temporary benchmarks, and a data base for horizontal and vertical benchmarks (Continuation of 2017ST1) | 30-Mar-2018 | 1-Feb-2019 | 1-Feb-2019 | Poor conditions in Pool 13 continue; highwater fall 2019 | Rogala, Moore, Kalas, Bierman |
| 2018ST2 | Open-water nearshore surveys completed and a database (Continuation of 2017ST2) | 31-Dec-2018 | 2-Jan-2020 | 2-Jan-2020 | | Rogala, Moore, Kalas, Bierman |
| 2018ST3 | Over-ice surveys completed and a database (Continuation of 2017ST3) | 30-Mar-2018 | 30-Mar-2020 | | | Rogala, Moore, Kalas, Bierman |
| 2018ST4 | Draft completion report on sedimentation rates along transects (Continuation of 2017ST4) If surveys in Pool 13 cannot be completed in 2019/2020, the completion report will only include analysis of data from Pools 4 and 8. | 30-Sep-2018 | 30-Mar-2020 | 5-Feb-2020 | Pools 4 and 8 | Rogala, Moore, Kalas, Bierman |
| **Landscape Pattern Research and Application** | | | | | | |
| 2020L1 | Geospatial analyses in support of the Forest Gap project | 30-Aug-2020 | | | | De Jager |
| 2020L2 | Analysis; Evaluating effects of alternative flooding scenarios on forest succession in the UMRS. Potential manuscript in 2021 | 30-Sep-2020 | | | | De Jager |
| 2020L3 | Analysis; Developing a state and transition model for reed canarygrass invasion on the Upper Mississippi River floodplain. Potential manuscript in 2021 | 30-Sep-2020 | | | | De Jager |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **On-Going** | | | | | | |
| 2016L3 | Draft Manuscript: Review of Landscape Ecology on the UMR | 30-Sep-2016 | 30-Sep-2020 | | Delayed due to Indicators Report and HNA | De Jager |
| **Eco-hydrologic Research** | | | | | | |
| 2020EH01 | Submit manuscript of UMRS inundation diversity for peer review | 30-Sep-2020 | | | | Van Appledorn, De Jager, Rohweder |
| 2020EH02 | Submit manuscript of temporal patterns in UMRS inundation regimes for peer review | 30-Sep-2020 | | | | Van Appledorn, De Jager, Rohweder |
| 2020EH03 | Analysis of UMRS floodplain forest diversity and development of forest typology | 30-Sep-2020 | | | | Van Appledorn |
| **On-Going** | | | | | | |
| Development of UMRS inundation model query tool; Van Appledorn, Fox, Rohweder, De Jager; 2019EH03 | | | | | | |
| Manuscript: Van Appledorn, M., De Jager, N.R. Considerations for improving floodplain research and management by integrating inundation modeling, ecosystem studies, and ecosystem services (2016L5; see 2019EH01) | | | | | | |
| **Intended for distribution** | | | | | | |
| Manuscript: Modeling and mapping inundation regimes for ecological and management applications: a case study of the Upper Mississippi River floodplain, USAVan Appledorn, De Jager, Rohweder Research and Applications, Early View On-Line Special Edition. http://dx.doi.org/10.1002/rra.3628 Location of supporting data: https://doi.org/10.5066/F7VD6XRT) | | | | | | |
| **Acquisition and Interpretation of Imagery for Production of 2020 UMRS Land Cover/Land Use Data and Pool-Based Orthomosaics** | | | | | | |
| 2020LCU1 | Imagery Acquisition | Late Aug. Sept. 2020 | | | | Dieck, Hop |
| 2020LCU2 | Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, QA/QC, and serving of 2020 LCU datasets for Pools 4, 8, 13, 26, La Grange, and an estimated 80% of the Open River South | 1-Sep-2021 | | | | Dieck, Hop |
| 2020LCU3 | Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of 2020 LCU datasets for remaining 50% of Open River South, the Alton Pool of the Illinois River, and Pools 9-12 | 1-Sep-2022 | | | | Dieck, Hop |
| 2020LCU4 | Image processing, stereo model development, orthorectification, pool-based mosaicking, image interpretation, automation, QA/QC, and serving of 2020 LCU datasets for Pools 1-3, 5-7, the St. Croix and lower Minnesota Rivers, and the Peoria Pool of the Illinois River | 1-Sep-2023 | | | | Dieck, Hop |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Aquatic Vegetation, Fisheries, and Water Quality Research** | | | | | | |
| ***Fisheries*** | | | | | | |
| 2020B12a | Final LTRM Completion Report: Developing a biochronology of smallmouth buffalo growth for the Upper Mississippi and Illinois Rivers (tied to 2018SMBF4) | 30-Jul-2020 | | | | Ickes with Solomon |
| **On-Going** | | | | | | |
| 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-2019 | 29-Feb-2020 | 29-Feb-2020 | out for peer review | Ickes |
| 2016B14 | Draft completion report: Exploring Years with Low Total Catch of Fishes in Pool 26 | 30-Sep-2016 | 30-Jul-2020 | | Previous co-authors took new job positions | Gittinger, Chick |
| 2020BF1 | Iowa Walleye Management Plan 2019; incorporation of LTRM data | 30-Nov-2019 | | 30-Nov-2019 | | Bowler |
| ***Water Quality*** | | | | | | |
| 2019D12 | Draft Summary Paper: Expanding the international engagement and recognition of UMRR LTRM (replacing 2014P1) | 30-Sep-2019 | TBD | | Currently low priority, will revisit when appropriate | 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-2019 | 30-Jul-2020 | | Split in to two papers; second will incorporate connectivity | Jankowski, Rogala, Houser |
| **Intended for Distribution** | | | | | | |
| Burdis, Rob. Manuscript: Trends in water quality and biota in segments of Pool 4, above and below Lake Pepin (Aquat Sci 82, 27. https://doi.org/10.1007/s00027-020-0703-7M) Working title: Decadal trends and ecological shifts in backwater lakes of a large floodplain river: Upper Mississippi River | | | | | | |
| **Statistical Evaluation** | | | | | | |
| 2020E1 | Draft manuscript. Detection errors | 30-Sep-2020 | | | | Gray |
| **Intended for distribution** | | | | | | |
| Draft manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1) in journal review | | | | | | |
| Draft manuscript: How well do trends in LTRM percent frequency of occurrence SAV statistics track trends in true occurrence? Gray 2016E2; in journal review | | | | | | |
| Manuscript: Model selection for ecological community data using tree shrinkage priors; Gray, Hefley, Zhang, Bouska; (2017FA2; in revision with Ecological Applications) | | | | | | |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Pool 12 Overwintering HREP Adaptive Management Fisheries Response Monitoring** | | | | | | |
| ***Fisheries Population Monitoring*** | | | | | | |
| 2020P13a | Collect annual increment of pool-wide electrofishing data | 1-Nov-2019 | | 1-Nov-2019 | | Bowler |
| 2020P13b | Collect annual increment of fyke netting data from backwater lakes | 15-Nov-2019 | | 15-Nov-2019 | | Bowler |
| 2020P13c | Perform otolith extraction from bluegills for aging | 1-Dec-2019 | | 1-Dec-2019 | | Bowler |
| 2020P13d | Age determination of bluegills collected in Fall 2020 | 1-Feb-2020 | | Not collected because of highwater fall of 2020 | | Bowler and Kueter |
| 2020P13e | In-house project databases updated | 31-Mar-2020 | | | | Bowler |
| 2020P13f | Summary letter compiled and made available to program partners; contained in "2018 UMRR-LTRM Highlights for Bellevue" | 30-Sep-2020 | | | | 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 | | Feb. 2020 | | 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 Science Coordination Meeting** | | | | | | |
| 2020N1 | Science Planning Meeting; UMESC | Week Jan. 13, 2020 | | Completed | | All LTRM |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **FY18 Funded Science in Support of Restoration and Management Proposals** | | | | | | |
| **Conceptual Model and Hierarchical Classification of Hydrogeomorphic Settings in the UMRS** | | | | | | |
| 2019CM2 | Summary of workshop findings and minutes; internal document | 31-Dec-2018 | | 30-Jan-2019 | 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-2019 | 30-Dec-2019 | 19-Dec-2019 | | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange |
| 2019CM4 | GIS data base and query tool | 31-Dec-2019 | On-going | | Prototype developed | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange |
| 2019CM5 | Submit draft LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system | 31-Dec-2019 | 30-Mar-2020 | | | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange |
| 2019CM6 | Submit Final LTRM Completion report on hydrogeomorphic conceptual model and hierarchical classification system | 30-Jun-2020 | | | | Fitzpatrick, Henderson, Rogala, Erwin, Sawyer, Strange |
| **Develop a better understanding of geomorphic changes through repeated measurement of bed elevation and overlay of land cover data** | | | | | | |
| ***Determine geomorphic changes in selected side channels of selected reaches using hydroacoustics*** | | | | | | |
| 2019GC2 | Complete geodatabase of previous surveys and begin updating as needed. Begin developing and apply change detection methods. | 1-Dec-2018 | | 30-Jan-2019 | Delayed due to furlough | Strange, Rogala |
| 2019NEW | Complete Side Channel Surveys | 30-Sep-2019 | 30-Nov-2019 | 4-Feb-2020 | Pool 18 survey data received Feb. 2020 | Strange, Wallace, Klingman |
| 2019GC3 | Submit draft LTRM Completion report | 1-Mar-2020 | 15-Jun-2020 | | Delayed since Pool 18 survey data later than expected | Rogala, Stone |
| ***Establish a network of transects in backwaters to measure sedimentation*** | | | | | | |
| 2019GC4 | Begin setting monuments at existing transects. Establish, survey and monument new transects as needed | 1-Oct-2018 | 1-Jun-2019 | 1-Jun-2019 | | Kalas, Rogala |
| 2019GC5 | Establish methods. Determine database structure and begin entering data into database (including transect maps, description of monuments, etc.) | 1-Dec-2018 | | 1-Dec-2018 | | Rogala, Kalas |
| 2019GC6 | Complete setting monuments and surveying remaining transects | 30-Sep-2020 | | | | Kalas |
| 2019GC7 | Complete database for all transects. | 30-Sep-2020 | | | | Kalas |
| ***Determine recent planform changes using UMRR LCU datasets*** | | | | | | |
| 2019GC8 | Submit draft LTRM Completion Report on recent planform changes using UMRR LCU datasets | 1-Jul-2019 | 30 Oct. 2019 | 4-Nov-2019 | | Rogala |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Water Exchange Rates and Change in UMRS Channels and Backwaters, 1980 to Present** | | | | | | |
| 2019WE1 | Data Analysis | 31-Mar-2019 | 30-Jun-2020 | | Delayed due to continuous flooding and high water along with other priorities | Hendrickson |
