Hampton Inn-Gateway Arch
St. Louis, Missouri

Upper Mississippi River Restoration Program Coordinating Committee

Quarterly Meeting

May 6, 2015

Agenda

with
Background
and
Supporting Materials

Quarterly Meeting
Hampton Inn St. Louis -Downtown
St. Louis, Missouri

UPPER MISSISSIPPI RIVER RESTORATION PROGRAM
COORDINATING COMMITTEE

May 5-6, 2015

AGENDA

Tuesday, May 5 Partner Pre-Meetings

3:45 –5:30 p.m. **Corps of Engineers**

3:45 – 5:30 p.m. **Department of the Interior**

3:45 – 5:30 p.m. **States**

Wednesday, May 6 UMRR Coordinating Committee

Time	Attachment	Topic	Presenter
8:00 a.m.		**Welcome and Introductions**	***Tim Yager**, USFWS*
8:05	**A1-15**	**Approval of Minutes of February 11, 2015 Meeting**	
8:10		**Regional Management and Partnership Collaboration**	***Marv Hubbell**, USACE*
	B1-5	▪ FY 2015 Budget Update and Scope of Work ▪ FY 2016 Progress Report ▪ Update on UMRR Strategic Operational Planning	
	B6	▪ Lean Six Sigma – Priority Programmatic Areas to Evaluate	***Nicole Lynch**, USACE*
	B7-9	▪ 2016 UMRR Report to Congress – Process for Engaging Partners in Report Development – Draft Policy Recommendation Statements	***Marv Hubbell**, USACE and* ***Kirsten Mickelsen**, UMRBA*
9:10		**External Communications and Outreach**	
	C1	▪ External Communications Plan (Goal 3) – Initial Development Plans ▪ Public Involvement and Outreach Activities – Partner Contributions to August 23-28 International Society for River Science Conference in La Crosse – UMRR Involvement in Illinois Nutrient Monitoring Council – Other Relevant Activities	***Marv Hubbell**, USACE* ***All***
9:40		**Break**	

(Continued)

Wednesday, May 6, 2015
UMRR Coordinating Committee
(Continued)

Time	Attachment	Topic	Presenter
9:50 a.m.		**Habitat Restoration**	
		▪ District Reports	***District HREP Managers***
		▪ Sponsor Involvement in Project Planning and Design – Pool 12 Overwintering Case Study – Evolving Ecological Issues on the River	***Marv Hubbell**, USACE and* ***Tim Yager**, USFWS*
		▪ Planning New Project Starts: Identifying Projects to Enhance Ecological Resilience	***Marv Hubbell**, USACE*
		▪ Habitat Restoration Highlight: Harbor and Open River Islands	***Brian Markert**, USACE*
11:15		**Lunch**	
12:15 p.m.		**Long Term Resource Monitoring and Science**	
	D1-8	▪ Highlights	***Jeff Houser**, USGS*
	D9-13	▪ USACE Science Update	***Karen Hagerty**, USACE*
	D14	▪ Update on UMRR Invasive Species Policy Paper	
		▪ A-Team Report	***Shawn Giblin**, WI DNR*
		▪ Science Highlight: Asian Carp Influence on Native Fishes on the UMR	***Quinton Phelps**, MO DoC*
1:00		**Other Business**	
	E1	▪ Future Meeting Schedule	
1:10 p.m.		**Adjourn**	

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

ATTACHMENT A

Minutes of the February 11, 2015
UMRR Coordinating Committee Meeting

(A-1 to A-15)

DRAFT
Minutes of the
Upper Mississippi River Restoration Program
Coordinating Committee

February 11, 2015
Quarterly Meeting

Holiday Inn and Conference Center
Rock Island, Illinois

Gary Meden of the U.S. Army Corps of Engineers called the meeting to order at 8:00 a.m. on February 11, 2015. Other UMRR Coordinating Committee representatives present were Sabrina Chandler (USFWS), Mark Gaikowski (USGS), Dan Stephenson (IL DNR), Randy Schultz (IA DNR), Kevin Stauffer (MN DNR), Janet Sternburg (MO DoC), Jim Fischer (WI DNR), and Ken Westlake (USEPA) via phone. A complete list of attendees follows these minutes.

Minutes of the November 19, 2014 Meeting

Jim Fischer moved and Janet Sternburg seconded a motion to approve the draft minutes of the November 19, 2014 meeting as prepared. The motion carried unanimously.

Regional Management

Marv Hubbell explained that the Administration has directed District staff to provide more detailed allocation information in UMRR's proposed budgets. As a result, the program's budget is being characterized differently to align with Headquarters' expectations. This includes providing the science allocations in categories related to monitoring, science supporting restoration, USACE staff support, and habitat project evaluations. The amount of resources allocated to science is the same as would be provided at the given appropriations levels. Hubbell said he will present the internal allocations for FY 2015 and FY 2016 today and in future quarterly meetings based on how they are discussed in the program's budgets to the Administration. In addition, Hubbell said District staff are reformatting the budget spreadsheets provided in the UMRR Coordinating Committee quarterly meeting agenda packets to be more understandable, useful, and transparent.

FY 2015 Fiscal Update and Scope of Work

Hubbell reported that the FY 2015 Consolidated Appropriations Act was enacted on December 16, 2014 and includes $33.17 million for UMRR. At that funding level, the program's FY 2015 internal allocations would be as follows:

- Regional Administration — $861,000
- Regional Science and Monitoring — $8,126,000
  - Long term resource monitoring — $5,495,000
  - Regional science in support of restoration — $1,907,000
  - Regional science staff support — $69,000
  - Habitat project evaluations — $5,495,000

- Habitat Restoration — $24,183,000
  - Regional science support — $70,000
  - MVP — $7,234,000
  - MVR — $9,645,000
  - MVS — $7,234,000

Hubbell applauded partners' exceptional work to continue executing strongly.

President's FY 2016 Budget Request

Hubbell reported that the President's FY 2016 budget request includes $19.787 million for UMRR. This represents a decrease of $13.383 million from FY 2015, and is a result of increased competition from other USACE ecosystem restoration projects for construction funding, including Everglades and Chesapeake Bay. The final FY 2016 appropriation is unknown. Gary Meden recognized that District and Division staff worked closely with Headquarters and the Office of Management and Budget (OMB) to illustrate the value of funding for UMRR as well as to articulate the funding needs for long term resource monitoring in order to meet UMRR's authorization requirements and further understanding of the complex river system. UMRR's FY 2016 situation appeared to be much worse at various times during the budget development.

Under the President's FY 2016 budget scenario, the program's internal allocations would be as follows:

- Regional Administration — $741,000
- Regional Science and Monitoring — $6,567,000
  - Long term resource monitoring — $4,500,000
  - Regional science in support of restoration — $963,000
  - Regional science staff support — $300,000
  - Habitat project evaluations — $804,000
- Habitat Restoration — $12,479,000
  - Regional science support — $100,000
  - MVP — $3,425,000
  - MVR — $4,745,000
  - MVS — $4,209,000

[Note: This District habitat restoration funds are not reflective of the historical split, but rather of program priorities and execution capabilities.]

Hubbell explained that Headquarters directed that base monitoring be funded at $4.5 million, while allowing for science funding in other categories. Through these other categories, there is flexibility to fund additional analyses and support monitoring efforts. Hubbell recognized the difficulty for partners in moving from $5.3 million in base monitoring to $4.5 million. A February 19 conference call is scheduled with field station leaders to overview the FY 2016 science allocations per the President's budget and discuss any questions. Hubbell said he plans to hold more frequent calls with field stations leaders in the coming months regarding their FY 2016 budgets.

Hubbell said Headquarters issued guidance for developing the FY 2017 budget. District staff will initiate FY 2017 planning for UMRR shortly.

Jim Fischer expressed optimism that Congress will appropriate FY 2016 funds at a higher level than the President's budget for UMRR that will allow for the long term monitoring infrastructure to remain functional. Fischer applauded District staff who were involved in discussions with the Administration about the program's FY 2016 budget. He expressed concern with the long term monitoring allocation, noting that it is less than funding levels needed to maintain the continuity and integrity of the data set. He emphasized the importance that the program continues to advance UMRR's FY 2015-2025 Strategic Plan goals and objectives. Kevin Stauffer agreed with Fischer's comments, and expressed concern that the Administration appears to undervalue the program's science. Hubbell agreed and said he anticipates more dialogue with the Administration about UMRR's budget. He noted that it is rare for the Administration to provide District staff with this level of detail regarding its intentions.

In response to a question from Janet Sternburg, Hubbell said he anticipates that the Administration will seek more detailed budget proposals in the future. In addition, the program will continue to face increased competition for funding from USACE's other ecosystem restoration programs especially as USACE's total budget continues to be flat or decline. Meden added that a primary reason that UMRR received full authorized funding recently was the lack of other ecosystem projects able to execute. But that has since changed. Sternburg asked what partners can do to highlight UMRR's need for greater funding and increase its ability to compete nationally. Hubbell said UMRR has several habitat projects that will be completed in the next two years that will help showcase the program's accomplishments as well as accountability. At a minimum, it will help maintain UMRR's position and keep the program competitive. Meden added that OMB and the Administration consider partner input. He said the 2016 UMRR Report to Congress will also be an opportunity to illustrate the program's accomplishments.

In response to a question from Ken Barr, Hubbell said each District sets its own priorities for habitat projects. The three UMR Districts evaluate these projects together based on program priorities and resource capabilities, and then present them to MVD and Headquarters for consideration. The Administration expressed more interest in projects in construction rather than planning. However, District staff were able to make the case for project planning to provide long term capabilities.

Randy Shultz expressed appreciation to USACE staff for convening a call with field stations to discuss the budgets. Fischer thanked UMRBA for its advocacy efforts on behalf of the program.

Hubbell said he also anticipates convening UMRR's *ad hoc* funding group to consider programmatic implications from the reduced funding.

FY 2015-2025 UMRR Strategic Plan Implementation

Hubbell reported that, following its November 19, 2014 quarterly meeting, the UMRR Coordinating Committee established a team to develop an operational plan to focus program implementation on achieving the FY 2015-2025 UMRR Strategic Plan's vision, goals, and objectives. Team members include Andy Casper (Illinois River Biological Field Station), Kevin Stauffer (MNDNR); Gretchen Benjamin (TNC); Dru Buntin and Kirsten Mickelsen (UMRBA), and Marv Hubbell, Kat McCain, and Tom Novak (USACE); Tim Yager (USFWS); and Jeff Houser (USGS). Hubbell said the team held its first meeting held on January 20-22, 2015 in St. Paul. He explained that the team struggled a bit with the appropriate level of detail. There needs to be enough direction to explain the Strategic Plan's intentions while still retaining flexibility and innovation in program implementation. The team developed an operational plan framework and identified key implementing actions for the Strategic Plan's objectives. Ultimately, the team's initial recommendations are to create a communications plan, establish a habitat team that will function similar to the A-Team, update the Habitat Needs Assessment, and increase transparency in budgets and program implementation. The team plans to refine the framework in the next couple months before sharing a version more broadly with the partnership.

Kevin Stauffer echoed Hubbell's conclusions of the team's first meeting and acknowledged the difficulty of balancing the amount of detail that provides enough direction but does not become too prescriptive of partners' work. Fischer said the team's approach for referencing the strategic planning team's tabled action ideas was helpful.

Update on Non-Federal Project Partnership Agreements

Meden said USACE's cost share agreements have evolved over time. Recently, USACE revised the agreements, now called project partnership agreements (PPAs), adding protections for the federal government that, in turn, are more legally restrictive for non-federal sponsors. He recalled that, as an outcome of the September 19, 2014 UMRR Partner Leadership Event, program implementing partners agreed to work together to address issues related to non-federal sponsors' ability to execute PPAs. Meden said the 2014 Water Resources Reform and Development Act (WRRDA) directs USACE to contract with the National Academy of Public Administration to review and make recommendations for improving the PPA template and preparation, negotiation, and approval process. That contract has not yet been awarded. Meden said he anticipates that non-federal entities will have an opportunity to participate in that evaluation, at a minimum by providing comments. He will share the relevant information with UMRR partners as the process unfolds.

In response to a question from Sternburg, Meden explained that states can request that PPAs include language providing that future obligations are subject to availability of funds. This does not apply to non-governmental organizations. Dru Buntin recalled that Col. Deschenes offered to set up a meeting with UMRBA staff and Headquarters staff to discuss the PPA issues. Meden agreed to work with UMRBA and Headquarters staff to set up that meeting.

Lean Six Sigma

Nicole Lynch, Rock Island's process improvement specialist, presented Lean Six Sigma concepts and provided initial direction on selecting programmatic areas to examine. Lynch explained that Lean Six Sigma integrates tools and techniques from Lean and Six Sigma methodologies to provide a management approach to business performance improvement. The Lean methodology focuses on eliminating waste by removing unnecessary steps in the process whereas Six Sigma reduces waste by limiting variation in performance and outputs. The results of employing the Lean methodology is reducing service lead times, improving on-time delivery performance, and reducing costs. Employ Six Sigma results in improvements to service quality and cost. Lean Six Sigma together combines the speed and power of the two methodologies, using the customer to define quality and eliminating variation to the customer requirements.

Lynch advised UMRR partners, when selecting a focal area, to employ the following steps:

1) Identify value levers, or customers' requirements
2) Identify project opportunities, or areas of interest, to explore through process improvement
3) Rank those project opportunities based on their estimated benefit (e.g., strategic fit and cost savings) and effort (e.g., resources required, project duration, project risk)
4) Define high priority project areas and assign sponsors
5) Prioritize potential project areas by rank of importance, and identify projects that could be Rapid Improvement Events that could be resolved in a three-day effort

Lynch recommended that partners focus on a particular piece of a process based on its relative benefit. Examining a large process in its entirety could be overwhelming and confusing. Hubbell asked how frequently the partnership should employ these process improvement techniques. Lynch explained that,

in an ideal world, the partnership would examine process improvements on a constant basis to continually seek improvements. However, periodic examinations, such as quarterly or semi-annually, may be more practicable.

