

Agenda

with Background and Supporting Materials

Virtual Meeting



Upper Mississippi River Basin Association

May 25, 2021

Agenda

Connection Information:

- Web and video conferencing: https://umrba.my.webex.com/umrba.my/j.php?MTID=mdbae14e8e292d0ca8faa6cbe26439203
- Phone connection:
 - Dial-in: 312-535-8110
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 - Access code: 182 407 7836
 - o Password: 1234

Time	Attachm	nent Topic	Presenter
8:00 a.m.		Call to Order and Introductions	Dru Buntin , Missouri DNR
8:05	A1-20	Approval of Minutes of February 23, 2021 Meeting	
8:10	B1-21	Executive Director's Report	Kirsten Wallace, UMRBA
8:20	C1-4	Illinois River Basin Next Generation Water Observing System	Jim Dunker, USGS
8:40		Navigation and Ecosystem Sustainability Program	Andrew Goodall, USACE
9:10	D	Atchinson County Levee Setback	Dru Buntin, Missouri DNR Regan Griffin, Atchinson County Levee District Corina Zhang, USACE Barbara Charry, TNC Chris Hamilton, USDA
10:10		Break	
10:30		MVD Perspectives	MG Diana Holland, USACE
10:50	Ε	Keys to the River ReportPublic Comment	Brian Stenquist , Minnesota DNR (as Facilitator)
12:00 noor	ı	Lunch	
1:00 p.m.	F1-3	Invasive CarpPool 8 Early Detection and Rapid Response	Carli Wagner and Ben Larson , Minnesota DNR
		 Illinois River Control Efforts 	Jim Lamer , Illinois Natural History Survey
(Contir	nued)	 Lock 22 Fish Passage 	Mark Cornish, USACE

UMRBA Quarterly Meeting May 25, 2021 (Continued)

Time	Attachr	nent Topic	Presenter
2:00	G	Illinois Marine Transportation System Plan	BJ Murray , Illinois DOT
2:30		UMRS Federal Fiscal and Policy Matters	UMRBA Federal Liaisons
3:15	H1	Administrative IssuesFY 2022 UMRBA BudgetFuture Meeting Schedule	
3:30 p.m.		Adjourn	

(See Attachment H for frequently used acronyms.)

ATTACHMENT A

Minutes of the February 23, 2021 UMRBA Quarterly Meeting (A-1 to A-20)

DRAFT Minutes of the 157th Quarterly Meeting of the Upper Mississippi River Basin Association

February 23, 2021 Web-Based Conference Meeting

Steve Galarneau called the meeting to order at 8:00 a.m. Participants were as follows:

UMRBA Representatives and Alternates:

Rick Pohlman	Illinois Department of Natural Resources
Chad Craycraft	Illinois Department of Natural Resources
Dave Glover	Illinois Department of Natural Resources
Loren Wobig	Illinois Department of Natural Resources
Tim Hall	lowa Department of Natural Resources
Jake Hansen	Iowa Department of Agriculture and Land Stewardship
Sam Hiscocks	lowa Department of Transportation
Barb Naramore	Minnesota Department of Natural Resources
Dru Buntin	Missouri Department of Natural Resource
Chris Wieberg	Missouri Department of Natural Resource
Jennifer Hoggatt	Missouri Department of Natural Resource
Chris Klenklen	Missouri Department of Agriculture
Matt Vitello	Missouri Department of Conservation
Steve Galarneau	Wisconsin Department of Natural Resources
Jim Fischer	Wisconsin Department of Natural Resources
Federal UMRBA Liaisons:	
Brian Chewning	U.S. Army Corps of Engineers, MVD
Ken Westlake	U.S. Environmental Protection Agency, Region 5
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Scott Morlock	U.S. Geological Survey, Midcontinent Region
Verlon Barnes	Natural Resources Conservation Services
Others in Attendance:	
Bill McCormick	Colorado Department of Natural Resources
Wes Cattoor	Illinois Department of Natural Resources
Kirk Hansen	Iowa Department of Natural Resources
Randy Schultz	Iowa Department of Natural Resources
Garrett Pedersen	Iowa Department of Transportation
Nathan Grider	Illinois Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Neil Rude	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation

Brvan Hopkins Missouri Department of Natural Resources Dan Baumann Wisconsin Department of Natural Resources Adam Freihofer Wisconsin Department of Natural Resources Shaili Pfeifer Wisconsin Department of Natural Resources Sharon Sartor U.S. Army Corps of Engineers, Headquarters Bryan Taylor U.S. Army Corps of Engineers, Headquarters Jim Cole U.S. Army Corps of Engineers, MVD U.S. Army Corps of Engineers, MVD Leanne Riggs Thatch Shepard U.S. Army Corps of Engineers, MVD **Renee Turner** U.S. Army Corps of Engineers, MVD Col. Karl Jansen U.S. Army Corps of Engineers, MVP U.S. Army Corps of Engineers, MVP Kevin Wilson Terry Birkenstock U.S. Army Corps of Engineers, MVP Ann Banitt U.S. Army Corps of Engineers, MVP Angela Deen U.S. Army Corps of Engineers, MVP Aaron McFarlane U.S. Army Corps of Engineers, MVP **Rachel Perrine** U.S. Army Corps of Engineers, MVP Steve Tapp U.S. Army Corps of Engineers, MVP Terry Zien U.S. Army Corps of Engineers, MVP Col. Steve Sattinger U.S. Army Corps of Engineers, MVR Kim Thomas U.S. Army Corps of Engineers, MVR Andy Barnes U.S. Army Corps of Engineers, MVR Roger Perk U.S. Army Corps of Engineers, MVR U.S. Army Corps of Engineers, MVR Jon Klingman Jodi Creswell U.S. Army Corps of Engineers, MVR Colin Ewan U.S. Army Corps of Engineers, MVR Andrew Goodall U.S. Army Corps of Engineers, MVR Karen Hagerty U.S. Army Corps of Engineers, MVR Davi Michl U.S. Army Corps of Engineers, MVR Tara Gambon U.S. Army Corps of Engineers, MVR Scott Whitney U.S. Army Corps of Engineers, MVR Marshall Plumley U.S. Army Corps of Engineers, MVR Col. Kevin Golinghorst U.S. Army Corps of Engineers, MVS Susan Wilson U.S. Army Corps of Engineers, MVS Jasen Brown U.S. Army Corps of Engineers, MVS Hal Graef U.S. Army Corps of Engineers, MVS Brian Markert U.S. Army Corps of Engineers, MVS Ben McGuire U.S. Army Corps of Engineers, MVS Lance Engle U.S. Army Corps of Engineers, MVS Shane Simmons U.S. Army Corps of Engineers, MVS Shawn Sullivan U.S. Army Corps of Engineers, MVS Brian Johnson U.S. Army Corps of Engineers, Regional Planning Division North Nate Richards U.S. Army Corps of Engineers, Regional Planning Division North Jason Daniels U.S. Environmental Protection Agency, Region 7 Steve Schaff U.S. Environmental Protection Agency, Region 7 Neal Jackson U.S. Fish and Wildlife Service, UMRCC Kraig McPeek U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services Sara Schmuecker U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services Tvler Porter U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services