| 2019WE2 | Base Maps of Discharge Measurement Location | 31-May-2019 | | | | Le Claire |
| 2019WE3 | Submit draft LTRM Completion Report | 30-Sep-2019 | 30-Jul-2020 | | | Hendrickson |
| 2019WE4 | Submit Final LTRM Completion Report | 30-Mar-2020 | 30-Sep-2020 | | | Hendrickson |
| **Intrinsic and extrinsic regulation of water clarity over a 950-km longitudinal gradient of the UMRS** | | | | | | |
| 2019IE1 | Database complete | 30-Apr-2019 | | 30-Apr-2019 | | Carhart, Drake, others |
| 2019IE2 | Draft analysis and annual progress summary | 31-Dec-2019 | | 7-Feb-2020 | | Drake, Carhart and others |
| 2019IE3 | Submit Draft manuscript | 30-Mar-2020 | TBD | PIs determined that to move forward biomass information is needed. Will continue work once biomass model complete | | Drake, Carhart and others |
| 2019IE4 | Submit Final manuscript | 30-Dec-2020 | | | | 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-2019 | | 30-Apr-2019 | | 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-2019 | | 1-Jul-2019 | | Schmidt, Straub, Schultz |
| 2019WF5 | Collect data in Pools 4, 8, 13 using LTRM methodology | 30-Aug-2019 | | 30-Aug-2019 | | Winter, Lund, Drake, Bales |
| 2019WF6 | Collect data in Pools 4, 8, 13 using benthic core sampling | 30-Oct-2019 | | 30-Oct-2019 | | Winter |
| 2019WF7 | Conduct final analyses, submit draft LTRM Completion report | 30-May-2020 | | | | Schmidt, Straub, Schultz |
| 2019WF8 | Submit Final LTRM Completion Report | 30-Sep-2020 | | | | Schmidt, Straub, Schultz |
| **Understanding constraints on submersed vegetation distribution in the UMRS: the role of water level fluctuations and clarity** | | | | | | |
| 2019SVD1 | Retrieve existing systemic datasets for elevation gages, topobathy and water clarity. | 30-Dec-2018 | | 1-Dec-2018 | | Kalas, Carhart, Rogala, |
| 2019SVD2 | Estimate/interpolate photic zone and generate predicted SAV bands systemically. | 30-Jun-2019 | | 2-Jul-2019 | | Kalas, Carhart, Rogala, |
| 2019SVD3 | Submit annual progress summary | 30-Sep-2019 | | 11-Oct-2019 | | Kalas, Carhart, |
| 2019SVD4 | Spatial coverages and databases complete, begin draft report. | 30-Oct-2019 | | 30-Oct-2019 | | Kalas, Carhart, Rohweder |
| 2019SVD5 | Submit draft manuscript | 30-Sep-2020 | | | | Kalas, Carhart, Drake, Rogala, Rohweder |
| 2019SVD6 | Webpage to house database information | 30-Sep-2020 | | | | Kalas, Carhart, Rogala, Rohweder |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Systemic analysis of hydrogeomorphic influences on native freshwater mussels** | | | | | | |
| 2019FM1 | Design pool-wide surveys in Pools 8 and 13 | 30-Sep-2019 | | 30-Sep-2019 | | 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-2019 | 9/30/2020 (will now include all pools) | Delayed since lead technician who was to perform most of the analyses took a new position; new hire in place (Jan. 2020) | | Jim Rogala, Jason Rohweder, Teresa Newton |
| 2019FM3 | Conduct pool-wide surveys for mussels in Pools 8 and 13 | 30-Sep-2019 | 30-Sep-2019 | 30-Sep-2019 | | Mike Davis, Teresa Newton |
| 2019FM4 | Annual progress summary | 30-Dec-2019 | 15-Feb-2020 | 7-Feb-2020 | | 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-2020 | 30-Sep-2021 | | | Jason Rohweder, Teresa Newton, Catherine Murphy |
| 2019FM6 | Annual progress summary | 30-Dec-2020 | 30-Dec-2021 | | | Teresa Newton |
| 2019FM7 | Complete statistical analyses and prepare geospatial maps | 30-Sep-2021 | 30-Sep-2022 | | | Teresa Newton, Catherine Murphy, Jason Rohweder |
| 2019FM8 | Draft LTRM completion report | 30-Sep-2021 | 30-Sep-2022 | | | Teresa Newton |
| 2019FM9 | Final LTRM completion report | 30-Jan-2023 | | | | Teresa Newton |
| **Using dendrochronology to understand historical forest growth, stand development, and gap dynamics** | | | | | | |
| 2019DD1 | Annual progress summary | 31-Dec-2018 | | 25-Feb-2019 | | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde |
| 2019DD2 | Data collection | 30-Nov-2018 | | 30-Nov-2018 | Sample size low due to high water levels | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde, Robert Cosgriff |
| 2019DD3 | Growth-ring chronologies and forest vegetation demographic and biophysical data | 31-Jul-2019 | | 31-Jul-2019 | | Dr. Harley, MS students |
| 2019DD4 | Plot-level 3-dimensional subsurface floodplain sedimentation maps for each study site | 31-Jul-2019 | | 31-Jul-2019 | | Dr. Maxwell, MS students |
| 2019DD5 | Annual progress summary | 31-Dec-2019 | | 6-Feb-2020 | | Dr. Harley, Dr. Maxwell, MS students, Ben Vandermyde |
| 2019DD6 | Baseline dataset for promoting resilience of hard mast forest communities along the UMRS | 30-Jun-2020 | Delay in field work data collection has significantly altered the anticipated time for analysis. | | | Dr. Harley, Dr. Maxwell, MS students |
| 2019DD7 | Submit draft manuscript | 30-Sep-2020 | | | | Dr. Harley, Dr. Maxwell, MS students |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Forest canopy gap dynamics: quantifying forest gaps and understanding gap – level forest regeneration** | | | | | | |
| 2019FG1 | Completion of polygon layer of canopy gaps for Study Area with associated tabular and FGDC-compliant metadata | 30-Apr-2019 | | 30-Apr-2019 | | Strassman, Sattler, Hoy |
| 2019FG2 | Annual progress summary | 31-Dec-2018 | | 27-Dec-2018 | | Meier, Strassman |
| 2019FG3 | Data collection | 31-Oct-2019 | | 31-Oct-2019 | | Thomsen, Vandermyde, Guyon |
| 2019FG4 | Annual progress summary | 31-Dec-2019 | | 30-Dec-2019 | | Meier, Strassman |
| 2019FG5 | Submit draft LTRM Completion Report | 30-Sep-2020 | | | | Guyon, Thomsen, Meier, Strassman |
| 2019FG6 | Baseline dataset complete | 30-Sep-2020 | | | | Guyon, Thomsen, Meier, Strassman, DeJager |
| 2019FG7 | Submit draft manuscript | 30-Sep-2021 | | | | Guyon, Thomsen, Meier, Strassman, DeJager |
| **Investigating vital rate drivers of UMRS fishes to support management and restoration** | | | | | | |
| 2019VR1 | Data collection will occur during regular LTRM fish field sampling (Completed) | 15-Oct-2018 | | 15-Oct-2018 | | LTRM Fish Component Leads |
| 2019VR2 | Processing of samples | 2018 through 2021 | | | | Quinton Phelps. Greg Whitledge |
| 2019VR3 | Annual progress summary | 31-Dec-2018 | | 11-Feb-2019 | | Andy Bartels, Kristen Bouska, Quinton Phelps |
| 2019VR4 | Data collection will occur during regular LTRM fish field sampling | 15-Oct-2019 | | 15-Oct-2019 | | LTRM Fish Component Leads |
| 2019VR5 | Annual progress summary | 31-Dec-2019 | | 31-Dec-2019 | | Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge |
| 2019VR6 | Data collection will occur during regular LTRM fish field sampling | 15-Oct-2020 | | | | LTRM Fish Component Leads |
| 2019VR7 | Annual progress summary | 31-Dec-2020 | | | | Andy Bartels, Kristen Bouska, Quinton Phelps, Greg Whitledge |
| 2019VR8 | Data set complete (data delivered to Ben Schlifer, physical structures delivered to BRWFS) | 30-Sep-2021 | | | | Quinton Phelps |
| 2019VR9 | Submit draft manuscript (Vital rates) | 31-Dec-2021 | | | | Quinton Phelps, Kristen Bouska |
| 2019VR10 | Submit draft manuscript (Drivers of vital rates) | 31-Dec-2021 | | | | Quinton Phelps, Kristen Bouska |
| 2019VR11 | Submit draft manuscript (Microchemistry) | 31-Dec-2021 | | | | Greg Whitledge |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **FY19 Funded Science in Support of Restoration and Management** | | | | | | |
| **Development of a standardized monitoring program for vegetation and fish response to Environmental Pool Management practices in the Upper Mississippi River System** | | | | | | |
| 2019epm1 | Progress Report | 30-Dec-2019 | Postponed due to high water | | | Chick and McGuire |
| 2019epm2 | Progress Report | 30-Dec-2020 | | | | Chick and McGuire |
| 2019epm3 | Draft LTRM Completion | 30-Jun-2021 | | | | Chick and McGuire |
| 2019epm4 | Final LTRM Completion | 30-Dec-2021 | | | | Chick and McGuire |
| **Combining genetics, otolith microchemistry, and vital rate estimation to inform restoration and management of fish populations in the UMRS** | | | | | | |
| 2019gen1 | Progress Report | 30-Dec-2019 | | 31-Dec-2019 | | Larson, Bartels, Bouska |
| 2019gen2 | Progress Report | 30-Dec-2020 | | | | Larson, Bartels, Bouska |
| 2019gen3 | Draft Manuscript | 30-Dec-2021 | | | | Larson, Bartels, Bouska |
| **Reforesting UMRS forest canopy openings occupied by invasive species** | | | | | | |
| 2019ref1 | Progress Report | 30-Dec-2019 | | 7-Feb-2020 | Project delays due to high water in 2019 | Guyon and Cosgriff |
| 2019ref2 | Progress Report | 30-Dec-2020 | | | | Guyon and Cosgriff |
| 2019ref3 | Draft LTRM Completion | 30-Apr-2021 | | | | Guyon and Cosgriff |
| 2019ref4 | Final LTRM Completion | 30-Sep-2021 | | | | Guyon and Cosgriff |
| **A year of zooplankton community data from the habitats and pools of the UMR** | | | | | | |
| 2019zoo1 | Progress Report | 30-Dec-2019 | | 2-Jan-2020 | | Sobotka and Fulgoni |
| 2019zoo2 | Draft LTRM Completion report on utility of zooplankton community monitoring for HREP assessment | 30-Dec-2020 | | | | Sobotka and Fulgoni |
| 2019zoo3 | Final LTRM Completion report on utility of zooplankton community monitoring for HREP assessment | 30-Jun-2021 | | | | Sobotka and Fulgoni |
| 2019zoo4 | Draft LTRM Completion report on on detailing differences between pools and habitats. Report will also investigate the potential investigate the potential impacts of Asian carp on the zooplankton community. | 30-Dec-2020 | | | | Sobotka and Fulgoni |
| 2019zoo5 | Final LTRM Completion report on on detailing differences between pools and habitats. Report will also investigate the potential investigate the potential impacts of Asian carp on the zooplankton community. | 30-Jun-2021 | | | | Sobotka and Fulgoni |
| **The Role of Large Wood in The Restoration of Habitat in the Upper Mississippi River System** | | | | | | |
| 2019LW1 | Progress Report | 31-Dec-2019 | 14-Feb-2020 | 12-Feb-2020 | | Thomsen, Jankowski |
| 2019LW2 | Draft LTRM Completion Report | 31-Dec-2020 | | | | Thomsen, Jankowski |
| 2019LW3 | Final LTRM Completion Report | 30-Apr-2021 | | | | Thomsen, Jankowski |