Jim Fischer said he is pleased that this effort is moving forward, and recognized that it will be challenging to determine which aspects of the program to select. Fischer suggested that the UMRR's project planning process would greatly benefit from a Lean Six Sigma evaluation. Hubbell suggested that it may be useful for Corps staff to give an overview of efforts currently being made to standardize, and make more efficient, the project planning processes among all three Districts at a future UMRR Coordinating Committee quarterly meeting. Janet Sternburg agreed with Fischer's suggestion. Sternburg recalled that the partnership made a concerted effort to institute substantial efficiency improvements to the long term resource monitoring implementation, suggesting that it is now time to examine habitat project implementation. She noted that increased and better documentation of planning and design decisions might help to eliminate unnecessary reiterative discussions following staff turnover. Lynch acknowledged the importance of determining any sideboards upfront, including regulatory constraints.

In response to a question from Bob Clevenstine, Lynch said USACE staff can certainly provide Lean Six Sigma training to partners working on the process if desired. Lynch offered that partners first hold a meeting to identify the programmatic aspect to evaluate through continuous improvement, and then consider training given the associated funding and time.

Fischer recognized that process improvement will be beneficial for the program in the face of declining budgets and thus is an important investment for the future. He urged that current funding is allocated to this effort.

In response to a question from Kevin Stauffer, Hubbell said he will send an email to the UMRR Coordinating Committee shortly to request their top five priorities to address through Lean Six Sigma. At its May 6 quarterly meeting, the Committee will establish a team and select one or two programmatic areas to address. Lynch said she assumes that some programmatic areas will be suggested multiple times, reflecting partners' priorities. Sternburg requested that clear directions are provided in the request, including the level of detail desired.

Program Database

Michael Dougherty presented on the purposes, design, construction, and applications of the UMRR Database, as well as ongoing work to input historical program information and digitize various features. Dougherty said the Database's primary purpose is to combine key UMRR information into a single database application to produce priority program- and project-level reports and analyses. The goals of the Database are to 1) standardize reporting to increase awareness of UMRR's accomplishments of its strategic goals and objectives and 2) support habitat project design, analysis, and performance monitoring to increase effectiveness of applied ecosystem restoration science. Dougherty explained that UMRR developed its first HREP database in 1997 and has created several others since then, but they all experienced similar problems. These include a single-user platform that does not allow for efficient multiple-user editing; geographic data and project summary data managed in different, incompatible formats; and the inability to coordinate and standardize updates among the three UMR Districts. Because of these issues, none of the databases ever reached a stage of maturity that would allow them to be useful for analyzing restoration effectiveness. Dougherty explained how those issues have been eliminated in a new, user-friendly database, which should provide long-term utility for program partners. The new UMRR Database integrates and georeferences information related to the program's habitat projects. It is a web-based application that allows for multiple, simultaneous editors within the three UMR Districts. Dougherty said the Database was created using Oracle Application Express

software, which is a fully supported, no-cost, low maintenance option that includes all available Oracle editions. The software is fully embraced by USACE so it will not change in the foreseeable future. Using only a web-browser, users can develop and deploy professional applications that are both fast and secure.

Dougherty listed several advantages of the Oracle Application Express software. It links all program data together, records programmatic history on key issues, standardizes and tailors reporting, allows accessibility to implementing partners, and ensures data quality and consistency. The Database is not a replacement for the program's existing data systems. Thus far in the Database's development, USACE staff have compiled current and historic habitat project data from all three UMR Districts, added habitat project total cost estimates, and combined habitat project status, spatial locations, financial costs, sponsors, documents, and other relevant information into a single framework. This will allow for generating comprehensive reports. In addition, USACE staff have developed several standardized reports, such as Congressional fact sheets; updated the user authentication model to support the definition of fine-grained user roles; performed several quality assurance checks of specific data elements; and established a standing PDT to guide continued Database development and maintenance.

Dougherty explained that current efforts to develop the Database include the following:

a) Defining roles and responsibilities among USACE staff for making updates and doing quality assurance

b) Digitizing key habitat project documents and UMRR Coordinating Committee meeting packets and inputting them into the Database

c) Incorporating historical UMRR financial cost data and developing a plan for making routine updates

d) Updating points of contact for habitat project specialty areas

e) Inputting habitat project goals, objectives, and criteria

f) Developing a standard data model for storing habitat project restoration features with three-dimensional geometry

As the Database continues to mature, Dougherty said USACE staff will migrate habitat project features to a new data model, update the geometry to three-dimensional, and establish a standard operating procedure. USACE staff plan to input habitat project images, contacts, and performance evaluation reports; automate the creation of J-Sheet reports, UMRR Coordinating Committee financial reports, and habitat project web fact sheet reports; and perform quality assurance of the habitat project boundaries and features with the project sponsors. In addition, USACE staff plan to make the Database accessible to UMR partners via a public-facing server in the next six months to a year.

In response to a question from Randy Schultz, Dougherty said USACE will provide instructions to partners about how to navigate the Database and utilize the various features. Sternburg thanked Dougherty for the presentation. In response to a question from Sternburg, Doughtery confirmed that partners will be able to download GIS and other data files, such as acres per type of habitat and cost per acre of habitat. The Database will also offer web-based mapping applications. In response to a question from Jennie Sauer, Dougherty said USACE staff are scanning files with optimal character recognition to allow for full text searching. The particular software to support that capability has not yet been determined. Hubbell noted that the Database is not intended to replace any other UMRR-related database. He expressed appreciation to Dougherty for the great work in building the Database so that it will be easily maintained and user friendly.

2016 UMRR Report to Congress

Hubbell said he anticipates that USACE will soon finalize a contract with UMRBA to write and publish the 2016 UMRR Report to Congress (RTC). A first draft plan is scheduled to be distributed for partner review in August 2015, with a second review anticipated for late December 2015. Headquarters and MVD's official review is scheduled for spring 2016 with a final report incorporating graphics submitted to Headquarters in November 2016. In response to a question from Kirsten Mickelsen, Gabe Harris confirmed that MVD supports the outlined review schedule.

In response to a question from Karen Hagerty, Hubbell explained that UMRR's RTCs explore implementation issues and challenges and recommend any necessary adjustments to the program's authorization. The program's three RTCs have approached this in various ways, with the 2004 report focusing on programmatic implementation improvements in addition to authorization changes. Kirsten Mickelsen said she will contact UMRR Coordinating Committee members shortly to identify the issues to address in the report. The selected issues will be presented at the May 6, 2015 UMRR Coordinating Committee quarterly meeting for input. Ken Westlake suggested that the 2016 RTC discuss the challenges associated with habitat project partnership agreements (PPAs). Gary Meden noted that, depending on the National Academy of Public Administration's PPA review schedule, its recommendations may be included in the RTC issue write-up.

In response to a question from Hubbell, Mickelsen said the science section of the report will be framed similar to the FY 2015-2025 UMRR Strategic Plan's outcomes and strategies. She said an annotated outline of the science chapter has been developed. A more lengthy framework of the chapter will be shared with Jeff Houser and Karen Hagerty shortly. Mickelsen plans to work with Houser and Hagerty to refine the messages and identify the accomplishments to highlight.

In response to a question from Fischer regarding staff time expectations, Mickelsen referred to the anticipated review dates and said individual staff may be contacted to help develop certain segments of the report.

Public Outreach

Hubbell announced that, as an outcome of the January 20-22, 2015 UMRR operational planning meeting, a communications planning team will be established to consider UMRR's external communications and outreach. Hubbell said Kevin Bluhm will be asked to lead the team. Mickelsen added that external communications will be tailored both to the general public and elected officials as well as watershed programs and activities affecting the health of the UMRS. She said the operational planning team identified some individuals to participate on the team. Tim Yager noted that a USFWS human dimensions specialist may be able to provide expertise to the communications team. Chuck Theiling encouraged that an individual within the program is involved on the team. Kevin Stauffer said the operational planning team's intention with involving a communications professional is to get help in refining key messages as well as their dissemination.

Jim Fischer said Wisconsin DNR leadership are planning a "Bring the River to Madison" event to inform its state leadership about UMRS-related issues and benefits to the state. The event will likely be held in late summer 2015.

Brian Markert announced that the Batchtown habitat project received the 2014 Chief of Engineers Environmental Honor Award Recognition in a March 4, 2015 ceremony. The project was selected because of its innovative features and designs that will serve as a model in future ecosystem restoration projects.

Habitat Rehabilitation and Enhancement Projects

District Reports

St. Louis District

Brian Markert said the St. Louis District has been very active in advancing UMRR habitat projects. Markert said design work on Rip Rap Landing is pending receipt of a sponsor support letter from Illinois DNR. District staff hope to engage the agency's new leadership soon following the change in Administration. MVS is calibrating a physical model for Piasa and Eagles Nest Islands featuring the primary flow and island creation. The model will be used to develop and evaluate alternatives. A planning team has been established for Harlow and Wilkinson Islands and will begin work on the feasibility study soon. Markert said District staff are evaluating new potential habitat projects to begin planning in the next two to five years, as well as data needs to begin planning on those projects. The District's primary design effort is Clarence Cannon, and its construction work continues on Ted Shanks and Pools 25 and 26 Islands. Markert mentioned that MVS Commander Col. Anthony Mitchell toured the District's habitat project sites.

St. Paul District

Marv Hubbell said MVP awarded a $12.3 million construction contract for Harpers Slough, with the $6 million base contract awarded in the last weeks of FY 2014 and two options totaling $5.9 million awarded October 2014. Mike Griffin observed that this contracting approach of providing full funding at the outset resulted in substantial cost savings.

Rock Island District

Hubbell said MVR is accelerating its planning efforts on Beaver Island and anticipates completing its feasibility report in FY 2015 or FY 2016. The District is also finalizing the feasibility report for the Emiquon East project. Six projects are currently under construction in this fiscal year. MVR staff anticipate awarding a construction contract for Pool 2 Stage II Phases 2 and 4 together in the third quarter of FY 2015 and Huron Island Stage II in FY 2016. Hubbell said District staff are still awaiting Headquarters' decision on whether Illinois DNR will receive excess credits for construction work related to flood damages to Rice Lake.

Planning New Starts

Hubbell recognized that the pressure to select new projects for planning has lessened given the reduced funding in the President's FY 2016 budget request for UMRR and likely decreasing appropriations in out-years. Per the FY 2015-2025 UMRR Strategic Plan, the concepts of health and resilience will be integrated into the planning process to inform project selection. This will include the use of indicators of ecological health and resilience. Hubbell anticipates issuing a contract to UMESC in March to lead an interdisciplinary team that will define indicators of ecosystem health and resilience and link the indicators to the process of identifying habitat projects. The planned scheduled is for the team to begin this effort in spring or summer of 2015 and completing it at the end of FY 2017.

Hubbell said a team to identify the next generation of projects will be convened in fall 2015. The team will develop an outline, assemble key data sources, identify members of the system ecological team (SET), and utilize information from an updated habitat needs assessment (HNA). Hubbell anticipates that the process of selecting habitat projects will take two years.

Chuck Theiling asked how the "habitat team" being proposed by the operational planning team relates to project selection and whether there is potential overlap with the SET. Hubbell explained that the team's concept is fairly new. The operational planning team envisioned that the habitat team would have similar roles as the A-Team. The Team would discuss technical information related to project features and restoration approaches.

Griffin recalled that the UMRR partnership has identified several potential habitat projects and suggested that they be used as a reference. In response to a question from Griffin, Hubbell said partners will first identify the major stressors affecting the UMRS's health and resilience and then target restoration opportunities to address those stressors. This differs from past project selection efforts where the process would start by identifying potential project sponsors and then evaluate them based on their associated ecological benefits. The process details still have yet to be fleshed out. Hubbell said partners will be asked to develop fact sheets in a more standardized fashion to provide more consistency in comparing potential projects.

Fischer asked who will be involved on the health and resilience interdisciplinary team. Houser explained his preference to keep the group relatively small and focused, with representatives from field stations, USGS, USACE, and USFWS. In response to a question from Fischer, Houser explained that this approach diverges slightly from the initial project proposal only in the composition of the working group. Hubbell said the expanded composition beyond only scientists is in recognition that resilience will need to be applied to habitat project planning and implementation, as well as accountability in responding to the Administration about the program's accomplishments and ongoing need. Karen Hagerty added that the scope and associated costs are not anticipated to change from the proposal. It is only the working group that changed.

Beaver Island

Kara Mitvalsky presented Beaver Island's plans to restore mussel habitat with features to protect Albany Island and enhance rock substrate. The project is surrounded by urban area and has received considerable public attention. Beaver Island, which is located on USFWS refuge lands on the Iowa side of Pool 14, has experienced reduced aquatic habitat diversity, floodplain forest acreage and diversity, and wetland habitat, as well as island erosion. USFWS is the project sponsor. Beaver Island's interagency PDT conducted a literature review and mussel surveys to define general mussel habitat criteria related to substrate and water velocity and depth. With this information, the team identified areas to target for mussel conservation and enhancement.

The Bertrom McCartney mussel survey concluded that there are typically 4.8 live species per square meter, and are found in water depths of six to seven feet with velocities of greater than three feet per second. The preferred substrate is river washed gravel/cobble with crushed quarry rock. A preliminary analysis of case studies indicates that conditions having greatest mussel density include a substrate mix of cobble, gravel, sand, silt, and clay with average water depth of 3.7 feet.

