

**Minutes of the 146th Quarterly Meeting
of the
Upper Mississippi River Basin Association**

**May 15, 2018
St. Louis, Missouri**

Rick Pohlman called the meeting to order at 9:40 a.m. Participants were as follows:

UMRBA Representatives and Alternates:

Rick Pohlman	Illinois Department of Natural Resources
Loren Wobig	Illinois Department of Natural Resources
Dan Stephenson	Illinois Department of Natural Resources
Mike McClelland	Illinois Department of Natural Resources (via phone)
Tim Hall	Iowa Department of Natural Resources
Barb Naramore	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation (via phone)
Chris Klenklen	Missouri Department of Agriculture
Matt Vitello	Missouri Department of Conservation
Dru Buntin	Missouri Department of Natural Resources
Karen Rouse	Missouri Department of Natural Resources
Jim Fischer	Wisconsin Department of Natural Resources

Federal UMRBA Liaisons:

Brian Chewning	U.S. Army Corps of Engineers, MVD
Steve Hefner	U.S. Department of Agriculture, NRCS
Ken Westlake	U.S. Environmental Protection Agency (via phone)
Tim Yager	U.S. Fish and Wildlife Service, UMRS Refuges (on behalf of Sabrina Chandler)
Scott Morlock	U.S. Geological Survey, Midwest Region
Teri Mayer	Federal Emergency Management Agency, Region VII (Ken Sessa)

Others in Attendance:

Megan Moore	Minnesota Department of Natural Resources
Carol Comer	Missouri Department of Natural Resources
Chris Weiberg	Missouri Department of Natural Resources
Jessica Brooks	National Oceanic and Atmospheric Administration, NWS
Laurie S. Kuypers	Federal Emergency Management Association, Region V
Jim Cole	U.S. Army Corps of Engineers, MVD
Gabe Harris	U.S. Army Corps of Engineers, MVD
Renee Turner	U.S. Army Corps of Engineers, MVD
Thatch Shepard	U.S. Army Corps of Engineers, MVD
Ben Robinson	U.S. Army Corps of Engineers, MVD
Col. Sam Calkins	U.S. Army Corps of Engineers, MVP
Shahin Khazrajafari	U.S. Army Corps of Engineers, MVP
Col. Craig Baumgartner	U.S. Army Corps of Engineers, MVR
Col. Steve Sattinger	U.S. Army Corps of Engineers, MVR
Dennis Hamilton	U.S. Army Corps of Engineers, MVR
Andy Barnes	U.S. Army Corps of Engineers, MVR
Karen Hagerty	U.S. Army Corps of Engineers, MVR

Marshall Plumley	U.S. Army Corps of Engineers, MVR
Scott Whitney	U.S. Army Corps of Engineers, MVR
Jasen Brown	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Kip Runyon	U.S. Army Corps of Engineers, MVS
Shawn Sullivan	U.S. Army Corps of Engineers, MVS
Matt Vielhaber	U.S. Army Corps of Engineers, MVS
Jodi Creswell	U.S. Army Corps of Engineers, Regional Planning Division North
Brian Johnson	U.S. Army Corps of Engineers, Regional Planning Division North
Ronnie Heath	U.S. Army Corps of Engineers, ERDC
Amy Beussink	U.S. Geological Survey, Illinois, Iowa, Missouri Water Science Center
Paul Rydlund	U.S. Geological Survey, Illinois, Iowa, Missouri Water Science Center
Matt Mangan	U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services Field Office
Neal Jackson	U.S. Fish and Wildlife Service, UMRCC
David Stokes	Great Rivers Habitat Alliance
Neal Breitweiser	Jefferson County Port Authority
Nancy Guyton	Neighbors of the Mississippi
Bertha Mae Taylor	Neighbors of the Mississippi
Charles Williamson	Neighbors of the Mississippi
Patrick Michels	Reveal News
Susan Taylor	St. Louis Port Authority
Gretchen Benjamin	The Nature Conservancy
Mike Klingner	Upper Mississippi, Illinois, and Missouri Rivers Association
Kirsten Mickelsen	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Josh Ney	Upper Mississippi River Basin Association

Minutes

Kirsten Mickelsen suggested replacing the paragraph on the bottom of page A-7 with “Brad Walker raised the issue that the Administration’s current position is that NESP will require further economic evaluation before implementation.” Dru Buntin moved and Barb Naramore seconded a motion to approve the draft minutes of the February 6, 2018 UMRBA quarterly meeting as corrected. The motion was approved unanimously.