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **FY19 Funded Illinois Waterway 2020 Lock Closure** | | | | | | |
| **Aquatic Vegetation: Navigation Closure Study** | | | | | | |
| 2019SAV1 | Field sampling - before lock closure | 30-Aug-2019 | | 30-Aug-2019 | | Lund, Drake, Bales, others |
| 2019SAV2 | Progress Report | 30-Dec-2019 | | 3-Jan-2020 | | Lund, Drake, Bales |
| **Pre- and Post-Maintenance Aerial Imagery for Illinois River's Alton through Brandon Lock and Dams, 2019-2020.** | | | | | | |
| 2019AER1 | Acquire 4-band aerial imagery 2019 | late-August/early-September of 2019 | | Completed | | Lubinski, Robinson, and Hop |
| 2019AER2 | Complete Orthomosaics and metadata 2019 Flight | 31-Dec-2019 | | 31-Dec-2019 | Waiting for upload to ScienceBase | Robinson and Hop |
| **Fish Community Response to the 2020 Illinois Waterway Lock Closure** | | | | | | |
| 2019FSH1 | Field sampling - before lock closure | 30-Oct-2019 | | 30-Oct-2019 | | Lamer and Solomon |
| 2019FSH2 | Progress Report | 30-Dec-2019 | | 7-Feb-2020 | | Lamer and Solomon |
| **Water Clarity and the IWW Lock Closures** | | | | | | |
| 2019WC1 | Background data collection on barge -driven wave action and sediment suspension | 30-Dec-2019 | | 30-Dec-2019 | | Jankowski (collaborating with Fish and SAV studies) |
| 2019WC2 | Spatial survey of phytoplankton biomass | 30-Dec-2019 | | 30-Dec-2019 | | Jankowski (collaborating with Fish and SAV studies) |