Mitvalsky said the PDT conducted a mussel survey of Beaver Island and collected 886 individual mussels of 17 different species. She overviewed the project's potential features, including the protection and enhancement of Albany Island for mussel habitat by reducing water velocities and providing overwintering habitat. Riprap at the head end and one-third of length along the island will protect the island and provide the desired substrate for the mussels. The project will also construct a chevron and linear toe protection, as well as an intermix of riprap with river-washed rock. The PDT is also considering placing substrate in Albany Slough. Mitvalsky outlined the project's next steps, including completing the project's preliminary design, an incremental cost analysis, alternative selection, and public review opportunities. Mitvalsky anticipates that the project's feasibility report will be finalized in 2015 with construction initiated in 2017.

Hubbell noted that the Beaver Island mussel habitat project illustrates the value of the program's efforts to better integrate its science and restoration. Theiling acknowledged that Steve Zigler from UMESC has provided mussel research and modeling expertise to the project. Zigler developed a two-dimensional mussel model that will be help refine the project's design. Janet Sternburg asked if Beaver Island is UMRR's first project with features to improve mussel habitat. Mitvalsky said Bertrom McCartney Lakes [constructed in 1992] included features to improve mussel habitat, but Beaver Island is the only project to create mussel habitat since then. Hubbell clarified that Batchtown includes mussel habitat protection features. Brian Markert said MVS is exploring options for new habitat projects that would restore or protect mussel habitat.

Kraig McPeek asked about the project's criteria for success. Jon Duyvejonck explained that a monitoring plan is being developed with assistance from mussel experts Zigler and Teresa Newton. Duyvejonck recalled that Bertrom McCartney provided valuable information about the desired substrate for mussel habitat. However, Beaver Island's location is more representative of the typical river system where we find larger mussel beds. Therefore, Duyvejonck said he believes this project will help determine whether managers can create larger sized mussel beds. Griffin noted that since Beaver Island has low quality habitat, improvements to the site should be readily measured and determined. McPeek emphasized the importance of documenting success and insights gained. This project has the ability to inform greater mussel restoration and mitigation efforts. Currently, mitigation for mussels involves moving the species because it is the only known successful tool.

Huron Island

Mitvalsky presented on Huron Island's project construction and the contractor's innovative approach to excavating the site. Huron Island is a 2,600-acre complex is located on USFWS Refuge lands on the right descending bank of Pool 18, approximately 20 miles north of Burlington, Iowa. The Iowa River is about 12 miles upstream of the project area. USFWS has established a cooperative agreement with Iowa DNR for the project's operation, maintenance, repair, rehabilitation, and replacement (OMRR&R).

Mitvalsky explained that Huron Island has experienced significant impacts to its hydrology, topography, and biotic communities that includes reduced native plant and animal populations, degraded quality of remaining natural resources and plant communities, and impaired ecosystem structure and function. It is estimated that, without restoration improvements, the aquatic habitat would potentially reduce by 70 percent in the next 50 years, a large portion of the existing forest would be replaced by shrub-shrub habitats or reed canary grass, and side channel islands would continue to erode and cease to exist as spawning habitat. Mitvalsky listed the Huron Island's objectives as follows:

- Increase the areal coverage as measured in acres of emergent and submersed aquatic vegetation in backwater areas during the growing season
- Increase diversification of year-round floodplain forest and scrub-scrub habitat on Huron Island, as measured in acres
- Increase the structure and function of year-round aquatic habitat diversity, as measured by acres and native fish use of spawning, rearing, and overwintering habitat in the project area
- Maintain side channel riverine hydrodynamic, sediment transport and geomorphic processes in Huron Chute

Mitvalsky discussed the PDT's recommendations for the project's design, including increasing bathymetric and forest diversity, installing a water management control structure, and creating riprap island protection. The project's construction cost was estimated at $12.8 million. Mitvalsky said Trade West Construction from Mesquite, Nevada received the construction contract award of $2.66 million.

Trade West Construction's innovate approach resulted in a bid that was well-below the construction cost estimated. Even though USACE staff had reservations, the innovative approach proved to be successful. Mitvalsky provided an overview of typical dredging operations on UMRR's habitat projects for a comparison to the Trade West Construction's approach, which included constructing a berm and draining the pools to create dry conditions to enable dredging with excavators. The contractor was able to capture and move fish to deep water using an excavator. Mitvalsky said MVR staff anticipate awarding a construction contract for Stage II in FY 2016, following the completion of Stage I.

Theiling acknowledged that the design was informed by hydrologic modeling that included Nate De Jager's analysis on which species to expect at various elevations. Jim Fischer noted that this project suggests that UMRR might benefit from design-build agreements with contractors to foster more innovative designs. Mitvalsky noted that USACE has contracted certain design features before that were unsuccessful. Fischer suggested that the project planning process be evaluated through Lean Six Sigma to determine the benefits of involving contractors earlier in the planning and design process. Mitvalsky said one insight gained from Beaver Island is that project designs can be less prescriptive regarding construction techniques.

Long Term Resource Monitoring and Science

Highlights

Jeff Houser described the value of UMRR's long term resource monitoring fish data set and the capabilities that the 22-year trend data now allows for research and analysis, including the effectiveness of management approaches. Citing Mel Bower's analyses of the long term fish monitoring data in Pool 13, Houser outlined the purposes of the fish data collection and the information generated from the monitoring data. Long term monitoring of fish has significant public value as the UMRS supports multi-million dollar commercial and sport fisheries, fish are indicators of the biotic integrity of the UMRS ecosystem, and information about fish populations and communities can inform our understanding of dynamics of other organisms and physical and chemical processes. Short-term monitoring does not allow for determining factors affecting fish populations because fish populations are highly variable among years and there might be multiple possible causes that impede identification of short-term cause-and-effect relationships.

Houser said a Pool 13 long term data analysis of sex-specific age structure, growth, and mortality of black and white crappie in Pool 13 show that it is unnecessary to separate sexes when examining growth and population metrics for black and white crappie and that otoliths may only need to be collected once every five to eight years to accurately assess age and size structure. In another example, analysis of fish monitoring data in Pool 13 showed that a mandatory catch-and-release regulation of riverine largemouth bass populations had only a short-term positive effect. Long term data was necessary to determine that there was a natural population upswing in accordance with its natural variation. Mike Griffin acknowledged the importance of the Pool 13 analysis for providing management insights, such as the effectiveness of the catch-and-release regulation.

Houser said the Illinois River Biological Field Station on the La Grange Reach is evaluating population dynamics of Asian carp to better assess their ecological impact. Thus far, research is showing that three to five year old fish dominate the population. This could indicate that there is a recent lack of successful recruitment to adulthood, unless there is a gear bias towards that age group. Continued monitoring will help clarify the results. Houser said the Illinois River Biological Field Station is also evaluating population dynamics of key indicator species to inform habitat project selection, among other information and management needs.

Houser reported that the National Great Rivers Research and Education Center (NGRREC) is working cooperatively with UMRR to evaluate new monitoring platforms capable of collecting real-time data on a wide variety of water quality conditions, including the YSI PISCES Platforms that are used in the Great Rivers Ecological Observatory Networks. Houser explained that high temporal resolution data are beneficial in that the data provides insight into river ecosystem processes and improves assessments of nutrient and sediment concentrations and loadings. High resolution data detects short term associations between nitrate and discharge, while standard monitoring detects longer term associations. Analyses of the two data methods are highly correlated. Given the limitations in spatial resolution, UMRR's traditional sampling methods should be continued.

Houser said USGS is developing methods to assess mussel survival rates using passively integrated transponder tags to monitor vital rates (e.g., mortality, recruitment, growth). These tags could offer a better long term monitoring method for mussels, and provide for an indicator of ecological health and environmental changes.

Houser reported that Wisconsin DNR hired two new UMRR long term resource monitoring staff. John Kalas was hired as the water quality specialist and Dr. Deane Drake as the vegetation specialist. Jim Fischer said he is very pleased with these two new hires, who he believes have very complimentary skillsets.

USACE Science Update

Karen Hagerty said an updated FY 2014 scope of work milestone chart for science in support of restoration and management is included on pages C-9 to C-11 of the agenda packet. Hagerty reported that the UMRR Coordinating Committee endorsed via email the recommendations for FY 2015 funding for science analyses in support of restoration. She anticipates that USACE will issue the project funds in late February.

Science Highlight: UMR Landscape Ecology

Nate De Jager presented a summary of his landscape ecology research over the past several years and how that analysis can now lend insights into synthesis and significance. De Jager explained that landscape ecology analyzes relationships among various influences to the floodplain system, patterns and distributions (such as habitat or hydrology), and consequences or process (such as plant and animal growth or movement and nutrient cycling). Landscape ecology connects program managers' perspectives of improving the overall condition of the river system and local resource managers' perspectives of addressing site-specific habitat and resource limitations. A suite of landscape indicators allows for tracking the status and trends of pattern metrics, identifying potential areas for restoration, and developing a better understanding of the ecological consequences of modifications to landscape patterns.

De Jager said the three main objectives of UMRR landscape ecology research is to develop and maintain the landscape indicator graphical web browser, research of pattern-process relationships to support river-floodplain decision support modeling, and conduct syntheses using information generated from the web browser and research. While an incredible amount of information has been generated, it has not yet been synthesized into major points. This includes examining the consequences of restoration and climate change on landscape patterns and associated ecological patterns and process. Next steps include reviewing the information learned so far across multiple ecological and landscape components and distilling them into main points. In addition, UMESC staff will synthesize the results in the form of models and tools that can be used to inform restoration decisions.

De Jager provided an example of using models to quantify hydroecological patterns in order to inform where certain ecological functions are likely to be supported in different areas of the river floodplain. He said landscape modeling is challenged by its dependence on LiDAR and/or bathymetry data, flood or flow models, and solid hydro-ecological relationships. De Jager said he intends to continue fulfilling the landscape research framework priorities, which include analyzing the effects of alternative hydrological regimes and management scenarios on landscape-scale ecological distributions. Thus far, nearly twenty manuscripts of UMRS landscape ecology research have been completed. De Jager said the data sets and research are coming together at the right time to be able to examine important landscape research questions.

In response to a question from Hagerty, De Jager said the land use/land cover data is anticipated to be ready for use by the end of this fiscal year. Hagerty asked how the landscape information might be applied to selecting the next generation of habitat projects. De Jager said the landscape indicators would be very useful for identifying habitat projects that would improve larger-scale restoration needs. There are maps available on UMESC's UMRR long term resource monitoring website that would be a great reference.

Janet Sternburg suggested exploring opportunities to seek grant funding through the National Climate Science Center to support development of the river-floodplain decision support model.

Emerging Issues and Trends

Draft Invasive Species Policy Paper

Karen Hagerty recalled that she presented a draft UMRR Invasive Species Policy Paper for partner input at the UMRR Coordinating Committee's November 19, 2014 quarterly meeting. Following the meeting, Hagerty coordinated a review of the draft Policy Paper with the UMRR Coordinating Committee members via email. A revised version based on that feedback is included on page D-1 of the agenda packet. Hagerty noted that the modifications were only minor editorial changes, not any substantial changes to the policy itself.

Kevin Stauffer noted that the reporting requirement provision was strengthened. Sabrina Chandler asked if UMRR Coordinating Committee members had any questions or were prepared to offer a motion of endorsement. Mark Gaikowski asked for the individual states' reporting requirements to the USGS's Nonindigenous Aquatic Species (NAS) Alert System, and who is responsible for reporting new or rare captures under UMRR. Stauffer and Janet Sternburg said their respective states do not mandate, but rather strongly encourage, such reporting and staff do follow through. Stauffer acknowledged that there is not a well-defined process for reporting to NAS. Gaikowski suggested modifying the language to more explicitly direct partners to report to the NAS as soon as possible. Bob Clevenstine offered support for Gaikowski's suggestion, noting that resource managers have a responsibility and charge to limit the spread of invasive species. Sternburg suggested adding "or encouraged" following "each UMRR partner agency is already required." Dan Stephenson added that UMRR Coordinating Committee members can provide guidance to staff to report any new or rare captures.

In response to a request for a motion from Chandler, Sternburg moved and Stauffer seconded a motion to approve the UMRR Invasive Species Policy as provided in the agenda packet, with language modifications regarding the reporting of new or rare captures or sightings of invasive species. Hagerty said she will send a revised version to the UMRR Coordinating Committee for approval.

Other Potential Issues to Explore in FY 2015

Marv Hubbell explained that UMRR Coordinating Committee agreed to identify any new emerging threats or issues that might affect program implementation at its February quarterly meetings. This recommendation came from the Implementation Issues Assessment (IIA) paper on emerging threats and issues.

Olivia Dorothy noted that UMRR's authorization covers the geographic extent of the UMRS's commercially navigable waterways. Dorothy asked if the closure of Upper St. Anthony Falls L&D will eliminate that area from UMRR's geographic scope, and whether that would result in any lost restoration opportunities. Hubbell said he will seek guidance on that question and report back at the UMRR Coordinating Committee's May 6, 2015 quarterly meeting.

The UMRR Coordinating Committee offered no new emerging trends or issues affecting UMRR implementation to explore in FY 2015.

Other Business

Future Meetings

The upcoming quarterly meetings are as follows:

- **May 2015 — St. Louis**
  - UMRBA — May 5
  - **UMRR Coordinating Committee — May 6**
- **August 2015 — La Crosse**
  - UMRBA — August 4
  - **UMRR Coordinating Committee — August 5**
- **November 2015 — St. Paul**
  - UMRBA — November 17
  - **UMRR Coordinating Committee — November 18**

With no further business, the meeting adjourned at 2:00 p.m.