Executive Director’s Report

Kirsten Mickelsen expanded on her written Executive Director’s report in the agenda packet as follows:

- On April 9, 2018, the Corps announced that it allocated \$20,000 in FY 2018 funding to support implementation of the UMRBA water level management PAS agreement. UMRBA is the non-federal cost-share sponsor in partnership with Iowa, Minnesota, Missouri, Wisconsin, American Rivers, Audubon, The Nature Conservancy, and Waterways Council. The PAS agreement purpose is to support ongoing planning to improve natural low-water variability throughout the UMRS while maintaining the 9-foot navigation channel. UMRBA staff are convening these partners through a regional working team.
- The UMRBA Board met on April 3-4, 2018 to develop a scope and terms for a PAS proposal for advancing long term channel maintenance and flood management planning. Specifically, the proposal is to 1) clarify the key issues affecting flood and channel maintenance management, 2) develop immediate solutions to those problems, and 3) identify challenges that need to be addressed through a Section 729 study authority. The UMRBA Board believes this approach

will allow for 1) developing a more detailed vision and scope of work for exploring complex issues through the Section 729 study while 2) exploring solutions for which federal, state, local, and private partners can take immediate action. It is anticipated that UMRBA will transmit the PAS proposal within the next month.

- Over the past year, the America's Watershed Initiative's (AWI's) Steering Committee has been discussing the initiative's organizational options and long-term future. AWI is a collaboration of leaders from private and public sectors that share an interest in improving the economic and ecological health throughout the watershed as well as decision making processes. For the last five years, AWI has been administratively housed within The Nature Conservancy. At its May 8-9, 2018 meeting, the Steering Committee formally agreed to launch AWI as an independent not-for-profit entity for which UMRBA will serve on the Board of Directors.
- UMRBA launched a Facebook presence on March 16, 2018. Partners are encouraged to visit the page and to submit and share content.

Mickelsen pointed to the Association's financial report on pages page B-11 to B-14 of the agenda packet, including UMRBA Treasurer Jason Tidemann's review of the financial statement from January 2018 to March 2018. Jim Fischer moved and Tim Hall seconded a motion to approve the Profit and Loss Statement and Balance Sheet dated May 1, 2018. The Board unanimously approved the motion by voice vote.

Iowa Restoration Toolbox

Tim Hall showcased Iowa DNR's newly developed Iowa River Restoration Toolbox to enhance the restoration of small streams. Hall explained that the Toolbox was created to assess key drivers affecting instabilities and how best to stabilize and restore stream health given a variety of best practices. It was developed to improve consistency, efficiency, quality of stream assessment and restoration projects. In addition, the Toolbox provides information about more natural restoration techniques as an alternative to traditional engineering practices for stream stabilization. The Toolbox encompasses numerous practices and features that allow for individualized assessments of unique sites.

Hall said Stantec developed the Toolbox in consultation with an interagency team of state and federal agencies, local government representatives, and other river and stream interests. Planned next steps include trainings for agency staff, development of monitoring protocols, and making the database accessible through GIS.

Hall illustrated how restoration practitioners can use the Toolbox to inform their stream stabilization plans including through descriptive guidelines and detailed drawings and specifications. Practitioners input a site's unique characteristics from desktop and field reviews and, in turn, the assessment indicates the key drivers of instability and ranks practices and techniques to inform design decisions. Output includes illustrations of predicted effects of various restoration alternatives. Hall illustrated the results in a "test case" performed by Iowa DNR on a small stream located south of downtown Des Moines.

In response to a question from Tim Yager, Hall explained that the Toolbox is only applicable for small streams even though the techniques could be applied on larger streams. In response to a question from Barb Naramore, Hall said project sponsors include urban watersheds associations that have SRF components, municipalities, non-profit organizations, and Iowa DNR and DOT. The Toolbox is used to inform permitting.

Dru Buntin noted that traditional stream stabilization practices are much less expensive than natural solutions. Hall said some natural practices can be more affordable depending on availability of materials and other factors. The desired outcome is that greater use of natural practices will drive down costs. Hall expressed appreciation to Marty Adkins who participated on the interagency development team.