**UMRR Science in Support of Restoration and Management**
**FY2017 Work Plan Scope of Work**
**May 2020 Status**

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Plankton community dynamics in Lake Pepin - the role of curstacean zooplankton** | | | | | | |
| 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-Jun-20 | | schedule synched with 2015LPP2 | Burdis |
| **4-Band aerial camera acquisistion, integration, and testing for the 2020 LCU mission** | | | | | | |
| 2018CAM1 | Collection of test 4-band imagery, evaluation of image quality and image | Summer | | 30-Sep-18 | 4-band imgaery collected of various HREP | 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 | | Summer 2019 | The FWS remote sensing plane and hardware were lost for the entire year due camera integration issues. HREP imagery collected in 2018 will be resampled to approximate | 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 | 31-Mar-20 | 30-Apr-20 | COVID work load challenges | Robinson |
| 2018CAM4 | Final LTRM Completion report with sample images detailing integration | Winter 2019 | 31-May-20 | | COVID work load challenges | Robinson |
| **UMRR LTRM WQ lab modernization** | | | | | | |
| 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 | TBD | | | 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**
**May 2020 Status**

| Tracking number | Milestone | Original Target Date | Modified Target Date | Date Completed | Comments | Lead |
|---|---|---|---|---|---|---|
| **Effects of Nutrient Concentrations on Zoo- and Phytoplankton** | | | | | | |
| 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 | | Giblin, Campbell, Houser, Manier |
| 2014NC3 | Full manuscript completed | 13-Mar-18 | 13-Mar-20 | 13-Mar-20 | revised manuscript submitted to journal | Giblin, Campbell, Houser, Manier |
| **Plankton community dynamics in Lake Pepin** | | | | | | |
| 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 | | | Burdis |
| **Predictive Aquative Cover Type Model - Phase 2** | | | | | | |
| 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 |

**FY2020 UMRR Science Proposals Recommended for Funding**

Listed below are proposals recommended by the UMRR LTRM management team for FY2020 Science in Support of Restoration and Management funding. These recommendations are based on assessments of the proposals by the A team (representatives of MN, WI, IA, IL, MO, and USFWS), USGS UMESC and USACE. The criteria used to assess the proposals is provided at the end of this document.

Proposals not funded in FY2020 may be reconsidered in FY2021 pending an assessment of current information needs, available funding, and adequate revisions to address questions and concerns raised during the 2020 review process. These proposals address important topics but were not judged to be of higher priority than any of the recommended proposals and may need revision to be re-considered for funding. Final budget numbers are still being reviewed and will be provided prior to the 20 May meeting. The document containing the full version of each of the recommended proposals can be found here: http://www.umrba.org/RecommendedFY2020ScienceProposals_UMRRCC_link.pdf.

**Recommended Proposals:**

Working Group 1: Hydrologic and geomorphic changes

- Mapping Potential Sensitivity to Hydrogeomorphic Change in the UMRS Riverscape and Development of Supporting GIS Database and Query Tool; Jayme Strange (USGS UMESC) and Faith Fitzpatrick (USGS Upper Midwest Water Science Center)
- Improving our understanding of historic, contemporary, and future UMRS hydrology by improving workflows, reducing redundancies, and setting a blueprint for modelling potential future hydrology; Lucie Sawyer (USACE MVR) and Molly Van Appledorn (USGS UMESC)

Working Group 2: Side Channels

- Understanding physical and ecological differences among side channels of the Upper Mississippi River System; Molly Sobotka (MDOC)

Working Group 3: Vegetation and Wildlife

- Refining our Upper Mississippi River's ecosystem states framework; Danelle Larson (USGS UMESC)

Working Group 4: UMRS fish community dynamics

- Augmenting the UMRR fish vital rates project with greater species representation for genetics and otolith microchemistry; Andy Bartels (WDNR) and Jim Lamer (INHS)
- Functional UMRS fish community responses and their environmental associations in the face of a changing river: hydrologic variability, biological invasions, and habitat rehabilitation; Brian Ickes (USGS UMESC), John Gatto (INHS), and John Chick (INHS)

Working Group 5: Water quality and eutrophication

- Understanding landscape-scale patterns in winter conditions in the Upper Mississippi River System; KathiJo Jankowski (USGS UMESC); Hilary Dugan (UW-Madison); Becky Kreiling (USGS UMESC); Madeline Magee (WDNR)

Working Group 6: Floodplain ecology

- Forest Response to Multiple Large-Scale Inundation Events; Robert Cosgriff (USACE); Lyle Guyon (NGRREC); Nate De Jager (USGS UMESC)

# Estimated Budgets for UMRR Science Proposals

| SECTION 1: UMRR Science Proposals Recommended for Funding in FY2020 | | Estimated Gross | | | | | |
|---|---|---|---|---|---|---|---|
| **Title** | **PIs** | **USGS (UMESC & UMidWSC)** | **FWS** | **USACE** | **Non-Fed (States)** | **Non-Fed (CESU)** | **Total** |
| Mapping Potential Sensitivity to Hydrogeomorphic Change in the UMRS Riverscape and Development of Supporting GIS Database and Query Tool | Strange, Fitzpatrick | $ 369,440 | | $ 22,000 | | | $ 391,440 |
| Improving our understanding of historic, contemporary, and future UMRS hydrology by improving workflows, reducing redundancies, and setting a blueprint for modelling potential future hydrology | Sawyer, Van Appledorn | $ 57,560 | | $ 167,000 | | | $ 224,560 |
| Understanding physical and ecological differences among side channels of the UMRS-Tier 1 and Tier 2 | Sobotka | $ 40,538 | | $ 61,600 | $ 50,350 | $ 94,926 | $ 247,414 |
| Refining our Upper Mississippi River's ecosystem states framework | D Larson | $ 137,005 | | | $ 10,390 | $ 44,696 | $ 192,091 |
| Augmenting the UMRR fish vital rates project with greater species representation for genentics and microchemistry | Bartels, Lamer (Davis) | | | | $ 234,453 | $ 72,462 | $ 306,915 |
| Functional UMRS fish community responses and their environmental associatios in the face of a changing river: hydrologic variability, biological invasions, and habitat rehabilitation | Ickes, Gatto | | | | $ 92,058 | | $ 92,058 |
| Understanding landscape-scale patterns in winter condition in the UMRS | Jankowski, Dugan, Kreiling, Magee | $ 205,422 | | | $ 20,049 | $ 99,878 | $ 325,349 |
| Forest Response to Multiple Large-Scale Inundation Events | Cosgriff, Guyon, De Jager | | | $ 31,320 | $ 85,445 | $ 89,264 | $ 206,029 |
| | **[1]Budget for recommended proposals** | $ 809,965 | $ - | $ 281,920 | $ 492,744 | $ 401,226 | $ 1,985,855 |

[1]Subject to changes after final review

| SECTION 2: UMRR Science Proposals Not Recommended for Funding in FY2020 | | Estimated Gross | | | | | |
|---|---|---|---|---|---|---|---|
| **Title** | **PIs** | **USGS (UMESC & UMidWSC)** | **FWS** | **USACE** | **Non-Fed (States)** | **Non-Fed (CESU)** | **Total** |
| Geomorphic Assessment Techniques for Baseline Assessments and Monitoring Related to Habitat Rehabilitation and Enhancement Project (HREP) Planning, Design, and Evaluation | Fitzpatrick, Hendrickson, Janvrin | $ 210,044 | | $ 24,000 | | $ 13,732 | $ 247,776 |
| Evaluation of how HREPs, aquatic veg, and management activities influence wterfowl distributions on the UMR Pools 4, 8, 13 | Fara, Houdek | $ 249,308 | $ 66,602 | | | | $ 315,910 |
| Expansion of wild rice in the UMR: drivers, restoration risks and opportunites, and implications for waterfowl management | Drake, Lund Sedinger | | | | $ 103,044 | $ 119,732 | $ 222,776 |
| Connectivity and cyanotoxin production | Larson, Giblin, Jankowski, Manier | $ 287,296 | | | | | $ 287,296 |
| Microplastic abundance in fish and the water column in relation to spatial heterogeneity and constructed habitat improvements in the UMRS | Strauss, Fulgoni, Jankowski | | | | | $ 119,716 | $ 119,716 |
| | | $ 746,648 | $ 66,602 | $ 24,000 | $ 103,044 | $ 253,180 | $ 1,193,474 |