UMRR Coordinating Committee Attendance List
February 11, 2015

UMRR Coordinating Committee Members

Gary Meden	U.S. Army Corps of Engineers, MVR
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Mark Gaikowski	U.S. Geological Survey, UMESC
Dan Stephenson	Illinois Department of Natural Resources
Randy Shultz	Iowa Department of Natural Resources
Kevin Stauffer	Minnesota Department of Natural Resources
Janet Sternburg	Missouri Department of Conservation
Jim Fischer	Wisconsin Department of Natural Resources
Ken Westlake	U.S. Environmental Protection Agency, Region 5[On the phone]

Others In Attendance

Gabe Harris	U.S. Army Corps of Engineers, MVD
Terry Birkenstock	U.S. Army Corps of Engineers, MVP
David Potter	U.S. Army Corps of Engineers, MVP
Ken Barr	U.S. Army Corps of Engineers, MVR
Michael Dougherty	U.S. Army Corps of Engineers, MVR
Kayleigh Easter	U.S. Army Corps of Engineers, MVR
Kim Ferguson	U.S. Army Corps of Engineers, MVR
Angie Freyermuth	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR
Dennis Hamilton	U.S. Army Corps of Engineers, MVR
Marvin Hubbell	U.S. Army Corps of Engineers, MVR
Nicole Lynch	U.S. Army Corps of Engineers, MVR
Kara Mitvalsky	U.S. Army Corps of Engineers, MVR
Monique Savage	U.S. Army Corps of Engineers, MVR
Karla Sparks	U.S. Army Corps of Engineers, MVR
Chuck Theiling	U.S. Army Corps of Engineers, MVR
Brian Markert	U.S. Army Corps of Engineers, MVS
Sharonne Baylor	U.S. Fish and Wildlife Service, UMR Refuges
Bob Clevenstine	U.S. Fish and Wildlife Service, UMR Refuges
Jon Duyvejonck	U.S. Fish and Wildlife Service, RIFO
Kraig McPeek	U.S. Fish and Wildlife Service, RIFO
Tim Yager	U.S. Fish and Wildlife Service, UMR Refuges
Nate De Jager	U.S. Geological Survey, UMESC
Jeff Houser	U.S. Geological Survey, UMESC
Jennifer Sauer	U.S. Geological Survey, UMESC
Dave Bierman	Iowa Department of Natural Resources
Mike Griffin	Iowa Department of Natural Resources
Robert Stout	Missouri Department of Natural Resources
Tom Boland	AMEC Foster Wheeler
Olivia Dorothy	American Rivers
Brad Walker	Missouri Coalition for the Environment
Josh Spies	The Nature Conservancy
Dru Buntin	Upper Mississippi River Basin Association
Dave Hokanson	Upper Mississippi River Basin Association
Kirsten Mickelsen	Upper Mississippi River Basin Association

ATTACHMENT B

UMRR Regional Management

- **UMRR Spreadsheets thru 2nd Quarter of FY 15 (3/31/2015)** *(B-1 to B-5)*
- **Lean Six Sigma Issue Identification Worksheet** *(B-6)*
- **UMRR Coordinating Committee's 2016 UMRR Report to Congress Draft Policy Recommendations (4/6/2015)** *(B-7 to B-9)*

BUDGET SHEET

UMRR-EMP EXPENDITURES AND ALLOCATIONS

	FY15 ($ 000)				
	CARRY IN FROM FY 14	FY 15 ALLOCA.	TOTAL AVALIABLE TO EXP.	31 Mar 15 ACTUAL EXP.	'31 Mar 15 ACTUAL OBLIG.
PROGRAM ELEMENTS					
HABITAT PROJECTS					
HREP PROJECTS	223	23,309	23,526	8,841	9,684
ARRA HREP PROJECTS	0	0	0	0	0
HABITAT EVAL/MONITORING	0	475	475	219	210
HABITAT NEEDS ASSESSMENT	0	0	0	0	0
PLANNING/PRIORITIZATION	0	0	0	0	0
USFWS HREP SUPPORT	0	370	370	203	142
PROGRAM COOR.(Includes District Habitat Coordination)	0	3,240	3,240	940	984
REPORT TO CONGRESS- 2014	0	0	0	3	78
REGIONAL INITIATIVES	0	201	201	107	106
LTRM (Includes LTRM Regional Technical)	0	5,575	5,575	2,950	3,674
ARRA LTRM PROJECTS	0	0	0	0	0
TOTALS	223	33,170	33,387	13,267	14,958
TOTALS BY ORGANIZATION					
MVR *	26	12,443	12,463	6,704	1,940
MVP	75	7,361	7,436	1,002	6,680
MVS	122	7,421	7,543	2,362	2,367
USGS	0	5,500	5,500	2,950	3,674
UMRBA Administration	0	75	75	43	76
USFWS (Multi-district funded)	0	370	370	203	142
REPORT TO CONGRESS- 2012	0	0	0	3	78
System Ecological Team (SET)	0	0	0	0	0
TOTAL	223	33,170	33,387	13,267	14,958

*1

* 1 Equals Work Allowance amount of $33,170,000.

31 March 2015
FY 2015

ADMINISTRATIVE, LTRM, and Non-Site Specfic Costs

	FY15 ($ 000)				
	CARRY IN	ALLOCA.	TOTAL SCHED EXP.	31 Mar 15 Actual Exp.	31 Mar 15 Actual Obl.
HABITAT (Rollup from district sheets)					
BASELINE MONITORING	0	85	85	39	39
HABITAT PROJ. EVALUATION	0	315	315	180	171
BIO-RESPONSE STUDIES	0	75	75	0	0
USFWS HREP SUPPORT (Multi-district funded)	0	370	370	203	142
PLANNING/SEQUENCING (PRIORITIZATION)	0	0	0	0	0
TOTAL HABITAT	0	845	845	422	353
PROGRAM COORDINATION (excludes District Habitat Coor.)					
UMRBA	0	75	75	43	76
System Ecological Team (SET)	0	0	0	0	0
PUBLIC INVOLVEMENT	0	60	60	1	1
EMP PROGRAM ADMINISTRATION	0	630	630	354	354
LTRM REGIONAL TECHNICAL	0	75	75	0	0
REGIONAL INITIATIVES	0	201	201	107	106
PROGRAM MGT TOTAL	0	1,041	1,041	504	537
REPORT TO CONGRESS (includes all organizations)	0	0	0	3	78
LTRM					
CORPS LTRM MANAGEMENT	0	0	0	0	0
LTRM (USGS & STATES)	0	5,500	5,500	2,950	3,674
CORPS BATHEMETRY & LiDAR (Multi-district funded)	0	0	0		
ARRA - BATHEMETRY, LiDAR, & GIS (Multi-district funded)	0	0	0	0	0
CORPS APE'S ACTIVITIES	0	0	0	0	0
CORPS LTRM TECHNICAL SUPPORT (MSP)	0	0	0	0	0
SUBTOTAL	0	5,500	5,500	2,950	3,674

ST. PAUL DISTRICT

MVP	PROJECT ESTIMATE DESIGN	CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 14	EXP THRU FY 14	FY15 ($ 000) CARRY IN	ALLOCA.	TOTAL AVALIABLE TO EXP.	31 Mar 15 Actual Exp.	31 Mar 15 Actual Obl.	(Federal) Scheduled $ To Complete	
HABITAT PROJECTS													
Capoli Slough, WI	500	8,750	9,250		1981	6413		200	200	309	147	4,509	CONSTRUCTION
Conway Lake, IA	462	2,050	2,512		141	254		275	275	100	100	2,299	DESIGN
Harpers Slough, IA	1,500	15,000	16,500		499	2185	75	6,106	6,181	192	6,009	14,622	CONSTRUCTION
Lake Winneshiek, WI	620	4,380	5,000			9			0			4,991	DESIGN
Lower Pool 10 Islands/Backwater, IA	920	5,200	6,120		27	0			0			6,120	DESIGN
McGregor Lake, WI	900	5,600	6,500		151	152		30	30	3	3	6,496	DESIGN
North & Sturgeon Lakes, MN	900	7,600	8,500	1,100	297	2172		300	300	214	237	6,411	DESIGN
ARRA PLANING, ENG & DESIGN	0	75	75	0		75			0			0	
Other Habitat (Carry over)	0	0	0	0		0			0			0	
HABITAT TOTAL	5,802	48,655	54,457	1,100	3,096	11,260	75	6,911	6,986	818	6,496	45,448	
									0				
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT						57			0				
BASELINE MONITORING					104	582		25	25				
HABITAT PROJ. EVALUATION					138	1771		75	75	44	44		
BIO-RESPONSE STUDIES						1333			0				
USFWS HREP SUPPORT					107	1345		130	130				
PLANNING/SEQUENCING(PRIORITIZATION)						0			0				
SUBTOTAL	0	0	0	0	349	5,088	0	230	230	44	44	0	
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					457	4889		350	350	140	140		
PUBLIC INVOLVEMENT - mipr $						0			0				
SUBTOTAL	0.0	0.0	0.0	0.0	457	4,889	0	350	350	140	140	0	
LTRM													
LTRM COORDINATION						455	0	0	0				
ADDITIONAL LTRM						484	0	0	0				
SUBTOTAL	0	0	0	0		939	0	0	0	0	0	0	
DIRECT MVP EXPENDITURES				1,100	3,902	22,176	75	7,491	7,566	1,002	6,680	0	
								*1					
MIPR & CROSS CHARGE LABOR EXPENDITURES													
Mipr for LTRM Travel						15.1			0	0	0		
Cross charge labor Technical & Bathemetry						31.7			0	0	0		
MIPR TOTALS (Includes Public Involvement)						47	0	0	0	0	0		
TOTAL MVP EXPENDITURES					3,902	22,223	75	7,491	7,566	1,002	6,680		
								*1					
NOTES:													
*1 Equals MVP work allowance of $7,491,000													

ROCK ISLAND DISTRICT

MVR	PROJECT ESTIMATE DESIGN	PROJECT ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 14	EXP THRU FY 14	FY15 ($ 000) CARRY IN	FY15 ($ 000) ALLOCA.	FY15 ($ 000) TOTAL AVALIABLE TO EXP.	31 Mar 15 Actual Exp.	31 Mar 15 Actual Obl.	(Federal) Scheduled $ To Complete	
HABITAT PROJECTS													
BEAVER ISLAND, IA	1,500	11,000	12,500		232	411		540	540	357	307	11,963	PLANNING
FOX ISLAND, MO	700	4,300	5,000		446	5,675		140	140	220	67	-449	DESIGN
HURON ISLAND, IA	2,100	8,400	10,500		639	2,285		773	773	2,299	113	6,555	PLANNING
LAKE ODESSA, IA	2,470	12,394	14,864		90	15,133		650	650			-179	DESIGN
POOL 11 ISLANDS, WI	1,548	14,469	16,017			10,157			0			5,860	CONSTRUCTION
POOL 12 OVER WINTER, IA	2,500	16,500	19,000		1,811	3,939		6,393	6,393	2,304	336	14,569	DESIGN
RICE LAKE, IL	2,800	10,720	13,520	6,825	1,518	12,374	26	539	565	624	142	2,040	DESIGN
TURKEY RIVER BOTTOMS	2,900	15,800	18,700		0	2		4	4			18,698	PLANNING
BOSTON BAY	900	5,100	6,000		0	2		4	4			5,998	PLANNING
STEAMBOAT ISLAND	1,250	6,250	7,500		0	2		25	25			7,498	PLANNING
KEITHSBURG DIVISION	1,400	4,800	6,200		12	14		250	250	65	65	6,133	PLANNING
DELAIR DIVISION	1,750	7,750	9,500		0	2		4	4			9,498	PLANNING
SNYDER SLOUGH	1,800	15,000	16,800		14	16		4	4	0	0	16,799	PLANNING
EMIQUON	725	12,575	13,300	6,400	232	233		20	20	9	9	13,290	DESIGN
LAKE ODESSA, IA (Flood Recovery) (supplemental)		5,500	5,500		174	4,915			0	54	54	705	FLOOD RECONSTR.
ARRA ODESSA		236	236			158			0			78	ARRA
OTHER HABITAT		0	0			0			0			0	
HABITAT TOTAL	23,618	138,922	162,540	6,825	5,170	87,333	26.0	9,346.0	9,372	5,933	1,093	39,233	
HABITAT													
HABITAT NEEDS ASSESSMENT						0		0	0				
BASELINE MONITORING			268			254			0				
HABITAT PROJ. EVALUATION			938		150	3,514		225	225	131	122		
BIO-RESPONSE MONITORING			588			1,036		0	0				
USFWS HREP SUPPORT					166	1,049		170	170	150	89		
PLANNING/SEQUENCING(PRIORITIZATION)						39		0	0				
SUBTOTAL	0	0	1,794	0	316	5,893	0	395	395	281	212		
PROGRAM MANAGEMENT													
REGIONAL HREP SCIENCE SUPPORT			3,496	0	276	5,469		1,900	1,900	175	185		
PUBLIC INVOLVEMENT	0.0	20.0	20.0		41	244		60	60	1	1		
REGIONAL ADMIN				0	655	2,936		630	630	354	354		
LTRM REGIONAL TECHNICAL					69	1,813		75	75				
PROGRAM INITIATIVES					192	1,170		201	201	107	106		
SUBTOTAL			3,516	0	1,234	11,633	0	2,866	2,866	636	646		
REPORT TO CONGRESS					0	96	0	0	0	3	78		
LTRM													
CORPS BATHEMETRY & LiDAR(Multi-district funded)					8	463	0		0	0	0		
ARRA - BATHEMETRY, LiDAR, USGS, & GIS					0	2,811	0		0				
CORPS APE'S ACTIVITIES						165	0		0				
ADDITIONAL LTRM					0	927	0		0	0			
SUBTOTAL	0	0	530	0	8	4,365	0	0	0	0	0		
MIPRS & Contracts													
UMRBA					83	239	0	75	75	43	76		
ITRC					0	0	0	0	0	0	0		
USGS					6,088	20,286	0	5,500	5,500	2,950	3,674		
FY14 Reprogram						0		6					
SUBTOTAL					6,171	20,525	0	5,581	5,575	2,992	3,750		
TOTAL MVR EXPENDITURES					12,898	129,845	26.0	18,188	18,208	9,846	5,780		
								*1					