Kelly Warner U.S. Geological Survey, Central Midwest Water Science Center Jim Duncker U.S. Geological Survey, Central Midwest Water Science Center JC Nelson U.S. Geological Survey, Midcontinent Region Danelle Larson U.S. Geological Survey, UMESC Jennifer Dieck U.S. Geological Survey, UMESC Jeff Houser U.S. Geological Survey, UMESC Jennie Sauer U.S. Geological Survey, UMESC Mark Gaikowski U.S. Geological Survey, UMESC Kim Wickland U.S. Geological Survey, Water Mission Area Steve Buan National Oceanic and Atmospheric Administration, NWS Jessica Brooks National Oceanic and Atmospheric Administration, NWS Mike Welvaert National Oceanic and Atmospheric Administration, NWS Tom Streight Alter River Terminals Jon Omvig AMEC Olivia Dorothy American Rivers Kim Lutz America's Watershed Initiative **Caroline Sevier** American Society of Civil Engineers Tim Kabat City of La Crosse (Mayor) Paul Dierking HDR Engineering Inland Rivers, Ports, and Terminals Association Jim Kearns Kenz Becoo Lake Pepin Legacy Alliance Carolyn Mahlum-Jenkins League of Women Voters Mary Ploeser League of Women Voters Colin Wellenkamp Mississippi River Cities and Towns Initiative Maisah Khan Mississippi River Network Nancy Guyton Neighbors of the Mississippi **Rick Stoff** Our Mississippi Sierra Club Christine Favilla Gretchen Benjamin The Nature Conservancy **Doug Blodgett** The Nature Conservancy Rachel Curry University of Illinois Marian Muste University of Iowa Xuesong (John) Zhang University of Maryland Upper Mississippi, Illinois, and Missouri Rivers Association Mike Klingner Wood Angela Love Tom Boland Wood Kirsten Wallace Upper Mississippi River Basin Association Mark Ellis Upper Mississippi River Basin Association Lauren Salvato Upper Mississippi River Basin Association Andrew Stephenson Upper Mississippi River Basin Association

<u>Minutes</u>

Loren Wobig moved and Tim Hall seconded a motion to approve the draft minutes of the October 27, 2020 UMRBA quarterly meeting as provided in the agenda packet. The motion was approved unanimously.

Executive Director's Report

Kirsten Wallace pointed to the Executive Director's report in the agenda packet for a summary of the Association's other work load efforts since the October 2020 quarterly meeting. Of particular note are the January 18, 2021 letters to the Federal Water Subcabinet and the Biden Administration transition teams. In the letter to the Federal Water Subcabinet, UMRBA requests a long term funding source to support the states' nutrient reduction strategies and other water quality improvement efforts and an agreement to facilitate a coordinated partnership between the Subcabinet and UMRBA.

Wallace explained that the UMRBA interstate water quality monitoring pilot in CWA Reaches 8-9 is ongoing in partnership with Illinois, Iowa, and Missouri. We continue to refine cost estimates for the remainder of the pilot and have determined that, in addition to their in-kind work, Missouri DoC would contribute \$40,000 and Iowa DNR would contribute \$20,000 to UMRBA to pay for pilot-related expenses. In response to a question of contracting approval from Wallace, Steve Galarneau moved and Dru Buntin seconded a motion to for UMRBA to enter into a contractual agreement with Missouri DoC to receive up to \$40,000 and with Iowa DNR to receive up to \$20,000 for pilot implementation. The motion passed unanimously.

Wallace announced that the Corps' Sustainable Rivers Program selected the Upper Mississippi River for a series of workshops to employ structured decision making regarding the implementation of water level management. In addition, the Upper Mississippi River Restoration program has agreed to utilize UMRBA's support services agreements to support a trained facilitator for the workshops. In response to an approval request from Wallace, Steve Galarneau moved and Dru Buntin seconded a motion for UMRBA to enter into an agreement with Pat Heglund for up to \$11,000 in facilitation support services.

Wallace pointed to UMRBA's financial statements on pages B-16 to B-19 of the agenda packet. Tim Hall moved and Rick Pohlman seconded a motion to approve the Association's budget report and balance sheet as included in the agenda packet. The motion was approved unanimously.

Keys to the River Report

Kirsten Wallace announced that UMRBA, in partnership with the Corps, put together a written report of the actions and more complex planning questions that are intended to improve the Upper Mississippi River System's resilience to floods, sediment, and drought. The report also includes a relatively brief summary of the river's geographic setting and a historical context of the socio-political dynamics. These ideas were generated and vetted over the fall and winter of 2019 into the spring of 2020. Disruptions from COVID-19 delayed some of the report writing.

Wallace recognized that this will be the first time the ideas and questions have more detailed written context, with the ideas all pulled together, and that there are many targeted audiences for this report. The latter makes it challenging to balance those audiences' needs with respect to report structure, language, and level of detail. On January 14, 2021, UMRBA sent a "targeted review" of a draft Keys to the River Report to over 60 individuals with varying mandates and perspectives – i.e., government employees, interest groups, and other individuals – from different geographic locations on the river and in the watershed. The goal of this review was to gauge support for the report and get feedback on how to improve the report. They were asked what they like about the report, what actions are important and can best support their work, their preferences for UMRBA's next actions, what else is needed to support their work, and if there's anything in the report that might make their work more difficult.