# ATTACHMENT D

## Habitat Restoration

- **FWWG Issue Brief (4/15/2020)** *(D-1 to D-3)*
- **Pool 8 Poolwide Floodplain Forest Fact Sheet** *(D-4 to D-11)*

# ISSUE BRIEF
# River Resource Forum
# Fish and Wildlife Work Group

**DATE: April 15th, 2020**

**PREPARED BY: Stephen Winter (FWWG Chair; USFWS) on behalf of agency voting members - Steve Clark (USACE), Jordan Weeks (WI DNR), Dan Dieterman (MN DNR), Kirk Hansen (IA DNR).**

**PRESENTED TO: River Resources Forum**

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**SUBJECT:** Recommending the Pool 8 Poolwide Floodplain Forest Habitat Rehabilitation and Enhancement Project (HREP) for River Resources Forum (RRF) endorsement and planning during FY 21-25 in the St. Paul District.

**ISSUE STATEMENT:** Per guidance from the HREP Planning and Sequencing PPT and the UMRR Coordinating Committee, the FWWG has completed a process that incorporated HNA-II indicators and agency restoration priorities to select "next generation" HREPs for FY's 2021-25 in the St. Paul District. This process resulted in the selection and prioritization of four HREP fact sheets by consensus of the FWWG voting members in January, 2020 and endorsement by the RRF In February, 2020. A fifth HREP fact sheet for the Pool 8 Poolwide Floodplain Forest HREP required additional time to develop but has now been completed. Following a consensus vote by FWWG voting members on April 9th, 2020, the FWWG is recommending the Pool 8 Poolwide Floodplain Forest HREP for endorsement by the RRF.

**BACKGROUND:**

In May 2019, the HREP Planning and Sequencing PPT issued guidance to district river teams for developing and selecting "next generation HREPs" for FYs 2021-25. The guidance asked that each river team develop 3 to 5 new fact sheets and strongly encouraged the use of HNA-II indicators in this process. Among other recommendations, the PPT asked river teams to use a "structured decision making" process, document the processes used, and develop new projects in collaboration with all agencies and NGO's in their river reach.

In June 2019, FWWG held a workshop to discuss overall restoration goals for the upper impounded reach, which HNA-II indicators are of highest importance, and to lay out a process for developing and selecting the "next generation" HREPs. At the workshop, FWWG agreed that 1) we should identify and agree on larger restoration goals (in context of HNA-II indicators) before getting to project scale or discussing specific project ideas, 2) address agency priorities and potential conflicts, 3) consider program constraints, 4) discuss the trade-offs that might exist between HNA-II, agency priorities, administrative constraints, etc. and 5) try to develop a set of criteria that all agencies can use to evaluate and rank project proposals.

At the conclusion of the workshop, FWWG established a general outline of how to move forward with the HREP selection process. FWWG members were asked to work within their agencies or NGO's to identify restoration project needs in a simple spreadsheet for that had enough detail to communicate the intent of the project. The spreadsheet would also include a way to score potential projects relative to HNA-II indicators and agency priorities. We agreed to use this larger list of restoration project ideas as a starting point to look for overlap in project ideas and restoration locations among the agencies. The idea

was to compile all project ideas before putting effort into developing fact sheets. FWWG agreed to this process and that project ideas would be submitted one week before the next meeting in late August.

Prior to the August FWWG meeting, a total of 86 restoration project ideas were submitted on the spreadsheet. After consolidating similar projects that were proposed by multiple agencies, the list was reduced to 66 projects, of which 14 were "pool-wide" or "multi-pool." The list was further narrowed down to 15 projects by using the total number of HNA-II indicators that would be positively impacted by the proposed action. FWWG then applied additional screening and ranking criteria to select the top five projects. These five projects met the desired mix of projects discussed earlier in the meeting by 1) addressing priority HNA-II indicators, 2) having a mix of sizes, 3) are geographically distributed, 4) include new/innovative approaches, and 5) address agency priorities. Full details of the August 2019 meeting and project selection are found in the meeting notes posted on the RRF website: https://tinyurl.com/w2f8owt

The following five projects were selected for fact sheet development:

1. La Crosse Area Floodplain Forest Restoration (team to select between Black River Bottoms in Pool 7 and a Pool 8 project area).
2. Lower Pool 5 / Weaver Bottoms
3. Trempealeau NWR
4. Bank Stabilization and Natural Levees
5. Lower Pool 4 / Big Lake

A team leader was assigned to each of these projects and they were asked to assemble a team that included at least one person from each agency. The teams were to collaborate on writing the fact sheets and to make sure that all agencies concurred with the final version. All teams began meeting in September 2019, with a deadline for final drafts of late December.

As the teams began meeting, a couple of changes were made to the list of projects:

- At the first meeting of the La Crosse Area Floodplain Forest Restoration Team, it was decided to focus on the Black River Bottoms area and to not pursue a Pool 8 project area.
- After the first meeting of the Trempealeau NWR team, the FWS asked that this fact sheet process be suspended until issues with an existing, non-functioning, HREP in the Trempealeau NWR could be resolved.
- In November 2019, it was decided to replace the Trempealeau project with a Pool 8 project so there would still be five new projects proposed in the St. Paul District.
- It was agreed that the Black River Bottoms team would also develop the fact sheet for the Pool 8 project, but due to the late start the Pool 8 project fact sheet would be on a longer timeframe.

During September to December 2019, the teams were able to complete final draft fact sheets for all projects except the Pool 8 Poolwide Floodplain Forest Restoration HREP. However, conceptualization of the Pool 8 Poolwide Floodplain Forest HREP was at a sufficient stage of development that it was able to be assessed alongside the four fact sheets at the next FWWG meeting.

The five HREPs were presented and discussed at the January 13, 2020 FWWG meeting. After discussion, the FWWG agreed on minor changes to two fact sheets and then used a paired comparison exercise to rank the five projects in priority order. Tables 1 and 2 below show the final priority rankings for the five proposed HREPs.

**Table 1. Weighted percents for each agency and average rank from the paired comparison exercise. RANK column is rank of AVG %**

| | IA DNR | MN DNR | WI DNR | USFWS | USACE | AVG% | RANK |
|---|---|---|---|---|---|---|---|
| Lower Pool 4 – Big Lake, Robinson Lake, and Tank Pond | 29% | 36% | 15% | 56% | 41% | 35% | 1.0 |
| Bank Stabilization and Natural Levee | 43% | 14% | 50% | 33% | 9% | 30% | 2.0 |
| Lower Pool 5 and Weaver Bottoms | 29% | 43% | 0% | 0% | 36% | 22% | 3.0 |
| Black River Bottoms Forest Restoration | 0% | 0% | 30% | 11% | 14% | 11% | 4.0 |
| Pool 8 Floodplain Forest Restoration | 0% | 7% | 5% | 0% | 0% | 2% | 5.0 |

**Table 2. Paired comparison ranks of weighted % from individual tabs. The RANK is the rank of the AVG column.**

| | IA DNR | MN DNR | WI DNR | USFWS | USACE | AVG | RANK |
|---|---|---|---|---|---|---|---|
| Lower Pool 4 – Big Lake, Robinson Lake, and Tank Pond | 2 | 2 | 3 | 1 | 1 | 1.8 | 1.0 |
| Bank Stabilization and Natural Levee | 1 | 3 | 1 | 2 | 4 | 2.2 | 2.0 |
| Lower Pool 5 and Weaver Bottoms | 2 | 1 | 5 | 4 | 2 | 2.8 | 3.0 |
| Black River Bottoms Forest Restoration | 4 | 5 | 2 | 3 | 3 | 3.4 | 4.0 |
| Pool 8 Floodplain Forest Restoration | 4 | 4 | 4 | 4 | 5 | 4.2 | 5.0 |

Because work on the Pool 8 Poolwide Floodplain Forest HREP Fact Sheet was initiated later than for the other four HREPs, it was not ready for recommendation by the FWWG in January of 2020 or endorsement by the RRF in February 2020. Work on the Pool 8 Poolwide Floodplain Forest HREP Fact Sheet was continued by the fact sheet team during October, 2019 through April, 2020, and a completed fact sheet was submitted to the FWWG on April 8th, 2020.