*1 Equals MVR work allowance of $18,188,000

March 2015
FY 2015

ST LOUIS DISTRICT

MVS	PROJECT ESTIMATE DESIGN	PROJECT ESTIMATE CONST	TOTAL W/O NON FED	NON-FED EST	EXP FOR FY 14	EXP THRU FY 14	FY15 ($ 000) CARRY IN	FY15 ($ 000) ALLOCA.	FY15 ($ 000) TOTAL AVALIABLE TO EXP.	31 Mar 15 Actual Exp.	31 Mar 15 Actual Obl.	(Federal) Scheduled $ To Complete	
HABITAT													
BATCHTOWN MGMT, IL	3,220	14,875	18,095	145	261	16,796		100	100	36	36	1,524	CONSTRUCTION
CLARENCE CANNON, MO	2,637	27,180	29,817		484	1,502		950	950	191	191	28,608	DESIGN
EAGLES NEST & PIASA IS., IL	1,057	4,500	5,557		216	432		350	350	124	124	5,217	FACT SHEET
GLADES WETLAND, IL	3,218	14,000	17,218			0		100	100	16	16	17,202	DESIGN
HARLOW ISLAND	750	3,750	4,500		22	60		400	400	129	129	4,333	DESIGN
RIP RAP LANDING	1,373	10,553	11,926	1,207	79	748		100	100	7	7	11,250	DESIGN
POOL 24 ISLANDS	1,373	8,119	9,492			8		10	10			9,484	DESIGN
POOLS 25/26, MO	875	1,600	2,475		272	1,076		100	100	128	128	1,543	CONSTRUCTION
REDS LANDING,	621	2,863	3,484			0		10	10			3,484	DESIGN
SCHENIMANN CHUTE, MO	691	2,800	3,491			396		10	10			3,095	DESIGN
SWAN LAKE, IL	2,377	13,246	15,623	262		15,204		25	25			419	CONSTRUCTION
TED SHANKS, MO	4,405	25,101	29,506		5,004	12,620	122	4,861	4,983	1,334	1,334	20,556	CONSTRUCTION
WILKINSON ISLAND	1,250	2,730	3,980	0	8	876		10	10			3,112	DESIGN
WEST ALTON ISLAND	805	5,727	6,532			17		10	10	0	5	6,515	DESIGN
HORSESHOE LAKE	1,520	12,750	14,270		40	40		10	10	3	3	14,267	DESIGN
FT. CHARTRES SIDE CHANNELS, IL	650	2,650	3,300			44			0			3,256	DESIGN
ESTABLISHMENT CHUTE SC, MO	650	2,250	2,900			24			0			2,876	FACT SHEET
KASKASKIA OXBOWS, IL	750	3,500	4,250			0			0			4,250	FACT SHEET
ARRA RIPRAP LANDING	0	319	319			319			0			0	ARRA
ARRA BATCHTOWN	0	3,405	3,405			3,261			0			144	ARRA
ARRA SWAN LAKE	0	1,109	1,109			1,109			0			0	ARRA
(Other Unexpended Carryover)	0	62	62		48	62			0	122	122	-74	
HABITAT TOTAL	28,222	163,089	191,311	1,614	6,434	54,594	122	7,046	7,168	2,090	2,095	141,061	
HABITAT EVAL/MONITORING													
HABITAT NEEDS ASSESSMENT	1,000		1,000			0							
BASELINE MONITORING					530	1,372		60	60	39	39		
HABITAT PROJ. EVALUATION					14	666		15	15	5	5		
BIO-RESPONSE MONITORING					4	1,184		75	75		0		
USFWS HREP SUPPORT					156	614		70	70	53	53		
PLANNING/SEQUENCING(PRIORITIZATION)						4			0				
SUBTOTAL	1,000	0	1,000	28,347	704	3,840	0	220	220	97	97		
PROGRAM MANAGEMENT													
PROGRAM COORDINATION					199	2,285		225	225	228	228		
PUBLIC INVOLVEMENT					0	0			0				
SUBTOTAL	0	0	0	0	199	2,285	0	225	225	228	228		
LTRM													
LTRM COORDINATION					0	0			0				
ADDITIONAL LTRM					0	0			0				
SUBTOTAL	0	0	0	0	0	0	0	0	0	0	0		
DIRECT MVS EXPENDITURES	29,222	163,089	192,311	29,961	7,337	60,719	122	7,491	7,613	2,415	2,420		
								*1					
MIPR EXPENDITURES													
LTRM mipr for Travel					0	444	0		0	0	0		
LTRM Bathemetry & Technical cross chrg					0	28	0		0	0	0		
MIPR/ Cross charge totals					0	472	0		0	0	0		
TOTAL MVS EXPENDITURES					7,337	61,191	122	7,491	7,613	2,415	2,420		
NOTES:								*1					
*1 Equals MVS work allowance of $7,491,000													

Based on the 3 topics below, Regional Issues, Science, and Habitat Restoration; please identify the area where you see issues or gaps between the customer requirement and what the organization is delivering. Some items have been identified on areas of focus but if you see any additional areas not covered please feel free to add those to the bottom or under one of the main topics. In both cases please answer at least the 3 below questions to help assist in the right direction.

1. What processes do you currently have where you see there is a gap between customer requirements and what they are actually getting?

2. What is the problem statement for those processes?

3. What is the goal for those problem statements identified?

Regional Issues

Technical formulation:

Project management:

Partnership coordination:

Science

Base monitoring:

Research:

Coordination:

Integration:

Habitat Restoration

Plan formulation:

Construction:

Post construction:

Integration:

Chapter 3: Policy Recommendations

Overview

The UMRR's reports to Congress have proven to be useful opportunities for USACE and program partners to articulate challenges and potential influences to program implementation and to recommend solutions to address them. The challenges and potential influences discussed in this Chapter are beyond the partnership's ability to resolve internally at the District level and merit attention by Congress and the Administration.

Project Partnership Agreements

The UMRR has enormous potential to continue implementing habitat projects throughout the Upper Mississippi River System that will improve the ecosystem's health and resilience. The program's non-federal project sponsors gain significant ecological and economic benefits from these habitat projects and are committed to continue advancing future habitat projects. However, UMRR's candidate non-federal project sponsors have indicated that USACE's newly updated project partnership agreements (PPAs), which stipulate both parties' obligations, are too legally burdensome to execute. This could create unintended limitations on UMRR's restoration capabilities, especially as the program is set to embark on a collaborative process to identify the next generation of habitat projects. These PPA legal challenges are also limiting other USACE programs and projects and are beyond UMRR's scope to resolve.

Per UMRR's authorizing language, habitat projects require that a non-federal sponsor provide 35 percent of construction costs including planning and design unless a habitat project is located on lands managed as a national wildlife refuge, is intended to benefit a federally-listed threatened or endangered species, or provides a national benefit — e.g., treaty species. However, as a matter of policy and priorities over successive administrations, USACE has only approved full federal funding for projects located on national wildlife refuge lands. Section 906(e) of the 1986 Water Resources Development Act, as amended, governs cost sharing for UMRR habitat projects. In accordance with Section 107(b) of the 1992 Water Resources Development Act, operation, maintenance, repair, replacement, and rehabilitation (OMRR&R) is the responsibility of the entity that manages the land.

Many portions of the river in serious need of restoration are located in areas with no federal lands. Habitat projects in these areas will require a non-federal sponsor to cost-share construction and assume full responsibility for OMRR&R. The addition of nonprofit organizations as candidate cost share sponsors on habitat projects, provided in the 2007 Water Resources Development Act, could substantially increase the program's restoration opportunities, particularly in the southern river reaches where there is a considerably higher proportion of private land and therefore fewer options for USFWS and the states to sponsor projects.

In the context of UMRR, USACE District leadership has worked with the program's non-federal sponsors in an effort to describe the PPA legal issues and identify potential solutions. There are two primary areas of concern. One is the indemnification provision that makes non-federal sponsors fully liable for damages resulting from the planning, design, construction, operation, and maintenance of the project, including costs for any damages that are not the result of the non-federal sponsor. The second issue is that the PPAs no longer include a time limit or cost ceiling related to the non-federal sponsors' requirement to maintain the project, essentially requiring that OMRR&R is done in perpetuity. Previously, UMRR's non-federal sponsors were required to provide OMRR&R for the life of the project, which was typically stipulated to be 50 years. In addition, the OMRR&R requirements are not provided to the non-federal sponsor until the project is completed and after a signed PPA is required.

The non-federal sponsors have proposed the following solutions to allow them to execute PPAs:

1. Modify the hold and save clause to a more equitable, shared approach to liability that does not extend beyond the liabilities that already exist under applicable state constitutions and laws.
2. Include language providing that unanticipated costs for project construction are subject to a) the state's future appropriations for the project or b) the nonprofit's availability of funds for the project. In addition, construct projects in phases when appropriate to limit cost overruns.
3. Provide greater specificity regarding OMRR&R costs and requirements in the PPAs, rather than providing those requirements post-construction. PPA provisions related to OMRR&R should include:
    a. A defined end-term that is based on the expected useful life of the project's construction features.
    b. Language providing that unanticipated costs are subject to a) the state's future appropriations for the project or b) the nonprofit's availability of funds for the project.
    c. Adaptive management provisions to address risk and uncertainty regarding project outcomes and the need and ability to perform OMRR&R obligations depending on whether the project features perform as intended.

In addition, UMRR's non-federal cost share sponsors have encouraged USACE and the National Academy of Public Administration to involve all candidate non-federal sponsors in its efforts to improve the PPA template and preparation, negotiation, and approval process, per Section 1013 of the 2014 Water Resources and Reform Development Act.

UMRR-NESP Transition Plan

In establishing the UMRR in 1986, Congress created the first program in the nation to combine ecosystem restoration with scientific monitoring and research efforts on a large river system. In addition, Congress recognized its commitment to balanced management of the Upper Mississippi River System by declaring it to be a nationally significant ecosystem and a nationally significant commercial navigation system. Since UMRR's inception, with strong Congressional support and a highly effective federal-state partnership, the program has built an effective and efficient restoration and long term resource monitoring infrastructure and has produced a strong record of accomplishments and success in improving the health and resilience of the Upper Mississippi River System ecosystem.

Congress confirmed its commitment to sustainable management of the Upper Mississippi River System as a multi-purpose river when it authorized the Navigation and Ecosystem Sustainability Program (NESP) in 2007. The NESP authority is the first increment of a long-term dual purpose program of ecological restoration and navigation improvement projects on the Upper Mississippi River System. The NESP authority includes 225 ecosystem restoration projects, restoring over 100,000 acres, long term resource monitoring, and navigation improvements ranging from helper boats and mooring cells to seven new 1,200-foot locks (at Locks and Dams 20, 21, 22, 24, and 25 on the Upper Mississippi River and at La Grange and Peoria on the Illinois Waterway). The existence of two major ecosystem restoration authorities for the Upper Mississippi River System has raised obvious questions about their interrelationship and potential futures. Congress declared again its commitment to sustainable management of the Upper Mississippi River System and NESP in the Conference Committee report on the 2014 Water Resources Reform and Development Act (WRRDA), acknowledging that the river is the only system designated as a "nationally significant ecosystem and nationally significant navigation system."

Since the 2010 UMRR RTC, on May 14, 2012, USACE submitted a plan to transition UMRR to NESP in response to Congress' Joint Explanatory Statement included in the FY 2009 omnibus appropriations measure (P.L. 111-8). The plan outlines key principles for a successful transition, as follows:

1. A transition should occur only when NESP is appropriated construction funding, and until then, UMRR should continue to be funded.
2. Until Congress directs a transition, UMRR should remain fully functional in order to a) continue providing significant benefits to the Upper Mississippi River System region and the nation, b) maintain the ecosystem restoration and monitoring capabilities. This includes ensuring that the regional infrastructure of partnership, technical expertise, scientific monitoring and research, and construction capability will be in place for early success in implementing a robust ecosystem restoration component in NESP.
3. Extensive collaboration and coordination, including the use of a shared planning process for the identification and sequencing of habitat projects, will allow both UMRR and NESP to execute efficiently until the time of transition, with the expectation that transition will occur seamlessly and efficiently.
4. Scientific and monitoring efforts currently carried out under UMRR would integrate into NESP when a transition is ripe.
5. Long term resolution of inland navigation funding issues is needed prior to transition to ensure that comparable progress between the navigation and ecosystem restoration components can be maintained.

Regional partners continue to advocate for both UMRR and NESP appropriations. In doing so, partners stress echo many of the same transition principles incorporated in USACE's 2012 Transition Plan. In particular, this includes that 1) UMRR must remain fully functional unless and until a transition to NESP is ready and 2) the Upper Mississippi River System ecosystem restoration and science capabilities and infrastructure must be maintained and enhanced. The program's non-federal partners advocate that NESP should be funded at levels well above UMRR's authorized level before a transition occurs so that NESP is an enhancement to UMRR's current implementation.

ATTACHMENT C

External Communications and Outreach

- **Proposed Process for UMRR External Communications Plan Development** *(C-1)*

UMRR Program: Communications Activities

GOAL: To build a toolbox of communication materials that will help all stakeholders unify and enhance reporting and communicating in the UMRR Program.