UMRBA's next steps are to review and consider comments received from the targeted review, develop a one- to three-year work plan for UMRBA, advocate for actions and continued planning, convene discussions, and develop "branding" or a clear communications umbrella for explaining UMRBA's resilience planning work.

Wallace said 20 people had submitted comments on the draft Keys to the River Report in both written and verbal ways. Those 20 people have different backgrounds and expertise related to the river. Wallace reiterated that UMRBA is anticipating that more comments will be submitted. Wallace provided a general characterization of the comments received as follows, explaining that UMRBA's Board intends to review the feedback and evaluate any modifications over the next month.

Wallace said commenters expressed support for the interstate, multi-purpose, long term, adaptive strategy outlined in the report as well as its description of peoples' experiences, the historical summary of legislation and management decisions, and the importance of the river to agriculture, river communities, and navigation. Commenters expressed support for the work building upon well-established planning principles and science and the connection to the watershed as well as the statement acknowledging that the status quo of river management is commonly viewed among stakeholders as no longer acceptable. Commenters found the report to be practical, concise, and succinct. Commenters also called out support for specific actions related to information exchange, beneficial use, and efforts to eliminate, minimize, and mitigate damages.

Commenters also suggested that the Keys to the River Report add tribal authorities and acknowledge that underserved communities face disproportionate environmental risks and impacts as well as the gaps in outreach, communication, or engagement to these communities. Commenters requested more detailed solutions regarding flood control, retirement of certain agriculture lands, drought-related forecasting, conservation easements, and natural/nature-based solutions as well as the objective of enhancing ecological resilience in more places. In addition, commenters suggested employing the risk informed decisions framework and emphasizing soil health and water cycle restoration in the watershed.

Wallace provided an overview of commenters suggestions for UMRBA's next steps as follows:

- Consider wake restrictions, alternates to traditional dredging, and sand traps in the watershed
- Integrate with state transportation plans
- Explore partnership opportunities with the U.S. Department of Homeland Security to conduct assessments of risk, including port and terminal physical and cyber security assessments
- Add public safety as a priority
- Add scientific citations
- Explain local communities' dependence on recreation and tourism
- Emphasize that the river is a public resource
- Address equity through the involvement of underserved communities in planning and in fair solutions
- Continue long term resilience planning with a more detailed scope of work/plan, including developing a detailed shared vision statement and ways to track progress
- Convene a regional academic team to develop an integrated science plan

- Host regional meetings and facilitate information exchange, including expanding the historical summary to include other issue topics such as water quality management
- Broaden the drought issue assessment to a national context
- Integrate water quality goals and nutrient reduction strategies into the set of solutions
- Leverage existing information and recognize past efforts

Wallace said UMRBA's planned next steps include reviewing and considering comments from the targeted review of the January 14, 2021 version of the Keys to the River Report as well as developing a more detailed scope of work during summer 2021, advocating for actions and continued planning, convening discussions, and developing branding/a communications strategy. Wallace expressed her sincere appreciation to those who took time and provided input to the Keys to the River Report as well as all those who have contributed to this work along the way.

Steve Galarneau acknowledged the enormous challenges of this work and thanked our partners who have joined with us to find solutions knowing that these conversations would be difficult. We are clearly not at the beginning and not at the end. This is a very active process with substantial work. The states and our partners are hungry for action and not a sole focus on study. We want to be deliberative and thoughtful and learn from our actions as we continue to work towards improving the river's resilience.

Dru Buntin echoed Galarneau's comments and expressed gratitude to those who provided feedback on the draft Keys to the River Report. Buntin acknowledged the difficulty of this work, particularly as it involves a diverse set of interests with their own particular ideas for a future vision. The misalignment makes finding solutions difficult. Buntin said the function of convening and advancing these conversations is an important role for UMRBA. As this work continues, UMRBA will need to continually revisit its engagement strategies to ensure that the information reaches a wide variety of residents in the basin. Buntin said he looks forward to this work continuing.

Loren Wobig said the Keys to the River Report provides a nice snapshot in time as we continue to move forward with the ongoing development of a regional plan that examines sediment, drought, and flood conditions. The report documents the feedback from the outreach in 2019 and 2020 and defines a direction for moving forward. The report will be used as a springboard to dive into the development of a scope of work. Galarneau reinforced the need and value of stakeholder comments. Solutions are found when we do careful listening.

Interbasin Diversions

Annual Reporting

The five states are party to the 1989 Upper Mississippi River Basin Charter, which sets forth a notification and consultation process for any new or increased water diversion out of the basin that will exceed an average of five million gallons per day during any 30-day period. The Charter requires the signatory states to report on their involvement in qualifying diversion requests at UMRBA's annual meeting. The states reported as follows:

Illinois, Rick Pohlman	- no qualifying diversion requests
Iowa, Tim Hall	- no qualifying diversion requests
Minnesota, Barb Naramore	- no qualifying diversion requests

Missouri, Dru Buntin	 no qualifying diversion requests
Wisconsin, Steve Galarneau	 no qualifying diversion requests

Kirsten Wallace said UMRBA will send its customary letters to the Governors conveying the results of the states' annual diversion reporting.

Charter Review

Lauren Salvato explained that the UMR Basin Charter is a non-binding agreement that has not yet been triggered – i.e., there has not been a known proposal setting forth the notification and consultation process. Growing interest in the potential for significant out-of-basin water diversions from the Upper Mississippi River Basin have raised both the prospect of implementing the Charter's consultation process and important contextual questions regarding the Charter's provisions. In 2019, the UMRBA Board directed the Association to convene state experts to assess the Charter's current provisions and identify any recommended revisions to the Charter to ensure that it advances the Charter's stated principles. The direction to this *ad hoc* group was also to compare the signatory states' current approaches to regulating water use and consider how differences in those regulatory authorities may influence implementation of the Charter.