**ALTERNATIVES:** There was only one alternative available for consideration, the Pool 8 Poolwide Floodplain Forest HREP. The FWWG voting members reached consensus on April 9th, 2020, that the Pool 8 Poolwide Floodplain Forest HREP fact sheet content was appropriate and that it should recommend that planning for the Pool 8 Poolwide Floodplain Forest HREP begin during FY 2021-25 in the St. Paul District.

**RECOMMENDATION:** The FWWG is recommending that the RRF endorse the Pool 8 Poolwide Floodplain Forest HREP.

**APPROVED:**

STEPHEN WINTER

Digitally signed by STEPHEN WINTER
Date: 2020.04.15 08:24:07 -05'00'

Fish and Wildlife Work Group Chair

April 15th, 2020
Date

Attachment: Pool 8 Poolwide Floodplain Forest HREP Fact Sheet

**Upper Mississippi River Restoration Program**
**Pool 8 Poolwide Floodplain Forest**
**Habitat Rehabilitation and Enhancement Project**
**Upper Mississippi River, Pool 8**
**La Crosse and Vernon Counties, Wisconsin**
**Winona and Houston Counties, Minnesota**
**US Army Corps of Engineers - Saint Paul District**

## Location

Pool 8 is an impoundment of the Mississippi River resulting from the construction of Lock and Dam 8 as part of the 9-foot channel navigation project. Construction of Lock and Dam 8 was completed in 1937, and the pool extends from approximately river mile 680 at Genoa, Wisconsin, to river mile 703 near Dresbach, Minnesota.

The general boundaries for the proposed project encompass just under 10,000 acres of terrestrial and aquatic habitats in the pool (Figure 1). On the western side of the project area, the Canadian Pacific Railway railroad defines the boundary. The southern boundary follows the main navigation channel from river mile 683 to river mile 687.5. This excludes a large part of the lower end of Pool 8 where the three phases of the Pool 8 Islands HREP were constructed from 1993-2012. The eastern boundary at river mile 683 follows the railroad tracks to just south of the village of Stoddard, where it curves east to encompass federal land along lower Coon Creek. The boundary then moves west back into the river to skirt the western edge of the Phase II Pool 8 Islands, then continues north following the federal boundary adjacent to the City of La Crosse and the Town of Campbell on French Island north to the Lock and Dam 7 dike. The dike and the lock and dam form the northern boundary.

The project area occurs within the US Army Corps of Engineers (USACE) St. Paul District (MVP). Public land ownership in the project area is a roughly two-thirds US Fish and Wildlife Service (USFWS) and one-third USACE (Table 1). Of this, over 97% is classified as multiple resource management, with wildlife management as the primary activity. All federally-owned land included in the project areas is also incorporated into the USFWS Upper Mississippi River National Wildlife and Fish Refuge (hereafter referred to as the Refuge). Additional publically-owned land occurs in the vicinity, with small state ownerships as well as isolated properties owned by local municipalities. Non-federally owned or managed lands will not be part of the Pool 8 Poolwide Floodplain Forest HREP.

***Table 1. Land Use Designation, ownership and acreages in the Poolwide Floodplain Forest HREP area, in La Crosse and Vernon Counties, Wisconsin and Winona and Houston Counties, Minnesota.***

| | Acres by Owner | | Total |
|---|---|---|---|
| **Land Classification** | **USACE** | **USFWS** | |
| Multiple Resource - Wildlife Management | 2,890.97 | 6,338.82 | **9,229.79** |
| Multiple Resource - Recreation (Low Density) | 187.19 | 58.45 | **245.64** |
| **Total** | **3,078.16** | **6,397.27** | **9,475.43** |

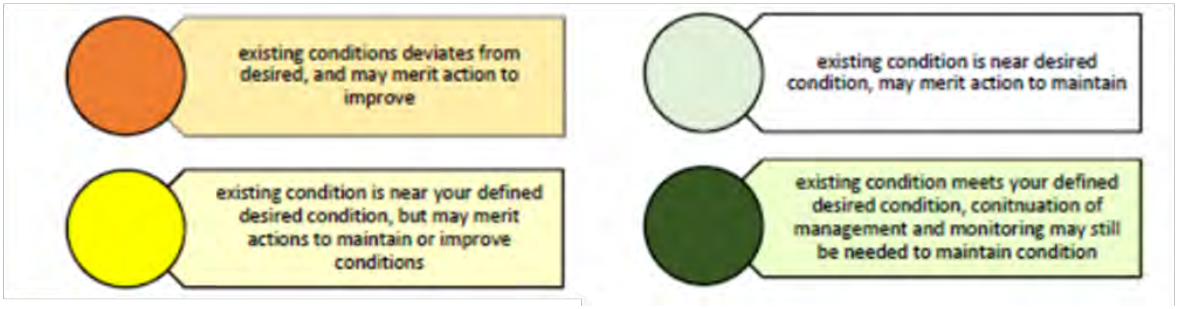
## Existing resources

In Pool 8, the majority of the HNA II indicators for both the pool and the Upper Impounded Cluster are outside of the desired conditions (Table 2). The aquatic and floodplain diversity and functional classes were identified by resource agencies as two of the highest importance resource categories in need of

management actions in the Upper Impounded Cluster. In Pool 8, four of the five indicators in this group are rated as meriting action. Of the remaining indicators, two of the medium priority indicators are farthest from desired conditions (longitudinal floodplain connectivity (natural areas), pool flux difference) and a third is near desirable (open water). The low priority indicators are generally within desired conditions.

***Table 2. Pool 8 HNA II indicators relative to the Upper Impounded Cluster (UIC) mean.***

| | Indicator | | River Team Importance | Pool 8 | UIC Mean |
|---|---|---|---|---|---|
| Diversity & Redundancy | Aquatic Functional Class 1 (unitless) | | High | | |
| | Aquatic Functional Class 2 (unitless) | | | | |
| | Aquatic Vegetation Diversity (unitless) | | High | | |
| | Floodplain Vegetation Diversity (unitless) | | High | | |
| | Floodplain Functional Class Diversity (unitless) | | | | |
| Connectivity | Longitudinal Aquatic Connectivity | % Time Gates Open | Low | | |
| | Longitudinal Floodplain Connectivity | Natural Area (ha/RM) | Medium | | |
| | Lateral River-Floodplain Connectivity | Leveed Area | Low | | |
| | Open Water | | Medium | | |
| Controlling Variables | Water Surface Elevation Fluctuation | Tailwater Flux Difference (m) | Low | | |
| | Pool Flux Difference (m) | | Medium | | |
| | Total Suspended Solids (mg/L) | | Medium | | |




Throughout much of Pool 8, the Mississippi River valley is confined to a narrow bedrock gorge. Urban areas occur where relatively flat terraces provide a buffer between the river and bluffs. In Wisconsin, these urban areas include the Cities of Onalaska and La Crosse, and the Villages of Stoddard and Genoa. The Cities of La Crescent and Brownsville are located on the Minnesota side

Major tributaries to the Mississippi River within Pool 8 are the Black River (Wisconsin, river mile 698.5), La Crosse River (Wisconsin, river mile 698), Root River (Minnesota, river mile 694) and Coon Creek (Wisconsin, river mile 684). Smaller tributaries include Pine Creek (Minnesota, river mile 697.5), Pammel Creek (Wisconsin, river mile 693.5), Mormon Coulee Creek (Wisconsin, river mile 692.5), and Wildcat Creek (Minnesota, river mile 688) (Fish and Wildlife Workgroup 2004).