OUTLINE (near term activities for remainder of 2015)

May UMRCC- Kick off Communication Strategy Planning
- -Introduction to concepts and desired steps forward
- -Initiate Communications Committee
- -Kick off marketing/positioning contract

June
- -Begin developing activities with Communications Committee
- -Launch questionnaire/needs process to stakeholders for input

July
- -Work thru questionnaire responses
- -Build up theme analysis and trends
- -Begin Development of Communications Tools
- -Initiate initial concept designs of imaging and key messaging

August UMRCC- Share progress on draft materials get feedback
- -Present findings to date, share themes and trends
- -Revise draft Communications Tools
- -Confirm priority Tools for FY16 Development

September/October
- -Refine messaging
- -Develop plans with specific details
- -Initiate detailed design of imaging and key messaging

November UMRCC- Results and action
- -Share DRAFT tools and messaging
- -Final discussions and prioritization of tools
- -Build toolbox of communication materials
- -Initiate concept designs of FY16 priority tools

ATTACHMENT D

Long Term Resource Monitoring and Science

- **Base Monitoring Scope of Work thru 2nd Quarter of FY 15 (4/19/2015)** *(D-1 to D-8)*
- **Update to FY 14 UMRR Science Activities in Support of Restoration and Management (4/17/2015)** *(D-9 to D-11)*
- **FY 15 UMRR Science Activities in Support of Restoration and Management (4/17/2015)** *(D-12 to D-13)*
- **UMRR Invasive Species Policy (3/18/2015)** *(D-14)*

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Aquatic Vegetation Component						
2015A1	Complete data entry and QA/QC of 2014 data; 1250 observations.					
	a. Data entry completed and submission of data to USGS	30-Nov-14		9-Oct-14		Moore, Nissen, Vogeler
	b. Data loaded on level 2 browsers	15-Dec-14		31-Oct-14		Schlifer
	c. QA/QC scripts run and data corrections sent to Field Stations	28-Dec-14		14-Nov-14		Sauer, Schlifer
	d. Field Station QA/QC with corrections to USGS	15-Jan-15		28-Nov-14		Moore, Nissen, Vogeler
	e. Corrections made and data moved to public Web Browser	30-Jan-15		30-Jan-15		Sauer, Schlifer, Caucutt
2015A2	WEB-based annual Aquatic Vegetation Component Update with 2014 data on Public Web Server.					
	a. Develop first draft	30-Mar-15		13-Apr-15		Sauer
	b. Reviews completed	15-Apr-15				Moore, Drake, Vogeler, Sauer, Yin
	c. Submit final update	30-Jun-15				Sauer
	d. Placement on Web with PDF	31-Jul-15				Sauer, Caucutt
2015A3	Complete aquatic vegetation sampling for Pools 4, 8, and 13	31-Aug-15				Yin, Moore, Nissen, Vogeler
2015A4	Web-based: Creating surface distribution maps for aquatic plant species in Pools 4, 8, and 13; 2014 data	31-Jul-15				Yin, Rogala, Schlifer
2015A5	Wisconsin DNR annual summary report 2014 that combines current year observations from LTRMP with previous years' data, for the fish, aquatic vegetation, and water quality components.	30-Sep-15				Fischer, Drake, Bartels, Giblin, Hoff
2015A6	Final draft LTRM completion report: Fifteen years (1998–2012) of aquatic vegetation in Pool 4 of the Upper Mississippi River (2012A6).	31-Dec-14		24-Mar-15	Delivered to UMRR Partnership	Moore
2015A7	Data compilation and analysis: Aquatic macrophyte communities and their potential lag time response to changes in physical and chemical variables in the LTRM vegetation pools	30-Jun-15				Moore
2015A8	Draft completion report or manuscript: Aquatic macrophyte communities and their potential lag time response to changes in physical and chemical variables in the LTRM vegetation pools	30-Jun-16				Moore
On-Going						
2013A8	Draft report: Identification of maximal flow velocity threshold for colony of *Vallisneria americana* along the channel border of the Upper Mississippi River–Extension of modeling capabilities for aquatic vegetation (contract award July 2013)	15-Jun-14	15-Sep-15		Had technical issues with model work which delayed report writing	Yin
2014A7	Final draft report: Identification of maximal flow velocity threshold for colony of Vallisneria americana along the channel border of the Upper Mississippi River (2013A8)	15-Sep-14	TBD		TBD; see 2013A8	Yin
2014A6	Annual Field Station Data Summary Report Template Development	30-Sep-14	30-Sep-15			Hagerty, Popp, Bierman, Chick, Herzog, Casper
Intended for distribution						
Completion report: LTRMP Aquatic Vegetation Program Review (2007A9; Heglund) (in USGS review)						
LTRMP Technical Report: Ecological Assessment of High Quality UMRS Floodplain Forests (2007APE12; Chick, Guyon, Battaglia) (in USGS review)						
LTRMP Technical Report; Experimental and Comparative Approaches to Determine Factors Supporting or Limiting Submersed Aquatic Vegetation in the Illinois River and its Backwaters (2008APE5, Sass) (in USGS review)						
LTRMP completion report: FY05-07 data--Analysis and support of aquatic vegetation sampling data in Pools 6, 9, 18, and 19 (2008APE4a; Yin) (in USGS review)						
Manuscript: Have the recent increases in aquatic vegetation in Pools 5 and 8 been the result of water level management drawdowns, HREPs, or natural fluctuations? (2009APE1a; Yin) (in USGS review)						

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Manuscript: A statistical model of species occupancy using the LTRMP aquatic vegetation data (2013A7; Yin) (in USGS review)						
WI DNR annual 2013 data summary report (2014A5; Fischer, Drake, Bartels, Giblin, Hoff) Completed						
Fisheries Component						
2015B1	Complete data entry, QA/QC of 2014 fish data; ~1,590 observations					
	a. Data entry completed and submission of data to USGS	31-Jan-15		31-Jan-15		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Pendleton
	b. Data loaded on level 2 browsers; QA/QC scripts run and data corrections sent to Field Stations	15-Feb-15		15-Feb-15		Schlifer, Ickes
	c. Field Station QA/QC with corrections to USGS	15-Mar-15		15-Mar-15		DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Pendleton
	d. Corrections made and data moved to public Web Browser	30-Mar-15		30-Mar-15		Ickes, Sauer and Schlifer
2015B2	Update Graphical Browser with 2014 data on Public Web Server.	31-May-15		30-Mar-15		Ickes, Sauer, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Pendleton, Schlifer
2015B3	Complete fisheries sampling for Pools 4, 8, 13, 26, the Open River Reach, and La Grange Pool	31-Oct-15				Ickes, DeLain, Bartels, Bowler, Ratcliff, Gittinger, West, Solomon, Pendleton
2015B4	Summary letter on Asian carp age and growth: collection of cleithral bones	31-Jan-15		6-Jan-15		Solomon, Casper
2015B5	Letter Summary: Exploring Years with Low Total Catch of Fishes in Pool 26	30-Sep-15				Gittinger, Ratcliff, Lubinski, Chick
2015B6	Collection and archiving of age and growth structure for selected species in the La Grange Reach of the Illinois River	31-Jan-15		16-Jan-15		Solomon, Casper
2015B7	Summary report: Pool 12 Overwintering HREP adaptive management fisheries response monitoring	30-Sep-15				Bierman, Bowler
2015B8(L)	Advisory role for Assessment of Asian carp exploitation by native piscivores in the Illinois River (Western Illinois University)	NA (WIU product)				Casper
2015B9	IDNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2014	30-Jun-15		31-Mar-15		Bowler
2015B10(D)	Database increment: Stratified random day electrofishing samples collected in Pools 9 - 11	30-Sep-15				Bowler
2015B11(D)	Database increment: Stratified random day electrofishing samples collected in Pools 16–18	30-Sep-15				Bowler
2014B10	Presentations, draft completion report: Paddlefish population characteristics in the Mississippi river Basin	1-Dec-15				Hupfeld, Phelps
2014B11	Presentations, draft completion report: Examining recruitment patterns in Fishes in the Mississippi River	30-Nov-14		25-Nov-14		West, Sobotka, Hupfeld, Phelps
2015B12	Draft Book Chapter: The Mississippi River: A place for fish past, present, and future	30-Sep-15				Ickes, Schramm
2015B13	Assemble requisite data: Developing and applying trajectory analysis methods for UMRR Status and Trends indicators	30-Aug-15				Ickes

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
2015B14	Perform Trajectory Analysis: Developing and applying trajectory analysis methods for UMRR Status and Trends indicators	30-Sep-15				Ickes, Minchin
2015B15	Summary letter on results: Developing and applying trajectory analysis methods for UMRR Status and Trends indicators	31-Oct-15				Ickes, Minchin
2014AC2	Fish community structure: complete data analysis	30-Oct-14		30-Oct-14		Solomon, Pendleton, Casper
2014AC3	Fish community structure: present results	TBD		30-Oct-14		Solomon, Pendleton, Casper
2014AC4	Fish community structure: draft manuscript	30-Dec-14	30-Jun-15			Solomon, Pendleton, Casper
On-Going						
2006B6	Draft manuscript: Spatial structure and temporal variation of fish communities in the Upper Mississippi River. (Dependent on 2008B9 acceptance into journal)	30-Sep-15				Chick
2008B9	Draft manuscript: Standardized CPUE data from multiple gears for community level analysis (a previous manuscript was submitted and rejected by the journal, 2006B5; 2008B9 is a revised manuscript) (Chick)	30-Sep-15				Chick
2014B6	Summary letter on Asian carp age and growth: collection of cleithral bones	31-Jan-15		6-Jan-15		Solomon, Casper
2014B12	Database increment, letter summary: Collection and archiving of age and growth structure for selected species in the La Grange Reach of the Illinois River	31-Jan-15		31-Jan-15		Solomon, Casper
Intended for distribution						
Completion report: LTRMP Fisheries Component collection of six darter species from 1989–2004. (2006B13; Ridings) (in USGS review)						
Evaluating the effectiveness of a mandatory catch and release regulation on a riverine largemouth bass population (2007B7; Bowler). Iowa Department of Natural Resources, Bureau of Fisheries Conservation & Recreation, Division Fisheries Management Section, 2013 Completion Reports, pp 149-169.						
LTRMP Report: An Evaluation of Macroinvertebrate Sampling Methods For Use In The Open River Reach of The Upper Mississippi River; Kathryn N. S. McCain, Robert A. Hrabik, Valerie A. Barko, Brian R. Gray, and Joseph R. Bidwell (2005C2) (in USGS review)						
LTRMP technical report; Setting quantitative fish management targets for LTRMP monitoring (2008APE2; Sass) (in USGS review)						
LTRMP Completion report, compilation of 3 years of sampling: Fisheries (2009R1Fish; Chick et al.) (in USGS review)						
Manuscript: Determining environmental history of three sturgeon species in the Upper, Middle, and Lower Mississippi Rivers. (2013B22; Phelps)						
Manuscript: Sauger life history in the lower portion of the Upper Mississippi River (2013B20, Phelps). The Prairie Naturalist 46:44–47						
Manuscript: Age-0 sturgeon habitat associations in the free flowing portion of the Upper Mississippi River (2012B5; Tripp, Phelps, Herzog)						
LTRMP Fact Sheet: Tree map tool for visualizing fish data, with example of native versus non-native fish biomass (2013B16) (in USGS review)						
IA DNR Fisheries Management State Report: Fisheries Monitoring in Pool 13, Upper Mississippi River, 2013 (2014B14). Iowa Department of Natural Resources, Bureau of Fisheries Conservation & Recreation, Division Fisheries Management Section, 2013 Completion Reports, pp 85-115.						
IA DNR Report: Sex-Specific Age Structure, Growth, and Mortality of Black and White Crappie in Pool 13 of the Upper Mississippi River (Bowler, M. C., K. A. Hansen, K. S. Hausmann, and B. J. Reed) 2014. Iowa Department of Natural Resources, Bureau of Fisheries Conservation & Recreation, Division Fisheries Management Section, 2013 Completion Reports, PP 117-125.						
Manuscript: American eel population characteristics in the Upper Mississippi River (2012B7; Phelps) The American Midland Naturalist, 171(1):165-171. 2014.						
LTRMP fisheries component procedures manual (2013B5; Ratcliff, Gittinger, Ickes). http://pubs.usgs.gov/mis/ltrmp2014-p001						
LTRMP Program report: Ickes, B.S., Sauer, J.S., and Rogala, J.T., 2014, Monitoring rationale, strategy, issues, and methods: UMRR-EMP LTRMP Fish Component. A program report submitted to the U.S. Army Corps of Engineers' Upper Mississippi River Restoration-Environmental Management Program, Program Report LTRMP 2014–P001a. http://pubs.usgs.gov/mis/ltrmp2014-p001a/						
Manuscript: Comparing commercial and recreational harvest characteristics of paddlefish Polyodon spathula (Walbaum, 1792) in the Middle Mississippi River, (2013B24; Phelps) J. Appl. Ichthyol. (On-line First) DOI: 10.1111/jai.12552						

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Manuscript: Hupfeld, R. N., Q. E. Phelps, M. K. Flammang and G. W. Whitledge. 2014. Assessment of the effects of high summer water temperatures on Shovelnose sturgeon and potential implications of climate change. River Res. Applic. (On-line First) DOI: 10.1002/rra.2806						