Container Shipping

Neal Breitweiser, Executive Director of Jefferson County Port Authority, described the growing demand in containerized shipping and the shifting paradigm in the national transportation system particularly following the opening of the Panamax Canal. According to Breitweiser, this is creating a greater potential for shipping containers on the Mississippi River. Over the past year, the Plaquemines Port Harbor and Terminal District (Plaquemines Port) and American Patriot Holdings have been working to develop innovative solutions for making container shipping on the Mississippi River feasible, cost-effective, and expedient.

Breitweiser explained that the Plaquemines Port is strategically located near the confluence of the Mississippi River and Gulf of Mexico and has the capacity to service the largest ocean carriers (i.e., 20,000 TEUs and greater). He noted that the Panamax Canal is now accommodating 14,000 TEU vessels. Research conducted by the Plaquemines Port and American Patriot Holdings found that container shipping on the Mississippi River would result in significant shipper savings and provide improved service and delivery reliability. While Gulf of Mexico ports require a longer transit to international destinations, west coast ports face long delays and unreliability factors that offset the additional travel time.

According to American Patriot Holdings, successful container shipping will require a new vessel design that would provide the necessary thresholds for reliability, cost-efficiency, speed, cargo volume, safety, environmental friendliness, and cargo flexibility. Breitweiser showcased American Patriot Holding's innovative vessel design as well as the planned development of Plaquemines Port. A next step is to evaluate the market for container shipping in the locked portions of the UMRS and other major river systems, including the Ohio River.

In response to a question from Dru Buntin, Breitweiser said he is unsure of the draft requirements for the new vessels. In response to a question from Chris Klenklen regarding timeline, Breitweiser said the earliest estimated operational container vessel to St. Louis would occur in five years. In response to a question from Mike Klingner, Breitweiser explained that American Patriot Holdings is developing concepts for a smaller and lighter vessel that can transit the locks.

Scott Morlock said USGS is partnering with the navigation community to provide stream gage monitoring data needed to inform any draft limitations.

Iowa DOT Stakeholder Meeting

On behalf of Iowa DOT, Kirsten Mickelsen provided a brief summary of the agency's plans to convene a stakeholder workshop on June 8, 2018. The workshop will focus on the status and trends of freight shipment of the UMRS, infrastructure investment needs, and options for financing maintenance, major rehabilitation, and modernization of the locks. This effort builds from previous work by Iowa DOT and other partners.

State and Federal Updates

Illinois – Loren Wobig reported that the Illinois DNR submitted a non-binding letter of intent to the Corps on May 4, 2018 to sponsor the GLMRIS Brandon Road project. According to Wobig, Illinois DNR's nonstructural measures are showing success. Wobig reported that Illinois has paused its effort to update its floodplain management rules, including levee regulations, and instead is focusing on establishing a levee and floodplain task force that would be comprised of representation from a wide-range of interest groups. UMRBA would have a designated position on that task force for the purposes of connecting Illinois to the regional flood risk management efforts. This rulemaking process is on hold until September. Wobig reported that the Illinois Silver Jackets are moving forward with a state-wide damage

assessment to estimate all structures that would be affected by a 500-year flood. The intent is to provide the knowledge for rapid response. Illinois is also working to create watershed alliances in an effort to develop regional collaborations to reduce flood risk and response to emergencies. For example, this would include training and education of local leaders and responders.

Iowa – Tim Hall announced that Iowa DNR’s Director Chuck Gipp retired and Bruce Trautman is now acting in that capacity.

Missouri – Dru Buntin reported that Governor Eric Grietens signed an executive order last year requiring that Missouri state agencies review all rules to alleviate unnecessary restrictions on those that the state regulates, particularly those that are obsolete and/or do not protect people or the environment. Missouri DNR reviewed over 600 regulations that collectively contained 24,000 restrictions. As a result, the agency has filed, or is in the process of filing, 391 rules to either make amendments or terminations.

Buntin reported that Missouri DNR is preparing to file comments to the Bureau of Reclamation of the Red River Valley water supply project expressing opposition to the project and requesting a full environmental impact statement. This is due in part to its out-of-basin diversion component. Buntin said Missouri DNR has raised its concerns with the project for several years.