Pool 8 is somewhat unique for St. Paul District pools in that a significant area of high elevation remnant glacial terraces remain at least partially in federal ownership, primarily Goose Island and the Stoddard

area on the eastern edge of the floodplain. Soils on these terraces are more like upland soils than typical floodplain soils, allowing for the development of vegetation unique within floodplain. Elevation in forested areas elsewhere in the pool relative to water levels follows usual patterns, with the highest elevations just below the LD7 dike and along the natural levees.

Typical of most navigation pools of the Upper Mississippi River, the water to land ratio changes from the upper to lower end of the pool. The upper reach of Pool 8 is predominately forested islands with many small river channels and shallow wetlands located throughout, though significant areas of urban development are present on the highest elevations in the upper pool. The amount of land decreases in the middle portion of the pool, though many islands separated by multiple river channels and backwater wetlands are present. The middle portion of the pool also contains large areas of forest, primarily along the Root River on the western edge of the floodplain and at Goose Island and Stoddard on the eastern edge. An extensive mosaic of minimally forested islands, marshes, and backwater channels occurs between the Root River and Goose Island. The lower reach of the pool is predominantly open water from river miles 680-690. This area has experienced a significant reduction in the number of islands since the river was impounded, though a number of islands were rebuilt in this area as part of the three phases of the Pool 8 Islands HREP project, constructed between 1993 and 2012 (Fish and Wildlife Workgroup 2004). The footprint of the Pool 8 Islands project is not included in the current project proposal.

Lowland and floodplain forests cover a large area along the lower Root River and at its mouth; the Root River forest patch is one of the largest contiguous tracts of forest in MVP. Based on recent forestry inventories, Pool 8 has relatively high tree species diversity; silver maple (*Acer saccharinum*) makes up about 35% of the total trees, oaks (*Quercus* spp.) account for just under 20%, and birch (*Betula* spp) and ash (*Fraxinus* spp.) account for just under 12% of total trees each across the entire pool. However, this diversity is most heavily concentrated in and around the Goose Island complex. The large Root River forest is almost 70% maple, even though elevations around the River are similar to those areas at Goose Island where non-maple species are more dominant. Midwestern Wooded Swamps and Floodplains are classified by the Refuge as a Priority Resource of Concern (ROC), which designates these forests as important conservation priorities.

These forests provide critical habitat for many wildlife species as well. The Refuge has designated cerulean and prothonotary warblers, red-shouldered hawk, transient Neotropical migrant passerines, and tree-roosting bats as Priority Wildlife ROCs in this habitat, and these species are all important species of conservation concern for the adjoining states. Cerulean warblers are not common in the floodplain but do occur in areas where upland bluffs abut floodplains with an oak component; Goose Island and Green Island in Pool 8 fit these habitat characteristics and records from public databases indicate the presence of this species on these islands. Prothonotary warblers are floodplain forest obligate birds, so conversion of this habitat to non-forested types would have outsized implications for the overall population of these birds.

**Problem Identification**

The project area has seen significant changes in the last 150 years. Clearing of forest for agriculture and fuel following European settlement undoubtedly altered the composition and distribution of the forest in the 1800s and early 1900s. Impoundment of Pool 8 in the 1930s further degraded forest habitats by permanently inundating low-lying forested areas, thereby killing the forest, and increasing duration of inundation events on higher-elevation areas. Pool 8 also historically had native prairie in places, and this has also been largely lost. The complex of islands between Goose Island and the Root River has shown a significant decline in total forest cover over the last 130 years, in spite of the relatively high elevation of many of these islands. Of 5,817 acres in the three forest management compartments in this area, 94%

was forested in 1890. As of 2010, only 518 acres of forest remained, 8.9% of the total area. Loss of this forest cover has led to a significant decline in overall habitat connectivity, which likely results in decreased foraging efficiency and fewer suitable refuge habitats for migrating passerines which need to rebuild energy reserves by eating and resting before resuming their migratory movements.

Other modern stressors continue to degrade forest habitats. Two of the most common tree species in the Mississippi River floodplain, American elm (*Ulmus americana*) and green ash (*Fraxinus pennsylvanica*) have been decimated by non-native pests, virtually eliminating a key late-successional, flood tolerant component from the forest and shifting forests to greater dominance by silver maple. Changes in annual flows patterns of inundation and terrestrial sedimentation have further exacerbated shifts in species composition. Based on data from 1840s General Land Office survey notes and modern forest inventory datasets across the St. Paul District, all tree species except for silver maple and eastern cottonwood (*Populus deltoides*) have declined in relative abundance over the last 200 years.

Signs of potential long-term decline related to the expansion of invasive species, natural regeneration failures, and altered hydrology, are evident in these areas. Reed canarygrass (*Phalaris arundicaea*) is widespread and, in many silver maple dominated stands, it is the only plant species in the forest understory and is likely to take over these stands as the forest canopy dies naturally. Other invasive species are also present. Japanese hops (*Humulus japonicus*), an invasive species which is causing significant ecological damage in floodplain forests lower in the river, has also been discovered along the Root River. The first known populations of Japanese barberry (*Berberris thunbergii*) in MVP were also recently discovered on Goose Island. Common buckthorn (*Rhamnus cathartica*) and glossy buckthorn (*Frangula alnus*), as well as bush honeyscuckles (*Lonicera* spp.) are widespread and damaging in the area. Additional problems of herbivory from deer, beaver, voles and other rodents have also made it more difficult for trees to establish.

The resource problems in the Pool 8 Forest HREP area are consistent with those documented for Pool 8 and the Upper Impounded Cluster within the HNA II report.

Climate change is almost certainly having an impact currently on plant distributions in the project area, and will likely continue to into the foreseeable future. Invasive plants are often particularly adapted to take advantage of longer growing seasons, and thus become more likely to outcompete the natives. More unpredictable hydrologic patterns associated with climate change are also likely to lead to greater dominance of the species most adapted to these fluctuations, like reed canarygrass. In addition, low-elevation, silver-maple dominated forest is particularly vulnerable to mortality from chronic growing season flooding. More variable flows associated with climate change are likely to lead to the loss of this low-elevation forest cover.

**Project Goals**

The primary goal of this project is to protect, enhance and restore quality forest to support native wildlife, and fish, USFWS Trust Species, and Refuge Priority ROC's. Secondary goals include restoration of other terrestrial and aquatic habitats in the project area, to improve water quality for native fish species and aquatic vegetation for Refuge Priority ROC's and habitats. There is unique opportunity to connect extant but separate large tracts of floodplain and lowland forest and to enhance current forest. The project will be adaptive in nature and will utilize the Floodplain Forest Prioritization Tool currently being developed by MVP La Crescent field office to identify highest priority sites for restoration. Activities will include reed canarygrass control, forest canopy management, tree planting, seeding of native woody and herbaceous vegetation, prescribed burns, and forest inventory. Hydrologic and depth/elevation modifications may also be incorporated to benefit both terrestrial and aquatic resources.

Increased diversity of tree species, age, and forest structure in UMR forests, as well as an increase in the area subject to lower levels of annual inundation, are important components of forest resiliency. This project will focus on enhancing these conditions, thus ensuring a forest habitat with greater resiliency in the face of future uncertainty.

Two HNA-II indicators related to forest resources are expected to be directly influenced as a result of this project. One connectivity indicator is also expected to be positively impacted, as will one of the aquatic indicators, albeit indirectly. In support of the desired future conditions of the indicators, as described by the FWWG, this project would impact:

- **Floodplain Functional Class: Restore areas of low annual inundation through elevation enhancement**
    - Increase terrestrial elevation to create floodplain functional classes characterized by reduced annual inundation capable of supporting a more diverse mix of lowland and floodplain forest habitats
- **Floodplain Vegetation Diversity: Restore, maintain and enhance floodplain vegetation by expanding the distribution of forest cover and diversity of forest types**
    - Conduct a series of standard forest development prescriptions, including canopy management, site preparation, tree planting and seeding, promotion of natural regeneration, and competing vegetation control to promote establishment and growth of desired tree species and forest structure
- **Longitudinal Floodplain Connectivity: Maintain and increase connectivity between existing forest habitat patches**
    - Use various techniques including tree planting or seeding, elevation modification, or island building to maintain or create new forest patches in key locations
- **Aquatic Functional Classes (AFC) 1 and 2: Increase the amount of deep lentic habitat**
    - Deep lentic habitat will be created when material is removed to create or increase elevation of terrestrial habitat

**Proposed Project Features**

This project will include two main categories of treatments and features. One set will be intended to enhance and rehabilitate currently forested areas throughout the pool, while the second set will focus on restoration of forest to areas from which it has been lost or to areas that may not have been historically forested but which currently have high forest suitability and the potential to provide significant forest habitat improvements. These treatments will occur in geographically distinct areas of the landscape; the forest enhancement treatments will occur in Area 1, while forest restoration and creation will occur in Area 2 (Figure 1).