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Water Quality Component						
2015D1	Complete calendar year 2014 fixed-site and SRS water quality sampling	31-Dec-14		31-Dec-14		Houser, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D2	Complete laboratory sample analysis of 2014 fixed site and SRS data; Laboratory data loaded to Oracle data base.	15-Mar-15		30-Mar-15		Yuan, Schlifer
2015D3	1st Quarter of laboratory sample analysis (~12,600)	30-Dec-14		30-Dec-14		Yuan, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D4	2nd Quarter of laboratory sample analysis (~12,600)	30-Mar-15		30-Mar-15		Yuan, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D5	3rd Quarter of laboratory sample analysis (~12,600)	29-Jun-15				Yuan, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D6	4th Quarter of laboratory sample analysis (~12,600)	28-Sep-15				Yuan, Manier, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D7	Complete QA/QC of calendar year 2014 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-15		30-Mar-15		Schlifer, Rogala, Houser
	b. Field Station QA/QC; USGS QA/QC.	15-Apr-15			Delayed 1-2 weeks due to hiring lag in WQ lab	Houser, Rogala, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
	c. Corrections made and data moved to public Web Browser	30-Apr-15				Rogala, Schlifer, Houser
2015D8	Complete FY2014 fixed site and SRS sampling for Pools 4, 8, 13, 26, Open River Reach, and La Grange Pool (Table 1)	30-Sep-15				Houser, Burdis, Giblin, Kueter, L. Gittinger, Cook, Sobotka
2015D9	WEB-based annual Water Quality Component Update w/ 2014 data on Server.	30-May-15				Rogala
2015D10	Letter Summary: Evaluation of water quality data from automated sampling platforms	31 Sept 2015				Soeken-Gittinger, Lubinski, Chick, Houser
2015D11	Draft report/manuscript: Developing continuous water quality monitoring methods in the UMR	1-Sep-16				Chick, Houser
2015D12	Final report/manuscript: Developing continuous water quality monitoring methods in the UMR	1-Sep-17				Chick, Houser
2015D13	Initial analyses and draft manuscript: Coherence in temporal variation of select water quality parameters across strata and study reaches	1-Sep-15				Houser
2015D14	Draft manuscript: Coherence in temporal variation of select water quality parameters across strata and study reaches	1-Sep-16				Houser
2015D15	Analysis of Lake Pepin rotifers; data from 2012-2014	30-Jun-15				Burdis, Hirsch
2015D16	Draft manuscript: Temporal trends in water quality and biota in segments of Pool 4, above and below Lake Pepin, UMR; indications of a recent ecological shift (from 2010D6 completion report)	27-Feb-15				Popp, Burdis, DeLain, Moore
2014D13	Presentations, draft completion report: A Comparison of Side and Main Channel Fish Community and Water Quality Characteristics	1-Dec-15				Sobotka, West, Phelps

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Intended for distribution						
Completion report: Examining nitrogen and phosphorus ratios N:P in the unimpounded portion of the Upper Mississippi River (2006D9; Hrabik & Crites) (in USGS review)						
LTRMP report: Main channel/side channel report for the Open River Reach. (2005D7; Hrabik) (in USGS review)						
Manuscript: Ecosystem metabolism in the main channel and backwaters of the Upper Mississippi River: the role of submersed vegetation and hydraulic connectivity. (2008D8; Houser et al.) (Manuscript revised and resubmitted to journal)						
Manuscript: Lateral contrasts in nutrients, chlorophyll, and suspended solids within the Upper Mississippi River System (2012D10; Houser) (Review comments received from journal)						
Completion report, compilation of 3 years of sampling: Water Quality (2009R1WQ; Giblin, Burdis) (in USGS review)						
Manuscript: Trends in suspended solids, nitrogen, and phosphorus in select upper Mississippi River tributaries, 1991-2011 (Kreiling and Houser, 2013D14) (in USGS review)						
Manuscript: Relationship between the temporal and spatial distribution, abundance, and composition of zooplankton taxa and hydrological and limnological variables in Lake Pepin (2013D17; Burdis) (submitted for internal review)						
Completion report: Temporal trends in water quality and biota in segments of Pool 4 above and below Lake Pepin, Upper Mississippi River: indications of a recent ecological shift" (2010D6; Popp, Burdis, Moore) Completed						
Manuscript: Nutrients and dissolved oxygen in the UMRS: improving our understanding of winter conditions and their implications for structure and function of the river (2014D12; Houser) (in USGS review)						
Land Cover/Land Use with GIS Support						
2014LC1	Updates on progress for land cover products (See SOW)				New progress reported in the quarterly activities. Percent complete updated 30 Sept 2015.	Robinson
Development of 2010–2011 Land Cover/Land Use GIS Database and Aerial Photo Mosaics						
2015V1	Complete 2010/11 LCU database for UMR Pools 1, 2, 11, 15-17, the Illinois River's Lockport, Brandon, and Dresden Pools, and the Lower Minnesota, Lower St. Croix, and Lower Kaskaskia Rivers.	31-Aug-15				Robinson, Hoy, Hanson, , Ruhser, Nelson, Jakusz
Statistical Evaluation						
2015E1	Trend lines with confidence bands added to water quality data web summary pages	30-Sep-15				Gray, Schlifer, Houser, Rogala, Yin
2015E2	Draft manuscript: Estimating trends in water temperature data from LTRM data (from 2013E2 completion report)	30-Sep-15		12-Mar-15		Gray, Lyubchich, Gel
Intended for distribution						
Completion report that describes methods of estimating variance components from LTRMP water quality data (2008E1; Gray) (in USGS review)						
Manuscript: Inferring decreases in among- backwater heterogeneity in large rivers using among-backwater variation in limnological variables (2010E1, Rogala, Gray, Houser) (Submitted to journal)						
Completion Report: summer water temperature in the Upper Mississippi River (2012E2). Gray, Robertson, Houser, Rogala. (in USGS review)						
Completion report: An assessment of trends in water temperature in La Grange Pool (2012E3; Gray, Robertson, Rogala, Houser) (in USGS review)						
Completion report: Long-term trend reporting, water quality component (2013E1, Gray) http://www.umesc.usgs.gov/documents/publications/2014/gray_b_2014.html						
Data Management						
2015M1	Update vegetation, fisheries, and water quality component field data entry and correction applications.	30-May-15				Schlifer
2015M2	Load 2014 component sampling data into Oracle tables and make data available on Level 2 browsers for field stations to QA/QC.	30-Jun-15				Schlifer
2014M3	Webinar on LTRMP data access and use	27-Oct-14		27-Oct-14		Sauer, Johnson, Houser, Ickes, Yin, Rogala, Schlifer, Lowenberg

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Landscape Pattern Research and Application						
2015L1	Data Analysis: Examining changes in land cover and land use 2000-2010.	30-Sep-15				De Jager & Rohweder (UMESC)
2015L2	Draft Manuscript: Draft manuscript: The Upper Mississippi River Floodscape: spatial patterns of flood inundation and assosciated plant community distributions.	30-Sep-15		10-Feb-15		De Jager, Fox, & Rohweder (UMESC)
2015L3	Data Analysis: Effects of flooding, herbivory, and invasion by reed canarygrass on multivariate elemental cycling in a UMR floodplain forest	30-Sep-15		5-Feb-15	Draft manuscript in review	Kreiling & De Jager (UMESC), Swanson, Strauss & Thomsen (UW-L)
2015L4	Draft Analysis: Effects of flooding, invasion by reed canarygrass, and increased nitrogen deposition on decomposition and nitrogen cycling along the UMR Floodplain	30-Sep-15				Swanson, Strauss, Thomsen (UW-L) & De Jager (UMESC)
2015L5	Data Analysis: Effects of flooding, invasion by reed canarygrass, and increased nitrogen deposition on microbial enzyme activity along the UMR Floodplain	30-Sep-15				Reich & Hernandez (Carleton), De Jager (UMESC)
2015L7	Draft manuscript: Measuring spatial patterns in floodplains: a step towards understanding the complexity of floodplain ecosystems	30-Sep-15				Scown & Thoms (UNE), De Jager (UMESC)
2015L8	Draft manuscript: The effects of survey technique and vegetation type on measuring floodplain topography from DEM's using surface metrics	30-Sep-15				Scown & Thoms (UNE), De Jager (UMESC)
2015L9	Draft manuscript: Multi-scale measurement of topographic complexity in the Upper Mississippi River floodplain using surface metrics	30-Sep-15				Scown & Thoms (UNE), De Jager (UMESC)
2015L10	Draft manuscript: Comparing the physical complexity of floodplains in different geographical settings.	30-Sep-15				Scown & Thoms (UNE), De Jager (UMESC)
2015L11	Draft manuscript: The Upper Mississippi River Floodscape: spatial patterns of flood inundation and assosciated plant community					
Intended for distribution						
Manuscript: De Jager, N.R., Swanson, W., Strauss, E.A., Thomsen, M., Yin, Y. In review. Reed canarygrass invasion overrides flood-pulse effects on nitrification in and Upper Mississippi River floodplain forest. Ecosystems (2014L1). (Submitted to Wetlands Ecology and Management, New title: Flood Pulse Effects on Nitrification in a Floodplain Forest Impacted by Deer Browsing and Invasion by *Phalaris Arundinacea*)						
Manuscript: De Jager, N.R. In Prep. Differences in fish community composition between patches of high TN:TP and low TN:TP: the role of water flow velocity. (2014L3) (In USGS Review; New title: Patchiness in a large floodplain river: associations among hydrology, nutrients, and fish communities)						
Fact Sheet: De Jager, N.R. 2014. Landscape Ecology on the Upper Mississippi River: lessons learned, challenges, opportunities (2013L3). In Press						
Manuscript: Effects of flood inundation duration on letter decomposition and nitrogen cycling during different states of forest succession (2014L1; Strauss, Swanson, De Jager) (In USGS Review)						
Manuscript: Differences in fish community composition between patches of high TN:TP and low TN:TP: the role of water flow velocity (2014L3; De Jager) (In USGS Review)						
Science Planning						
2013XY	Draft report: Critical questions for advancing ecosystem understanding and management capability on the UMRS	30-Sep-13	31-Mar-15			Johnson
2013XZ	Final Draft Critical Questions report to UMRR-CC	20-Nov-13				Johnson
2014N3	Final Draft research plan to UMRR-CC	1-Aug-14	10-Nov-14	10-Nov-14		Johnson

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
UMRR LTRMP Team Meeting						
2015FM1	Meeting date coordination	31-Oct-14		31-Oct-14		All LTRM Staff
2015FM2	Agenda development	31-Dec-14		31-Dec-14		All LTRM Staff, led by UMESC
2015FM3	Meeting logistics	On-Going		Completed		Sauer
2015FM4	Meeting participation	TBD		Completed		All LTRM Staff
Involvement of LTRMP with monitoring on other rivers, nationally and internationally						
2014P1	Draft white paper for review	15-Jun-14	15-May-15			Johnson
2014P2	Final draft white paper	30-Sep-14				Johnson
2014P3	Final Draft white paper to UMRR-CC	Nov. 2014				Johnson
Quarterly Activities						
2015QR1	Submittal of quarterly activities	30-Jan-15				All LTRMP staff
2015QR2	Submittal of quarterly activities	13-Apr-15				All LTRMP staff
2015QR3	Submittal of quarterly activities	13-Jul-15				All LTRMP staff
2015QR4	Submittal of quarterly activities	12-Oct-15				All LTRMP staff
Science Management						
2015ER1	Property inventory and tracking	15-Nov-15				LTRMP staff as needed

UMRR Science in Support of Restoration and Management
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Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Seamless Elevation Data						
2014LB1	LiDAR Tier 1, processing and meta data, data on line: Pools 15-19, Pool 25 – Open River, Kaskaskia, IL River all pools	30-Mar-15		18-Dec-14		Dieck, Rohweder, Nelson, Fox
2014LB2	LiDAR Tier 3, processing and meta data, data on line: Pools 4, 5, 7, 8, 9, 10, 13, and 21	30-Mar-15		7-Apr-15		Dieck, Rohweder, Nelson, Fox
Land Cover / Land Use data and Accuracy Assessment/Validation for UMRS						
2014V2	Complete remaining 70% of the 2010/11 LCU database for UMR Open River North	30-Sep-14	30-Jan-15	21-Jan-15	In USGS FSP review	Robinson, Hoy, Hanson, Langrehr, Ruhser, Nelson
2014V4	Final LTRMP Completion Report on Accuracy Assessment	30-Sep-14		17-Nov-14	In USGS FSP review	Ruhser, Jakusz
Standardized HREP Non-forested Wetland Plant Sampling Protocol						
2014NFW1	draft NFW monitoring protocol	28-Feb-14		28-Feb-14		McCain
2014NFW2	Final draft NFW monitoring protocol	30-Mar-14		31-Mar-14		McCain
2014NFW3	A-Team review	1-Apr-14		7-Apr-14		McCain
2014NFW4	completed NFW monitoring protocol available	30-Sep-14		completed		McCain
Standardized HREP Forested Wetland Plant Sampling Protocol						
2014FW1	draft FW monitoring protocol	30-Nov-13		30-Nov-13		McCain
2014FW2	Final draft FW monitoring protocol	30-Mar-14		31-Mar-14		McCain
2014FW3	A-Team review	1-Apr-14		7-Apr-14		McCain
2014FW4	completed FW monitoring protocol available	30-Sep-14		completed		McCain
Predictive Model for Aquatic Cover Types						
2014AQ1	Complete hydraulic model of existing conditions	30-Apr-14	11-Jul-14	11-Jul-14		Hendrickson
2014AQ2	Compile vegetation data and develop empirical equations, Stoddard as pilot	31-Aug-14		31-Aug-14		Yin, Rogala, Ingvalson, Potter
2014AQ3	Apply equations to Pool 3 for pre-existing conditions, North & Sturgeon	30-Sep-14	28-Nov-14	completed		Yin, Rogala, Ingvalson, Potter
2014AQ4	Final model and outputs	31-Dec-14		completed		Yin, Rogala, Ingvalson, Potter
UMRS Vegetation Handbook						
2014VH1	Acquire new field images for handbook	30-Sep-14		30-Sep-14		Dieck, Langrehr, Hoy, Robinson, Ruhser
2014VH2	Draft updates to technical sections and vegetation descriptions	31-Dec-14		31-Dec-14		Dieck, Langrehr, Hoy, Robinson, Ruhser
2014VH3	Finalize handbook and submit for USGS review	31-Mar-15		31-Mar-15	In USGS FSP Review	Dieck, Langrehr, Hoy, Robinson, Ruhser
Phase 2 Geospatial Data Upgrades						
2014GDU1	Complete geodatabases by pool for the entire UMRS	30-Sep-14	30-Apr-15		A snag was hit with the 1989 Satelite data. Apparently no metadata was ever created despite having the data online. UMESC is working through old technical reports to complie FGDC metadata for this dataset	Nelson, Robinson
20144GDU2	Complete KMZ files for river miles, levees, boat access points, wing dams, aquatic areas, and remaining land cover data	30-Sep-14	30-Apr-15		Completed; still needs to be uploaded on-line	Nelson, Robinson