Salvato reported that the *ad hoc* group includes a representative for UMRBA's member state departments of natural resources. Thus far, the group has updated individual state protocols for water withdrawals and reviewed the Great Lakes Compact and other interstate agreements as well as scientific literature related to out-of-basin diversions. That work resulted in the conclusions that a) the states differ significantly in their policies and permitting approaches and b) there remain significant knowledge gaps regarding how out-of-basin diversions affect the hydrological cycle at regional scales. There is enormous complexity and possible variables involved in potential individual out-of-basin water diversions (including at cascading or synergistic effects), making it challenging to draw any particular assumptions about the impacts of diversions in general on the Upper Mississippi River basin's resources.

In 2019, the group proposed implementing a table top exercise that was postponed due to covidrelated restrictions on in-person meetings. After reassessing options for best evaluating potential ways to evaluate the existing Charter agreement, the *ad hoc* working group is recommending that three to five scenario planning exercises be implemented in order to:

- Illuminate ambiguities, clarify definitions, and discuss policy needs
- Develop a scientific framework for evaluating proposals
- Evaluate known and unknown questions

Example questions that might be explored through scenario planning include:

- How is ground water treated differently or similarly to surface water withdrawals?
- Is a withdrawal still considered to be an out-of-basin diversion if it is returned later?
- Should consumptive and non-consumptive uses be treated differently?
- How might potential unforeseen factors affect decision making e.g., commitment by a receiving watershed, climate variability?
- Should the Charter thresholds be modified?

Galarneau expressed support for scenario planning to objectively consider issues and the states' differing processes through a deeper analysis. Buntin explained that Missouri DNR is involved in litigating against an out-of-basin diversion in the Missouri River Basin, with its own complexity because Missouri and Iowa are riparian-rights states while the other basin states are water-right states. There is a long history of contention in that basin over those types of issues with the now added challenges of increasing impacts of climate change that might affect the economics of interbasin diversions. Buntin said it is wise and important to examine changes since 1989 that might warrant revisions to the Charter that envisions these types of issues and how we would handle them prior to an out-of-basin diversion request. Buntin suggested that focusing on potential revisions be a priority for UMRBA and the states.

Hall expressed support for the recommendation. Iowa's state climatologist has observed that the southwestern U.S. is trending toward consistent dryness while the Midwest is trending toward a wetter climate. Recognizing that there will likely be a time when the problems in the southwest want to be solved by the wetness in the Midwest, Hall encouraged the states to stay ahead of the issue and prepare for potential out-of-basin diversion proposals. Working through scenarios will better position the states to handing major proposals by better understanding where we stand on particular matters and what our options are for working in an interstate manner.

Naramore asked if the *ad hoc* team had considered employing scenarios within different geographies or a particular scenario under the unique regulatory regime in each state. Salvato replied that the group is considering both approaches, with each state implementing a common scenario and a scenario that might answer a particular question or two. The idea is also to better understand which types of out-ofbasin diversions might affect the basin's resources. Naramore expressed support for the recommendation and requested an additional conversation among the Board to discuss the strategic approach to these scenarios. Board members may have particular thoughts about which issues would be helpful to explore through the scenarios. Naramore suggested that the states implement a common scenario through their respective regulatory regimes, noting that it will likely illicit different results.

Navigation and Ecosystem Sustainability Program

Andrew Goodall provided an update on the Navigation and Ecosystem Sustainability Program (NESP). Goodall reported that NESP received \$4.5 million in the FY 2020 work plan for preconstruction engineering and design (PED) work, with \$3.0 million allocated to navigation projects and \$1.5 million for ecosystem projects. Goodall said the Corps worked with partners to determine which projects to advance with that funding, as summarized below:

Navigation-related:

- L&D 25 lockwall modifications in preparation for the 1,200-foot chamber (95 percent design level in March 2021)
- L&D 14 mooring cell for efficiency as tows approach the lock chamber (95 percent design level)
- Moore's towhead systemic mitigation to provide new habitat and maintain existing habitat (65 percent design level)

Ecosystem-related:

— Twin Islands on the Illinois River to maintain existing islands and side channels, increase channel geomorphic diversity, and improve aquatic habitat (65 percent design level)

- Alton Pool Islands on the Illinois River to decrease sediment deposition and erosion as well as prevent loss of islands and associated side channels (65 percent design level)
- Pool 2 wingdam notching on the Mississippi River to improve channel border fish habitat (95 percent design level)
- Starved Rock habitat restoration and enhancement to restore submerged aquatic vegetation and increase habitat for migratory waterfowl and native fish (35 percent design level)
- Lock 22 fish passage to increase the opportunity for fish to pass through the dam and access upstream habitats (TSP selected in December 2020; nearly 35 percent design level)

Goodall explained that the Corps' primary goal was to have construction-ready project elements prepared for a new start, with \$10 million for navigation projects and \$10 million for ecosystem projects. Loren Wobig asked if any of the projects are construction-ready given that 95 percent is the highest design level among the projects listed. Goodall explained that all projects discussed earlier are scheduled to be construction-ready by September 2021, allowing NESP to compete for a construction new start. Scott Whitney added that a project's final cost-estimation has an immediate shelf life, so 95 percent complete is typically the furthest completion point in design work until available funding for construction is certain.

Gretchen Benjamin asked for more information about the Starved Rock project design. Marshall Plumley explained that the purpose of the breakwater is to knock down wind fetch to allow for the reestablishment of submersed aquatic vegetation and not necessarily induce island creation. The project is targeted at submersed aquatic vegetation beds that are already present in the project area.

Mike Klingner asked for information about targeted fish species that are anticipated to benefit from the L&D 22 fish passage either upstream or downstream. Whitney said the project is targeting long distant migratory species as well as local resident fish to aid in their upstream movements to access feeding, overwintering, and spawning habitat – e.g., paddlefish. The project is designed to meet multiple swim speeds and capacities. Klingner mentioned a University of Iowa design suggestion and asked if that had been considered in the design.

Goodall reported that NESP received \$5 million in the FY 2021 work plan for PED-related activities, with \$2.375 million allocated to ecosystem restoration work and \$2.625 million allocated to navigation work. The FY 2021 work plan was published on January 19, 2021. The District has not yet received the funds to start work under NESP.