Wisconsin – Jim Fischer announced that Don Meyer was recently appointed as Wisconsin DNR Secretary. The agency’s Deputy Secretary took a position with USEPA. DNR staff will shift responsibilities until an interim Deputy Secretary is in place. Fischer reported that Wisconsin DNR signed a five-year MOU with the Corps’ Rock Island District in March 2018 for dredge material management. Fischer said the agency also submitted a project proposal for the Section 1122 beneficial use pilot program. The project is located in Pierce City and enjoys substantial public support. It would involve improving recreation and ecological services. Wisconsin DNR remains heavily involved in UMRR implementation and anticipates a substantial work effort to select the next generation of habitat projects. In addition, the agency submitted several analysis and research proposals for UMRR LTRM funding.

Minnesota – Barb Naramore explained that the Minnesota legislature is considering a measure to substantially change the state’s rulemaking authority and process. Minnesota DNR is also exploring potential changes to sulfate rules in drinking and municipal water supplies. Naramore explained that the legislature’s changes to water permitting would move the state toward western water law model rather than its existing riparian water law model. Naramore stated that the state executive branch is strongly opposed to such a move. She added that the legislature is considering requiring that state government reimburse a permittee for data collection costs even if the ultimate permit is rejected. The state legislature is also interested in providing tax relief to farmers affected by the buffer law. Minnesota DNR is also seeking \$130 million for asset preservation of 2,700 buildings, trails, etc. The backlog is estimated at \$400 million.

USEPA – Ken Westlake anticipates that USEPA will release its FY 2018 state allocations for water infrastructure soon. A federal executive order was issued for all agencies to expedite environmental review and permitting that affects most USEPA programs. USEPA is working to develop a new approach to environmental review that aligns with the Executive Order. Among other things, it calls for permitting within 90 days.

USGS – Scott Morlock reported that USGS’s FY 2018 appropriation is at the same level as its FY 2017 appropriation. The President’s FY 2019 budget includes a modest increase to the agency. USGS is working on a proof-of-concept for placing a sensor on a barge to monitor the longitudinal transect of the Mississippi River. The equipment is purchased and an agreement signed. UMESC will be hosting a meeting of the Corps, NOAA, and USGS on June 19, 2018 to discuss Mississippi River-related programs and projects, such as flood forecasting and mitigation. This year’s focus is on ecosystem restoration with a feature on UMRR.

NRCS – Steve Hefner reported that Missouri NRCS will implement several watershed projects this year, including five projects in the UMRS watershed that add up to \$1.8 million. Hefner said the NRCS Chief issued a decision memo instructing staff to continue planning for MRBI and NWQI contingent on the enactment of farm bill legislation.

USFWS – Tim Yager said the Midwest Region Director Tom Melius is scheduled to retire June 30, 2018. Charlie Wooley will be Acting Regional Director. USFWS anticipates making filing the permanent position by 2019. Yager said USFWS is facing many retirements. He said USFWS's FY 2018 work plan was published in March 2019 but field staff are still directed to execute at its FY 2017 appropriation level.

FEMA – Teri Meyer reported that FEMA Region 7 completed a five-year map plan and is preparing for its first update. The maps are intended to make information more accessible and understandable to users. Region 7 will be hosting a national flood insurance roundtable in June 2018.

USACE – Col. Sam Calkins reported that the Corps' FY 2018 final appropriation is similar to its FY 2017 appropriation. Congress also passed a \$17 billion supplemental to address storm damages. MVD is likely to get a large amount of funding related to hurricane disaster repair, but most of that money will likely be allocated within the Lower Mississippi River. Col. Calkins said the disposition study of the three Minneapolis locks are currently on hold. MVP will concentrate this year's dredging in Pools 2-5. The District's major maintenance allocation was substantially increased in the FY 2018 work plan, allowing the Corps to address much needed infrastructure improvements.

Col. Craig Baumgartner explained that the Corps is assessing its internal processes to be more flexible and responsive to problems and opportunities. Col. Baumgartner expressed appreciation to UMRBA for its interest to cost-share on a UMRS flood risk and channel management study through the Corps' Section 729 and PAS authorities. He announced that Marshall Plumley has assumed his new role as UMRR Program Manager.

Buntin and Rick Pohlman expressed appreciation to Col. Baumgartner for his leadership on the UMRS and well wishes in his deployment to Afghanistan. Buntin and Pohlman welcomed Col. Steve Sattinger to the UMRS partnership and said they look forward to working with him as he takes command of MVR.