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Spatial Data Query Tool						
2014SDQ1	Compile all LTRMP sampling data collected through 2013 and convert to a useable format	1-Aug-14		1-Aug-14		Rohweder, Fox
2014SDQ2	Create a web-based platform that contains all spatial data; convert all queries to ArcGIS	31-Dec-14	30-Apr-15		New ArcGIS server was needed, original server was taken offline because of compliance issue	Rohweder, Fox
2014SDQ3	SDQT beta tested and ready for USGS review	31-Mar-15	31-May-15		New ArcGIS server was needed, original server was taken offline because of compliance issue	Rohweder, Fox
UMRS Data Map						
2014DM1	Include all UMRR-EMP data created at UMESC in the data map	30-Sep-14	30-Nov-14	31-Dec-14	UMESC will update as new datasets come online in the future	Nelson, Ruhser
2014DM2	Include all UMRR-EMP publications from http://umesc.usgs.gov/reports_publications/ltrmp_rep_list.html in the data map	31-Dec-14	31-May-15		Presented WebEx to the Corps. Waiting for comments by 4/30/15	Nelson, Ruhser
2014DM3	Include additional state and federal data references in the data map	31-Mar-15	30-Jun-15		Not all state and federal data sources have the same metadata available making it more difficult than initially expected. New OMB guidelines will correct this. UMESC will continually updated site as new metatadata are made available	Nelson, Ruhser
Assessing System-wide Hydrodynamic Model Availability						
2014SHM1	Kick off Email to workshop participants	30-Apr-14		21-Apr-14		Theiling
2014SHM2	Compile list of UMR-IWW hydrologic models	31-May-14		31-May-14		Theiling
2014SHM3	Complete read-aheads	15-Jun-14	14-Jul-14	14-Jul-14		Theiling
2014SHM4	Conduct workshop/webinar	1-Jul-14	12-Aug-14	21-Aug-14	July dates did not work for attendees	Theiling
2014SHM5	Summarize webinar	31-Jul-14	31-Aug-14	30-Sep-14		Theiling
2014SHM6	**Draft white paper**	**31-Aug-14**	**15-Aug-14**	**30-Sep-14**		**Theiling**
2014SHM7	*draft* Final white paper	30-Sep-14	31-Dec-14	31-Dec-14	draft final submitted 31 Dec 14. Additi	Theiling
2014SHM8	final white paper	1-Apr-15		4-Apr-15		Theiling
Development of						
2014MVR1	Brief summary report	30-Sep-15				Newton, Zigler, Davis
2014MVR2	Brief summary report	30-Sep-16				Newton, Zigler, Davis
2014MVR3	Completion report on a vital rates of native mussels at West Newton Chute, UMRS	30-Sep-17				Newton, Zigler, Davis
Validation of Mussel Community Asessment Tool						
2014MCA1	Workshop of mussel experts in UMRS	1-May-15		19-Feb-15		Newton, Zigler, Dunn, Duyvejonck
2014MCA2	Draft completion report on a validated mussel community assessment tool for use by river managers	1-Dec-15				Newton, Zigler, Dunn, Duyvejonck
2014MCA3	Final completion report on a validated mussel community assessment tool for use by river managers	1-Mar-16				Newton, Zigler, Dunn, Duyvejonck

UMRR Science in Support of Restoration and Management

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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				Giblin, Campbell, Houser, Manier
2014NC3	Full manuscript completed	13-Mar-17				Giblin, Campbell, Houser, Manier
Ecological Shifts Turbid to Clear States						
2014ES1	Literature review and initial analyses competed	13-Mar-15		15-Nov-14		Giblin, Ickes, Langrehr, Bartels
2014ES2	Refined analyses and draft manuscrpt prepared	13-Mar-16			All analyses complete, manuscript in draft and co-author review 2 April 2015	Giblin, Ickes, Langrehr, Bartels
2014ES3	Manuscipt submitted for publication	13-Mar-17				Giblin, Ickes, Langrehr, Bartels
Invasive Carp Population Demographics (#1)						
2014CPD1	Summary letter	31-Jan-15		16-Jan-15		Phelps, Mccain
2014CPD2	Manuscript	31-Mar-16				Phelps, Mccain
Asian Carps Recruitment Sources (#2)						
2014CRS1	Summary letter	31-Jan-15		16-Jan-15		Phelps, Mccain
2014CRS2	Manuscript	31-Mar-16				Phelps, Mccain
Effects of Asian Carps on Native Piscivore Diets (#3)						
2014NPD1	Summary letter	31-Jan-15		16-Jan-15		Phelps, Mccain
2014NPD2	Manuscript	31-Mar-16				Phelps, Mccain
Early Life History of Invasive Carps (#4)						
2014CLH1	Summary letter	31-Jan-15		16-Jan-15		Phelps, Mccain
2014CLH2	Manuscript	31-Mar-16				Phelps, Mccain

UMRR Science in Support of Restoration and Management
FY2015 Scope of Work
April 2015 Status

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Seamless Elevation Data						
2015LB1	Tier 2 LiDAR for Pools 14-19	31-Mar-15		15-Apr-15		Dieck, Hanson
2015LB2	Tier 2 LiDAR for Pool 25-OR & Kaskaskia	30-Jun-15				Dieck, Hanson
2015LB3	Tier 2 LiDAR for the Illinois River	30-Sep-15				Dieck, Hanson
2015LB4	All remaining Bathymetry	30-Sep-15				Dieck, Hanson
2015LB5	Seamless Elevation for Pools 2, 5a, 6, 10-12, St Croix, and Pool 14	31-Dec-15				Dieck, Hanson
2015LB6	Seamless Elevation for Pools 15-19, 20, and 22-24	31-Mar-16				Dieck, Hanson
2015LB7	Seamless Elevation for Pools 25-OR & Kaskaskia	30-Jun-16				Dieck, Hanson
2015LB8	Seamless Elevation for the Illinois River	30-Sep-16				Dieck, Hanson
Producing NED ready LiDAR products						
2015NED1	Perry County, MO	31-Jul-15				Nelson, Dieck
2015NED2	Remaining portions of the middle Mississippi (OR1 & 2)	31-Jul-15				Nelson, Dieck
2015NED3	Area of the Upper Mississippi (Pool 25-26)	30-Sep-15				Nelson, Dieck
2015NED4	Illinois River area	30-Sep-15				Nelson, Dieck
Pool 12 AM monitoring (crappie telemetry)						
2015AM1	Capture fish and affix radio tags to white crappies in study lakes	1-Nov-14		2-Apr-15		Bierman, Hansen, Bowler, Theiling
2015AM2	Location of tagged fish and update in-house project database	Ongoing through FY				Bierman, Hansen, Bowler, Theiling
2015AM3	Complete tracking portion of study	30-Sep-15				Bierman, Hansen, Bowler, Theiling
Fish Indicators of Ecosystem Health						
2015FI1	Preliminary set of species identified for the different assemblages by study reach submitted to A-Team as status update and for review	30-Aug-15				McCain
2015FI2	Draft recommendation for the best attainable or target for each assemblage by study reach submitted to A-Team for Review	1-Oct-15				McCain
2015FI3	Initial draft Project Report submitted to A-Team for review	1-Dec-15				McCain
2015FI4	Final draft Project Report submitted to A-Team for review and endorsement at April meeting	1-Mar-16				McCain
2015FI5	Final draft Project Report submitted to UMRR CC for endorsement at August meeting	15-Jul-16				McCain
2015FI6	Final Report	1-Jun-16				McCain
Plankton community dynamics in Lake Pepin						
2015LPP1	Phytoplankton processing; species composition, biovolume	30-Dec-15				Burdis
2015LPP2	draft manuscript: Plankton community dynamics in Lake Pepin	30-Sep-16				Burdis
Estimating trends in UMRR fish and vegetation levels using state-space models						
2015SST1	Draft completion report: Evaluation of trend estimation methods for LTRM fish and vegetation indices	30-Sep-15				Gray
2015SST2	Final completion report: Evaluation of trend estimation methods for LTRM fish and vegetation indices	31-Dec-15				Gray
2015SST3	Provide trend estimates for fish and vegetation web browser pages	30-Sep-16				Gray, Schlifer
Generating and serving presumptive habitat maps for 28 UMRS fish species						
2015FI1	Assemble requisite data resources	28-Feb-15		15-Jan-15		Ickes
2015FI2	Generate “point” maps of predictions	30-Mar-15	15-May-15		funding delayed	Hlavacek
2015FI3	Generate “splines with barriers” interpolated maps	15-May-15	30-Jul-15		funding delayed	Hlavacek
2015FI4	Post maps to the UMRR LTRM fish component homepage	15-Jun-15	15-Sep-15		funding delayed	Ickes
2015FI5	Issue/publish a brief communication on their availability and prospective usage	15-Sep-15				Ickes

Tracking number	Milestone	Original Target Date	Modified Target Date	Date Completed	Comments	Lead
Predictive Aquative Cover Type Model - Phase 2						
2015AQ1	Develop 2-D hydraulic model of upper Pool 4	30-Sep-15				Goodfellow (MVP H&H)
2015AQ2	Apply model to Pool 4 and resolve discrepancies	31-Dec-15				Yin, Rogala
2015AQ3	Detailed summary of work for Phases I & II	31-Dec-15				Yin, Rogala, Ingvalson
Landscape Pattern Research on the UMRS: synthesis and significance, FY16-18						
	Milestones will be coordinated through the UMRR annual scope of work process					De Jager
Developing and Applying Indicators of Ecosystem Resilience to the UMRS						
	Milestones will be coordinated through the UMRR annual scope of work process					work group, post doc

Upper Mississippi River Restoration (UMRR)
Invasive Species Policy
March 18, 2015

Background and UMRR Program Context: Issues related to the spread and impact of invasive species are currently one of the dominant natural resource issues in the Upper Mississippi River System (UMRS). The UMRR Program strives to understand the ecology of the UMRS in order to restore habitat for native species and communities. UMRR Habitat Rehabilitation and Enhancement Projects (HREPs) provide benefits to native species and communities by restoring riverine and floodplain habitat quality and quantity. The UMRR Long Term Resource Monitoring (LTRM) element collects baseline data to identify the status and trends of the critical river components; fish, water quality, and submerged aquatic vegetation, to document the conditions and changes in those conditions within the UMRS over time. The UMRR LTRM element's research provides insight into ecosystem function and the factors influencing the community structure of fishes and aquatic vegetation.

Purpose of Policy: This paper identifies and addresses the UMRR Program's role regarding invasive species within its authorization and the interagency Partnership while considering the national and Corps of Engineers' (Corps) invasive species policies (see references below). All UMRR activities will comply with national and Corps regulations and guidance, and will consider state regulations, as appropriate.

1. Communicating the UMRR roles in understanding historic and existing conditions of the UMRS ecosystem and how this can be used to evaluate the impact of invasive species on native communities or species is critical for coordinating all efforts within the UMRS on aquatic invasive species effectively.

2. Reporting of new or rare captures or sightings of invasive species by each UMRR partner agency is already required or encouraged per each agency's rules, regulations or policies. Confirmed sightings should be recorded as soon as practicable to USGS via the Sighting Report Form, at http://nas.er.usgs.gov/SightingReport.aspx . In addition, new captures or sightings of invasive species will also be reported to the UMRR LTRM leads for the Corps and USGS-UMESC via email and/or phone call within 24 hours and prior to release to the media so that the appropriate level of interagency coordination can take place. Information will include the species captured, the time, location and method of capture along with photographs (if any) and the names of the collectors.

3. Future UMRR research activities on invasive species will focus on understanding the impacts of invasive species on native species and communities, on changes to the ecosystem, and will be used to inform future restoration and management from both a local and system-wide perspective.

4. All HREP projects are formulated to benefit native species and communities. Invasive species of concern will be considered in UMRR HREP planning efforts and in project evaluation reports of existing projects. Management and/or maintenance of existing projects should be adapted to address invasive species impacts and impairments to maintain the ecological value of the project for native species through time.

References:

National Invasive Species Act of 1996
Invasive Species Executive Order 13112 (1999)
National Invasive Species Management Plan (2008-2012)
U.S. Army Corps of Engineers Invasive Species Policy (2009)
U.S. Army Corps of Engineers Program Management Plan for the Invasive Species Leadership Team and Invasive Species Management CoP and Environmental CoP (2014)

ATTACHMENT E

Additional Items

- **Future Meeting Schedule** *(E-1)*
- **Frequently Used Acronyms (12/9/14)** *(E-2 to E-7)*
- **UMRR Authorization, As Amended (1/27/15)** *(E-8 to E-11)*
- **UMRR (EMP) Operating Approach (5/06)** *(E-12)*

QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE

AUGUST 2015	
La Crosse, Wisconsin	
August 4	UMRBA Quarterly Meeting
August 5	UMRR Coordinating Committee

NOVEMBER 2015	
St. Paul, Minnesota	
November 16	UMRBA WQEC Meeting
November 17	UMRBA Quarterly Meeting
November 18	UMRR Coordinating Committee

Acronyms Frequently Used on the Upper Mississippi River

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
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
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
HEL	Highly Erodible Land
HEP	Habitat Evaluation Procedure
HNA	Habitat Needs Assessment
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
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
LTRMP	Long Term Resource Monitoring Program
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
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
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
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
RCP	Regional Contingency Plan
RCPP	Regional Conservation Partnership Program
RDB	Right Descending Bank
RED	Regional Economic Development
RIFO	Rock Island 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
TLP	Traditional License Process
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
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.]
UMRS	Upper Mississippi River System
UMRSHNC	Upper Mississippi River Sub-basin Hypoxia Nutrient Committee
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
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.