Jim Fischer asked about plans for more formal engagement with the states and other federal agencies – i.e., reinvigorating the Navigation and Ecosystem Coordinating Committee (NECC). Goodall said that, with the minimal funding received in the last two years, only initial coordination activities have occurred. The Corps is developing its priorities internally for spending this year. One option for coordination could be a forum similar to the NECC. The Corps is deliberating over whether now is the right time to stand up a coordinating body. Goodall reminded that there were quasi-partnership meetings convened last year. The Corps is trying to be lean with its NESP funding

Kraig McPeek replied to Goodall's statement with a question of if now is not the right time, when would be the right time to get the partners' input especially after two years of consistent funding? At what point would you get the partnership rallied around feedback to the Corps if not willing to do so now? Gretchen Benjamin echoed McPeek's comment, recognizing the importance of seeking input at the frontend rather than the backend, and working on restoration priorities. Olivia Dorothy raised outstanding items to implement ASA(CW) Jo-Ellen Darcy's issuance of planning guidance as well as peer review. Dorothy asked if the Corps is going to resume standing planning protocols. Goodall said he will need to follow up with Dorothy.

Kirsten Wallace asked if it might be helpful for the partnership to help scope coordination needs and desired outcomes and what that would involve to achieve. Goodall agreed that would be helpful, including for getting projects in the pipeline. Wallace said the region has a deeply rooted partnership and strong experience in multi-agency coordination. She said coordination could be inexpensive but effective. Goodall said there are still undecided priorities that could benefit from partnership discussion. Scott Whitney added that the FY 2020 goal was to achieve construction readiness. FY 2021 funds will fulfill that commitment. Now, the Corps is weighting how much of the additional funds should be used to ACSP's construction readiness package.

Wallace and Goodall confirmed that the next step is to convene federal and state partners to put together a proposal for the interagency consultation to present at the UMRBA May 25, 2021 quarterly meeting.

Beneficial Use Panel Discussion

Kirsten Wallace introduced the panel discussion by explaining the potential for beneficial use to increase the resilience of the 9-foot navigation channel by reducing the overall demand for placement sites. Wallace explained the multi-jurisdictional nature of 9-foot navigation channel maintenance and management and the shared interest of advancing beneficial use. The passage of WRDA 2020 makes this panel session very timely. In that action, Congress added economic and ecological benefits from the beneficial use of dredged material to the low-cost federal standard. The Corps is currently seeking comment on the subsequent implementation guidance.

Definition

Steve Tapp provided a summary of what beneficial use means related to dredged material. The Corps' formal definition is as follows: "All productive and positive uses of dredged material, which cover broad use categories ranging from fish and wildlife habitat development, to human recreation, to industrial/commercial uses." In basic terms, beneficial use means placing the material where it can be used productively.

Tapp noted that the St. Paul District has done a fair amount of beneficial use projects relative to other regions of the county; in large part because the District has had to find those alternatives given lack of placement sites. In 2007, the Corps and USEPA published a beneficial use planning manual to aid in identifying, planning, and financing beneficial use material. The manual includes seven categories of types of beneficial uses.

Mike Klingner mentioned that some levee districts have requested the use of dredged material to rebuild interior berms on the landside of levees. It has been problematic to advance those types of partnerships with the federal standard.

Jon Klingman said MVR is looking at opportunities for placement within the levee districts. Real estate is a major hurdle for those types of projects. There has been some success at doing so, and the District is improving its processes.

Importance of Beneficial

Sara Schmuecker provided background on the GREAT studies, which Congress directed the Corps to undertake in the 1970s to address management needs and recommend implementation strategies of the Upper Mississippi River up to 2025. As an outcome of the GREAT studies, on-site inspection teams were formed to address localized dredge material problems with greater coordination of input from river biologists into the Corps' dredged material placement decisions. A GREAT II objective was to produce an environmentally and economically acceptable channel maintenance and operations program, leading to a channel maintenance handbook. While the plan was intended to last to 2025, watershed influences and deposition changes within the river have shortened the longevity of planned placement sites.

In 2016, Schmuecker explained that the on-site inspection team (OSIT) members identified several recommendations for improving channel maintenance and management that remain unresolved. Beneficial use of dredged material was a recommendation to alleviate placement capacity while realizing additional benefits. Schmuecker said many of the challenges identified in 2016 remain today. That includes a combination of limited placement capacity of dredged material (including previously identified sites no longer available) and a transition to maintaining a pilot channel rather than clearing the channel often due to limited resources. Dredging needs are increasing over time, including areas of the river that historically had not required dredging. Emergency declarations are issued when suitable placement sites cannot be readily identified.

Beneficial use is limited by the low-cost federal standard and real estate. The low cost standard had not accounted for long term savings or benefits to that beneficial use. Schmuecker discussed a beneficial use project with the Green Bay Levee District in Pool 19 through the P.L. 84-99 program. In that area, deferred dredging in 2019 led to an emergency declaration in 2020. The least cost option was bankline placement that had significant environmental concerns. Ultimately, the Corps was able to select the beneficial use option.

Matt Vitello explained recent changes to the Corps' real estate policies prevented a beneficial use project in Pool 22, where the landowner was interested in using the material. Instead, the material was placed in a dike field in the river because the upland site was no longer available. There is now ongoing work to rebuild Harris Island using placement of dredged material to shore up the head of the island as well as erosion control.

Schmuecker said accessibility and usability of existing dredged material managing plans (DMMPs) can be problematic because of timing requiring for construction, acquisition and real estate, and updating environmental compliance documents. Schmuecker cited the Pool 16 Buffalo Update and Pool 17 Barkis Island Upland DMMPs as examples.