Meramec River

Ecosystem Restoration Feasibility Study

Greg Koehler provided an overview of the Meramec River ecosystem restoration feasibility study. Missouri DNR is the cost-share sponsor while USEPA, USFWS, Missouri DoC, and TNC are direct contributors. Other involved partners include NRCS, state and federal health-related agencies, the East-West Gateway, the Urban Waters Federal Partnership, and various nonprofit organizations.

The feasibility study's geographic scope includes portions of Jefferson and St. Louis Counties and extends approximately 75 miles on the Big River and 50 miles on the Meramec River. The area has experienced significant habitat and ecosystem degradation, primarily resulting from excess sedimentation. The study examined solutions to reduce migration and quantity of sediment, increase quantity and quality of the riparian corridor, and reduce the quantity of sediment entering the river. Restoration measures include traditional and softer/bio-engineered bank stabilization, sediment capture basins, and riparian plantings. Koehler noted that the Meramec River basin has been studied extensively for over forty years, providing a vast array of information to evaluate various alternatives.

Koehler reported that the tentatively selected plan (TSP) is currently undergoing concurrent public, policy, and technical review. The Corps is anticipating that the agency decision milestone will be reached

in August 2018 and a Chief's Report finalized in summer 2019. It is estimated that the TSP will result in 675 acres of benefitted riparian habitat and 1,310 acres of benefitted aquatic habitat, including 12 bank stabilization sites, six sediment capture sites, six bed collector sites, five rock riffle structures, nine excavation structures, and 18 reforested areas. Estimated planning, design, and construction costs total \$78 million. Estimated OMRR&R obligations for Missouri DNR are \$13.35 million.

Koehler explained that the study areas has substantial legacy lead contamination. The Corps and USEPA have entered into seven different interagency agreements to address the contamination issues. In addition, related projects include park remediation, interim dam stabilization study, and a dam replacement study.

Flood Inundation Modeling

Paul Rydlund showcased USGS's flood inundation modeling in the Meramec River basin. Koehler recalled the major flood events that occurred in the 2015-2016 winter season and spring 2017, discussing the importance of having inundation maps as a planning and response tool. Rydlund explained the process of developing the inundation flood maps throughout the 50-mile stretch of the Lower Meramec River basin and provided an overview of mapping outputs at various flood stages and locations throughout the basin using the 2017 flood event as reference.

Rydlund discussed the value-added features of the inundation mapping, including historic flood information and other reference documents, a live web camera, location-specific information, a water action alert, multi-layer flood, and Hazus GIS mapping to estimate building and vehicle loss. The maps provide essential information to federal forecasting, assessment, and recovery; to state preparedness, damage recovery, and resource allocation; and to local government emergency response and evacuations.

Multi-Jurisdictional Floodplain Management Planning

Shawn Sullivan provided an overview of the Corps' flood risk management planning in the Meramec River basin. Sullivan explained that the public has historically pushed back against the use of dams and reservoirs. Five federally-authorized flood control reservoirs were constructed through the basin in the mid-1960s. One of the reservoirs was deauthorized in 1981 and the remaining four in 1990. The 1987 Lower Meramec Flood Damage Reduction Study's authorization specifically prohibited the evaluation of dams or reservoirs. Ultimately, that study recommended the construction of the Valley Park Levee. While nonstructural measures were found to be justified, none were economically feasible and were not constructed.

Sullivan said the FY 2018 interagency Lower Meramec Multi-Jurisdictional Floodplain Management Plan involved many local community organizations and interest groups. The Plan provided a written description of current and future flood hazards; impacts on people, property and infrastructure, economy, and the environment; flood hazard mitigation actions taken; and an action plan involving various physical and non-physical measures to minimize flood risk. The objective being to identify, document, and suggest implementation of policies, practices, and measures to reduce future flood risk. According to Sullivan, the plan offers elected officials justification for making investments, integrating resources across departments and jurisdictions, and a sustaining the mitigation effort long term.

Sullivan discussed the Corps' public engagement strategy including through workshops and survey, and said there was high turnout at the public meetings. The public is very interested in the outcomes of flood mitigation and risk reduction. Survey results indicate that the public is not supportive of levees and constructing new infrastructure in the floodplain. Instead, there is strong support for protecting and restoring natural floodplains and wetlands.