Primary features of this project will include those listed below, with the project areas in which they will occur in parentheses (project areas from Figure 1):

- Forest prescription development and implementation (Area 1 and Area 2)
- Invasive species control (Area 1 and Area 2)
- Dredged material placement (Area 2)
- Backwater dredging (Area 2)
- Island building (Area 2)
- Shoreline and River Bank Protection (Area 1 and Area 2) which could potentially be coordinated with a proposed Bank Stabilization and Protection HREP.

**Implementation Considerations**

Constraints:

- The project needs to sufficiently address USFWS and Refuge priorities as well as those of the multi-agency partnership
- The project needs to minimize the amount of O&M required after project completion
- The Refuge's Goose Island No Hunting Zone is a voluntary avoidance area from October 15 to the end of State waterfowl hunting season each year, significantly limiting potential activities in that area
- High density of cultural resource sites in the area, especially Goose Island and Stoddard, will require extensive surveys prior to work being completed
- Time of year activity restrictions near active bald eagle nests (January 15 – June 15) and related to migratory bird nesting (April 15 – August 15) and the northern long-eared bat maternity period (June 1 – July 31) will also need to be accounted for
- Excessive detrimental herbivory from deer, beaver, voles and other rodents

Synergy:

- Bankline stabilization HREP construct features within this project area that would benefit this project

Data:

- Up-to-date bird survey data from Eileen Kirsch at USGS
- Forest inventory is about 2/3 complete in the project area; completion of the remaining inventory plots will be needed in planning for this project

Optimally, due to logistical constraints and variable weather and hydrologic conditions, implementation of forest restoration activities will be sequenced over a 5 to 10 year period. It may also be determined that this project would be more feasible as a phased project, with project features potentially split between individual, distinct phases over a longer period of time (i.e. forest prescription implementation may be one phase, while dredging and island building may make up another phase).

**Financial Data**

1. It is anticipated that this project would cost between $5,000,000 and $15,000,000.

**Status of Project**

This project was ranked as a high priority on August 27, 2019. It will be submitted to the FWWG in an expedited process for approval by the voting representatives, then forwarded to the RRF for recommendation to UMRR-CC in time for the May 2020 meeting.

Partners: USFWS, USACE, WIDNR, MNDNR

**Sponsorship**

The Refuge will be the project sponsor for all features on Refuge Lands. These projects would be implemented in active partnership between the USFWS, State agencies and the USACE.

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**References**

Fish and Wildlife Working Group. 2004. Environmental pool plans. Mississippi River pools 1–10. River Resources Forum, U.S. Army Corps of Engineers - St. Paul District, St. Paul, MN. 156 pp.

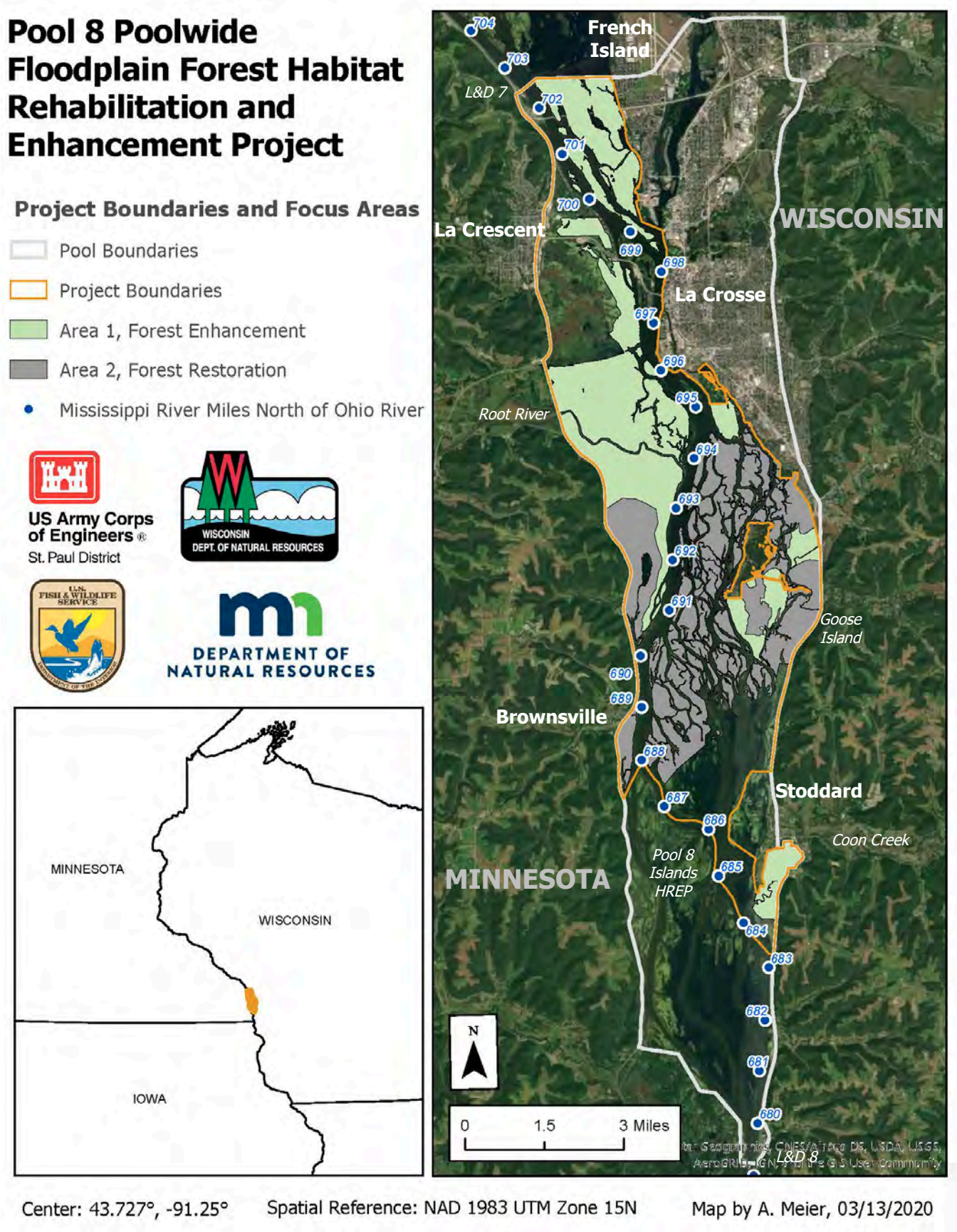


Figure 1. Project area map

# ATTACHMENT E

## Additional Items

- **Future Meeting Schedule** *(E-1)*
- **Frequently Used Acronyms (12/21/2017)** *(E-2 to E-7)*
- **UMRR Authorization, As Amended (1/27/2015)** *(E-8 to E-11)*
- **UMRR (EMP) Operating Approach (5/2006)** *(E-12)*

**QUARTERLY MEETINGS**
**FUTURE MEETING SCHEDULE**

**Note:** These meetings may be held remotely as we will follow state and federal travel policies.

| **AUGUST 2020** | |
|---|---|
| La Crosse, Wisconsin | |
| August 11 | UMRBA Quarterly Meeting |
| August 12 | UMRR Coordinating Committee Quarterly Meeting |

| **OCTOBER 2020** | |
|---|---|
| St. Paul, Minnesota | |
| October 27 | UMRBA Quarterly Meeting |
| October 28 | 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 |
| 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 20th 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.