Kirk Hansen discussed issues related to material stabilization and aligning timing of placement needs with opportunities to expand placement capacity. These material stabilization costs are a common reason for beneficial use options being eliminated. Hansen explained how stabilization was an important factor for Hurricane Island bankline placement in Pool 11 and Cormorant Islands in Pool 13. Vitello explained the flex pipe placement option in the Open River to create ephemeral islands, sandbars, and habitat to stabilize material over a longer duration. Channel maintenance is often reactionary, especially during the past several years of high water. The pressing requirements for placement often require a quick solution, precluding beneficial use projects that require permitting and environmental assessments. Sometimes the states are notified of new placement activities within a day or a few days, limiting the states' abilities to properly permit and complete environmental assessments these activities and precluding beneficial use. Hansen mentioned four examples of the Upper Mississippi River Restoration (UMRR) program utilizing dredged material for habitat projects. Hansen also provided an overview of a missed opportunity where River Stone sand mining operation is interested in the material dredged at a nearby Marais D'Osier cut. Currently, the dredged material is barged approximately six miles to a bankline placement site. The quarry is open to Section 19 navigable waters so there should no real estate interests required. Next steps include working through environmental compliance and confirmation that no real estate is required.

Hansen provided an overview of several successes in beneficial use, including projects that improved habitat, raised forest elevation, facilitated cover crop planting, reduced and prevented shoreline erosion, and aided in transportation projects.

Hansen provided a set of proposed solutions for beneficial use, including the following:

- Strategically identify and resolve questions regarding beneficial use opportunities and implementation, including per the new calculation of the federal standard
- Proactively integrate beneficial use into dredged material management planning at a larger-spatial scale
- Build flexibility into the system to prepare for emergency situations
- Continually seek cross-programmatic opportunities that are beneficial to the entire system

Wallace pointed to pages D-1 to D-10 of the agenda packet for an excerpt of Section 125 of WRDA 2020, which changes the calculation of the federal standard to include the economic and environmental benefits, efficiencies, and impacts. Wallace read the statement asserted by Congress in this section that it would be the "policy of the [Corps] to maximize the beneficial use, in an environmentally acceptable manner, of suitable dredged material obtained from the construction or operation and maintenance of water resource development projects." Wallace recognized that the timing is significant in that the Corps is developing implementation guidance and the states and other stakeholders could provide input to ensure that it does in fact alleviate the federal cost standard from being a major limitation to beneficial use.

Steve Tapp referenced back to the federal standard definition (33 CRF Part 335.7) and explained that the least cost alternative is often referred to as the base plan, which is a more accurate operational description of the federal standard. The base plan defines the placement costs associated with the navigational purpose of the project. Limitations related to beneficial use of dredged material include the requirement of a nonfederal cost-share partner; costs are typically not well-defined for economic analysis and alternative comparison; chemical, physical, and biological properties of material can limit potential uses; and the one-time, smaller beneficial use opportunities does not typically suit the longer time channel maintenance planning needs. Additionally, Tapp mentioned that a more fundamental question remains as to how to evaluate benefits across multiple projects. Other limiting factors not necessarily tied to the low-cost federal standard include real estate policies, limited marketing, floodplain management restrictions, and permitting and environment hurdles.

Tapp said it will be important to recognize that the federal standard definition did not change, just the consideration of the calculation with a beneficial use focus. The Corps will still need to consider the purpose for the federal standard and have a way to establish a base plan. Uncertainty remains with the implementation guidance and how the federal standard calculation may provide for beneficial use opportunities. Goal is to minimize the need for stockpiling and rehandling dredged material to the extent feasible. Jon Klingman said the Corps Districts are eager to see if the new guidance will facilitate new opportunities and new partnerships for beneficial use. Klingman described the enormity and complexity of the MVP and MVR channel maintenance and management programs. At any given time, the two Districts are managing 60-75 dredging locations using 6 to 10 different dredge plants. Many locations are logistically challenging to execute beneficial use projects. Klingman suggested that partners explore beneficial opportunities in accessible locations where upfront success can be achieved and built upon.

Mark Ellis referred to Mike Klingner's comment in the online chat feature requesting a sample real estate agreement for beneficial use projects in partnership with levee districts. Klingman said he will follow up with the information about the appropriate processes and procedures.

Jim Fischer acknowledged that now is an opportune time with the expanded federal standard calculation to transition from opportunistic to planned beneficial use as part of our channel maintenance and management strategies. Fischer recognized the strong partnership efforts to-date. It is a complex challenge, but we continue to have a better understanding of the issues as we talk about them. Partners have established beneficial use work teams in MVP and MVR as a result of the Keys to the River Report development. Those teams are scheduled to meet jointly in the next month. Fischer suggested that the teams identify the most significant issues requiring clarity that can be provided to Corps staff developing implementation guidance for Section 125 of WRDA 2020. Additionally, noting the nation-wide relevance of Section 125, Fischer encouraged Board members and other partners to engage their colleagues in other regions about potential comments for the implementation guidance.

Wallace said UMRBA can work with partners to carry forward Fischer's suggestions. Sabrina Chandler expressed support for Fischer's suggestions. Chandler pointed out that USFWS Refuges staff receive questions about the potential for the use of dredged material for recreational purposes such as beach nourishment that quickly become a public expectation. Chandler advised that the public perception of beneficial use is considered when evaluating those alternatives and asked if the Corps foresees entertaining more of those recreational requests throughout the system.

Marian Muste asked to be involved in the beneficial use work teams. Shawn Sullivan explained the established process for commenting on WRDA implementation guidance, and said he anticipates that the listening sessions will be announced soon as well as the solicitation for written comment.

Federal Agency Funding Reports

U.S. Geological Survey

Scott Morlock announced Dave Applegate as exercising authority of the USGS Director. Congress is holding a hearing today, February 23, to considering Deb Haaland's nomination as the DOI Secretary under President Joe Biden. Scott de la Vega is currently serving as acting DOI Secretary. USGS leadership is working hard with the Biden Administration's transition team.

Morlock explained that the Biden's Administration's priorities for USGS that related to the Upper Mississippi River include slowing spread of covid, addressing systemic inequality, tackling the climate crisis, and the "building back better" initiative. Morlock said he anticipates that USGS's science will play a major role in advancing climate and land conservation measures, particularly surrounding the goal of conserving at least 30 percent of the country's lands by 2030 – i.e., the 30x30 initiative. Morlock said 12 percent of America's terrestrial lands are permanently protected while 23 percent of America's oceans are permanently protected.