Sullivan said the anticipated schedule includes:

1. Finalizing data collection in May 2018
2. Performing H&H analyses and risk assessments from May to December 2018
3. Setting goals and evaluating options from January 2019 to March 2019
4. Writing the draft report from March 2019 to May 2019
5. Facilitating the planning committee review from June 2019 to July 2019
6. Hosting public meetings re the report findings from July 2019 to September 2019
7. Finalizing the report by November 2019

UMRS Flood-Related Reports

FEMA Region V

Laurie Smith-Kuypers provided an overview of FEMA's 2018-2022 Strategic Plan. Its three main strategies are to 1) build a culture of preparedness, 2) ready the nation for catastrophic disasters, and 3) reduce the complexity of FEMA. Smith-Kuypers discussed the tools FEMA uses to advance these goals including outreach and education, mapping, hazard mitigation, insurance, local floodplain management, long-term mitigation, leveraging funds, and building partnerships. FEMA set ambitious goals of doubling flood insurance coverage by 2023 and increasing mitigation investment by four times existing levels by 2023.

In commemoration of the 1993 Flood's 25th anniversary, Smith-Kuypers showcased FEMA's ESRI journal of the flood event throughout the UMRS watershed and actions taken since then by Austin, Minnesota; Darlington, Wisconsin; and Grafton, Illinois to reduce flood risk and minimize damages. In response to a question from Mark Gaikowski, Smith-Kuypers said the ESRI Story is available at <http://arcg.is/189CTi>.

Illinois DNR

Loren Wobig said the Illinois Association for Floodplain and Stormwater Management (IAFSM) published a 9-minute documentary in April 2018 of the Great 1993 Flood event. Illinois DNR provided various interviews to help tell the story, including work accomplished since then to reduce flood risk. Wobig played the video for meeting participants. It is available at <https://www.youtube.com/watch?v=pRz24fvf58o&feature=youtu.be>.

FEMA Region VII

Teri Mayer explained that FEMA is committed to increasing the use and appreciation for floodplain best management practices. Mayer showed a video that FEMA published on March 23, 2018. It can be viewed at <https://www.fema.gov/media-library/assets/videos/161620>. The video showcases the actions taken in Cape Girardeau, Missouri to address and reduce the city's flood risk.

USACE Flood Management Update

National Flood Risk Management Program (NFRMP)

Scott Whitney explained the vision, goals, and mission for the NFRMP as follows:

- *Vision:* Our economy, our society, and our natural landscapes are well position to withstand, recover, and adapt to ever changing flood risks
- *Mission:* Increase capabilities across all aspects of USACE to improve decisions made internally and externally that affect the nation's flood risk

Whitney said the goals for the NFRMP include 1) improving how USACE manages flood risk and supports others who are managing flood risk as well as 2) better connecting flood management strategies with other water resource challenges and opportunities. Whitney explained that large flood events are not routine and are often met with surprise among those who live and work in the floodplain as well as the general public. Given that large flood events are rare occurrences, there is typically a lack of investment in preparedness, risk reduction, and mitigation. But, these flood events are largely predictable and there are many solutions for minimizing flood risk, including improving building codes and emergency preparedness, developing flood recovery and risk management plans, and purchasing flood insurance. According to Whitney, flood risk management is a shared responsibility.

Whitney discussed the opportunities when striking the right tone and balance of relevant information to create awareness, understanding, and support for various flood risk management goals and strategies. Whitney articulated that innovative planning, strategic investments, and improved regional collaboration will be needed to attain a desired future condition of flood risk reduction, safety, and prosperity. Return on investment will be measured in economic and ecological damages prevented, lives protected, and resiliency in the wake of recurrent and extreme floods.

In response to a question from Amy Beussink, Whitney explained that changes to the NFRMP occurred at various times and there is no cross-comparison to the previous version that he can provide to partners.

UMRS HEC-RAS Update

Whitney reported that USACE recently released newly developed HEC-RAS for 320 miles on the UMRS, extending from Thebes, Illinois to L&D 19. The model includes all leveed and storage areas and was developed and tested in collaboration with federal and state technical experts and with frequent stakeholder input. Its predictive capability was validated through model runs using hydrology information from the significant flood events in 2008, 2013, 2014, and 2017. Whitney explained that HEC-RAS provides users with the ability to accurately and realistically predict changes in water movement and depth profiles in response to a variety of potential land use changes. HEC-RAS provides an integral tool for risk-informed planning, evaluation, and decision making.