USGS received a \$44 million increase in its FY 2021 appropriation over its FY 2020 enacted level, including increases for both the water resources mission area and ecosystems mission area. Funding has been increasing for HAB and PFAS research monitoring and research. USGS recently selected the Illinois River Basin for Next Generation Water Observing System (NGWOS). The FY 2021 appropriation included continued funding for Asian carp and the Midwest Climate Adaptation Center. President Biden has not yet released the FY 2022 USGS budget.

U.S. Army Corps of Engineers

Renee Turner explained MVD's overall programmatic efforts and current budget development activities. Turner explained that the Corps is currently executing the FY 2021 program and defending the FY 2022 program. Broader funding trends for MVD since FY 2018 as well as for Upper Mississippi River projects and programs. Turner gave more details on the currently funding projects in the region, including NESP, Brandon Road, UMRR, Mel Price, East St. Louis, the Illinois Waterway major rehabilitation, and O&M work for the navigation channel throughout the system.

U.S. Environmental Protection Agency

Ken Westlake provided the FY 2021 enacted funding levels for CWA Sections 106 and 319 and Safe Drinking Water Act as well as for the Upper Mississippi River states. Overall, funding levels are mostly consistent with FY 2020 allocations. Westlake reported that the Biden Administration's priorities include the integration of climate change and environmental justice across all USEPA programs and projects. Additionally, Westlake said he anticipates major regulatory shifts as the Biden Administration evaluates regulation changes made in the Trump Administration and/or restores measures.

Steve Galarneau said the attention to climate change is of great interest to Upper Mississippi River stakeholders, seeing the significant impacts on landscape and working towards sustainable solutions. Westlake reflected that resilience and adaptation is a top priority for President Biden as well as senior officials nominated for leadership roles at USEPA and other federal agencies. There is urgency to forestall the adverse consequences of climate change.

Galarneau added his hope that, in all periods of transition, federal agencies engage UMRBA, which serves as a convening voice and strives to listen to all perspectives.

U.S. Fish and Wildlife Service

Sabrina Chandler reported that the Biden Administration has set several priorities for DOI that are being delegated to the bureaus. USFWS is focusing on equity and environmental justice, engaging communities of color, low income, rural and urban, and indigenous communities. USFWS is working with those communities by exposing them to the natural world through the Urban Wildlife Refuge Program and several bird treaty initiatives.

Chandler reported on the specific objective to identify steps to accelerate responsible development of renewable energy on public lands and waters, tying into investments in climate research and environmental innovation. USFWS is also working to advance the 30x30 initiative to intended target biodiversity, slowing extinction, leveraging natural climate solutions, and conserving 30 percent of America's lands and waters by 2030. Will also rely on state, local, tribal, and private led conservation efforts. Chandler said she anticipates that all Upper Mississippi River partners will be heavily involved in that initiative.

Chandler reported that USFWS does not yet have a Congressionally-confirmed director, and that Martha Williams is currently serving as the political appointee exercising the authority of the director. USFWS does not yet have an FY 2022 budget proposal. The enacted FY 2021 appropriation is still trickling down to regions and stations. USFWS's FY 2021 overall funding level is \$1.6 billion, which is about 4 percent less than FY 2020 but 15 percent more than the Administration's FY 2021 request. Within USFWS, the FY 2021 allocation to ecological services is \$270 million. National Wildlife Refuge System is \$503.9 million, and fisheries is \$206.6 million.

Chandler described the benefits of the Great American Outdoors Act. It authorized \$95 million for deferred maintenance to USFWS distributed across the National Wildlife Refuge System and fish hatcheries. USFWS has submitted proposals for Upper Mississippi River sites in the FY 2023 funding cycle. Chandler reported that USFWS received \$112 million Land and Water Conservation Fund allocation through the Great American Outdoors Act, of which \$11.2 million is specifically for cooperative endangered species recovery grants and associated land acquisition. Chandler also mentioned that, in FY 2021, Congress allocated \$12.5 million for USFWS's cooperative landscape conservation (i.e., landscape conservation cooperatives), \$17.3 million for science support in the agency's resource management line item, and \$11 million for continuing state and tribal wildlife grants.

Natural Resources Conservation Service

Verlon Barnes reported that Tom Vilsack is pending confirmation to be the USDA Secretary under President Biden. An NRCS Chief has not yet been designated. Terry Cosby is the acting Chief, who is the Ohio state conservationist. NRCS continues to work on priorities related to soil health, water quality, wetland restoration, watershed work, and partnerships. NRCS is advancing ongoing programs such as EQIP, CSP, and RCPP and is continuing the 2019 flood emergency recovery work, particularly in Iowa. NRCS is continuing its partnerships with USFS and added a new partnership through its WaterSMRART initiative with the Bureau of Reclamation. Other ongoing efforts in the agency include urban farming, feral swine control, and watershed projects.

Resilience Planning and Analytical Tools

MRCTI Priorities

La Crosse, Wisconsin Mayor Tim Kabat provided perspectives of the Mississippi River Cities and Towns Initiative (MRCTI), which is a group of 100 mayors representing cities and towns of all sizes within the river corridor. Collectively, the mayors are committed to securing this fresh water resource and ensuring cities and towns are resilient in the face of disasters and weather events.

Mayor Kabat described the enacted resilience revolving loan fund (i.e., STORM Act), which passed as a stand-alone measure. Wisconsin Senator Ron Johnson was the original sponsor. States are tasked with

compiling local governments' resilience projects into a package that they will send to FEMA, which will evaluate all projects based on their individual merits to mitigate disasters and reduce repetitive losses. FEMA will award a state a capitalization grant though which the state can set up a revolving loan fund for local communities to implement their projects. Limits are that no single project can use more than \$5 million in loan funds towards a single project and that interest is capped at 1.25 percent. Localities must repay the respective state, which are able to establish their own repayment schedules. The loan types are intended to be flexible, accounting for unique needs of localities and potential projects as well as the differing types of disasters and weather events. Mayor Kabat said his hope is that the revolving loans become a sustainable source of funds. He described La Crosse's economic reliance on the Mississippi River and discussed the challenges of longer duration floods such as 2019 on the city's infrastructure, which is designed for shorter term floods lasting about one month.