HEC-RAS model is available upon request and . The Corps will also supply various technical reports, including source data, methods, assumptions, and limitations. Whitney said the model was developed for the purposes of managing the UMRS floodplain and evaluating Section 408 levee modification requests. While the model is publicly available, he cautioned that only experienced and qualified hydraulic engineers with advanced HEC-RAS training should run the model and must use the appropriate inputs to ensure accurate model results. He pointed out that the model is not designed or calibrated for sediment transport, water quality, or steady-state flows. Whitney also cautioned against parsing out smaller sections of the model unless an experienced HEC-RAS modeler can define the appropriate upstream and downstream boundary conditions.

Whitney said any future model updates will require a funding source. He also acknowledged that, while the Corps had plans to complete HEC-RAS model on the remaining portions of the UMRS, funding is uncertain and may require a non-federal cost share.

In response to a question from Jim Fischer, Whitney explained that HEC-RAS does have the capacity to add modules for understanding sediment transport and budgets. The Corps can work with UMRBA and other relevant partners to scope opportunities for using HEC-RAS to inform channel maintenance.

Sediment Modeling in Large River Systems

On behalf of Ty Wamsley, Ronnie Heath discussed the value of modeling sediment in large river systems. Heath explained that sediment models help to understand and predict how the river is changing. This information is necessary to inform objectives for managing large rivers for flood risk management, navigation, and ecosystem restoration. Without a sediment component, HEC-RAS assumes that the river has a concrete bottom. With a sediment component, models are more realistic.

Heath acknowledged that sediment modeling is costly. However, the benefits are substantial and outweigh the costs. This includes evaluating project alternatives before implementation, answering questions about cause-and-effect and isolating the impacts of different variables, and informing projections of future conditions. Heath explained that the Lower Mississippi River and Missouri River sediment models were developed through federal-state collaboration and information and tools from those models could be leveraged in an Upper Mississippi River sediment model. Sediment modeling should be thought of as a framework with a range of capabilities in different spatial and temporal scales. One-dimensional models are relatively fast and efficient and can be applied regionally over long periods of time. Two-dimensional models are more complex and expensive and can be applied at a project scale. Three-dimensional models are computationally expensive and typically can only be applied at a very local project scale.

Heath reviewed the sediment modeling done on the UMRS to-date, including to evaluate potential actions at the Upper St. Anthony Falls L&D, Len Small (potamology study), L&D 18, L&D 22, Lower Pool 10, Pool 5, Lower Pool 10, and the St. Louis Harbor. The purposes primarily for navigation and ecosystem restoration.

Heath said the version of HEC-RAS 5.0.4 includes upgraded sediment capabilities. Sediment modeling requires good hydrologic data, a calibrated hydraulic model, sediment data (e.g., bed composition and sediment inflows), and calibration data such as geomorphic assessments. Systemic datasets enhance the overall quality of a regional sediment model.

Heath said the 2000 Upper Mississippi River and Illinois Waterway Cumulative Effects Study provides a great foundation for establishing a UMRS one-dimensional sediment model. He concluded that it is the MVD Science Program's vision to have one- and two-dimensional hydrological and sediment models for the entire Mississippi River.

Administrative Issues

FY 2019 UMRBA Budget

Kirsten Mickelsen offered a proposed UMRBA budget for FY 2019 that reflects \$648,851 in revenues and \$671,245.72 in expenses, yielding a projected deficit of \$22,394.72. Mickelsen explained that the budget includes potential relocation expenses and a biennial audit. Dru Buntin moved and Tim Hall seconded a motion to approve the FY 2019 budget as proposed by staff. The motion pass unanimously.

Future Meeting Schedule

August 2018 — La Crosse

- UMRBA quarterly meeting — August 14
- UMRR Coordinating Committee quarterly meeting — August 15

October 2018 — Bloomington (MN)

- UMRBA quarterly meeting — October 30
- UMRR Coordinating Committee quarterly meeting — October 31

February 2019 — Dubuque

- UMRBA quarterly meeting — February 26
- UMRR Coordinating Committee quarterly meeting — February 27

With no further business, the meeting adjourned at 3:57 p.m.