Mayor Kabat said MRCTI is also interested in green infrastructure such as wetlands and reconnected floodplains for flood storage capacity. MRCTI is partnering with Ducks Unlimited to do floodplain restoration on the Mississippi River and in the tributaries. This agreement is scheduled to be announced at MRCTI's March 2021 meeting.

MRCTI's Executive Committee recently endorsed a new legislative proposal to create a Mississippi River Program Office, called the Safeguarding the Mississippi River Together (SMRT) Act, for the purposes of sustaining one of the nation's more important natural resources. MRCTI plans to unveil the measure during its March 3, 2021 Capitol Meeting.

The SMRT Act would create a federal leadership committee that would involve one governor and one mayor to carry out the measures in the Act. Through a new Mississippi River Program Office, the Department of the Interior would develop and implement a 10-state comprehensive ecosystem restoration plan. The SMRT Act would also establish three grants and four studies, which would be developed by the restoration plan. Mayor Kabat said the SMRT Act incorporates many priorities included in UMRBA's Keys to the River Report.

Mayor Kabat said MRCTI understands that there are other plans for major legislation that MRCTI is willing to discuss and to consider changes and other strategies as a way to get national attention to the Mississippi River corridor.

Dru Buntin expressed appreciation for the notion around flexibility in meeting local and landowner needs. Buntin said that flexibility is oftentimes even more important than funding.

Gretchen Benjamin recognized the incredible amount of energy from many sources coming up with different ideas about how we might move forward to take care of the Mississippi River. As we move forward, Benjamin encouraged partners to be cognizant of what has worked well over the years in terms of ecosystem restoration and those things that have not worked well – e.g., there has not been an ecosystem restoration program on the Lower Mississippi River. Benjamin expressed her hope that people will be willing to come together to develop the best strategy for the river and move forward to advance that strategy in collaboration. Mayor Kabat echoed Benjamin's sentiment, adding that the mayors came together and formed MRCTI to raise awareness of the river's importance. Mayors want to coalesce around the best ideas and stand ready to do their part.

FLOODS and PRECIP Act

Bill McCormick said the Flood Level Observation, Operations, and Decision Support (Floods) Act was passed in the Senate in 2020 and was introduced in the House but did not advance. Section 12 of that measure included \$3.5 million appropriation in FYs 2021 through 2030 for updates to the Atlas-14 tools. The Providing Research and Estimates of Changes in Precipitation (PRECIP) Act was drafted last fall by the House Science Committee but was not formally introduced.

McCormick explained the PRECIP Act provisions as follows:

- A National Academy of Sciences study to evaluate the best methodologies for nonstationary (climate change) analyses, including for:
 - Improving precipitation frequency estimates (same language as FLOODs Act)
 - Improving probable maximum precipitation estimates to include nonstationary assumptions
 - Establishing national guidance for developing probable maximum precipitation estimates
- Consistent and regular updates to precipitation frequency estimates at a national level

The existing funding approach has resulted in a piecemeal and regional approach for Atlas-14.

 Renewed probable maximum precipitation (PMP) rainfall estimates that reflect recent storm events

NOAA's probable maximum precipitation (hydrometeorlogical reports) program, implemented from the 1960s to mid-1990s, used information at that time on large storms that had been recorded. Available reports for Upper Mississippi River states were published between 1973 and 1982 and are largely outdated given the number of significant storm events that have occurred since then.

 A national standard of practice for allowing private contractors to conduct site-specific studies for critical projects in a consistent and repeatable way

Some states across the country have hired private consultants to update the estimates, but without a federal standard, the results are not usable by federal agencies and do not allow for statistically combining estimates among neighboring states.

McCormick said the PRECIP Act estimated cost is about \$83.5 million, with \$1.5 million for the National Academy of Sciences study, \$35 million for the precipitation frequency analysis, and \$47 million for the probable maximum precipitation analysis. Based on recent dam failures alone, McCormick concluded that the return on investment associated with the PRECIP Act would be significant and worth the effort. Supporting organizations to-date include the American Society of Civil Engineers (ASCE), Association of State Dam Safety Officials (ASDSO), Association of State Floodplain Management (ASFPM), and Interstate Council on Water Policy (ICWP). McCormick is scheduled to brief the Western States Water Council (WSWC) on March 24, 2021.

Caroline Sevier said ASCE will be releasing a new infrastructure report card next week and is working on a follow-on "solutions summit." Sevier said the FLOODS Act was passed in the Senate in 2020 by

unanimous consent, but there was not enough remaining time in the calendar year to get it on the House floor and through both chambers. ASCE continues to work with Congress this year on the FLOODS Act as well as the PRECIP Act. Both bills are on track to be introduced within the coming week. Sevier explained the sponsors and planned logistics for moving the measures forward through Congress. ASCE is focusing on educating members of Congress regarding the importance of these measures and building a coalition with other stakeholder groups. It remains unknown whether this bill might move as a stand alone legislation or attached to a broader infrastructure package.

NASA Carbon Monitoring System

Acknowledging the significant agroecosystems in the Upper Mississippi River basin and the nutrient transportation to the Gulf of Mexico, Xuesong (John) Zhang discussed general concepts regarding how climate change (increases in extreme precipitation and storm surge) would likely result in increased runoff and subsequently water contamination in the Mississippi River. Additionally, Zhang described USDA's Soil and Water Assessment Tool (SWAT) to better understand and quantify water quality challenges (e.g., sedimentation, nutrients, and hypoxia) in the Upper Mississippi River basin resulting from climate change.

Zhang explained that the University of Maryland, with funding provided by NASA, is developing a model to quantify the coupled terrestrial and aquatic carbon cycle. Climate science assumes that there is a substantial carbon sink that is not yet known. While it has been assumed that the unidentified sink lies within the terrestrial ecosystem, a more likely explanation is that the sink is within inland waters – i.e., inland waters can emit large amounts of carbon but also can sequester significant carbon. The purpose of the research is to better understand and quantify the magnitude of those fluxes and better integrate terrestrial and inland waters carbon modeling. The results may be able to explain how land and water conservation efforts to mitigate nutrient pollution can also alter the carbon cycle and associated ecological and human health impacts.

Zhang said the research is focused on developing algorithms to simulate carbon cycling and transportation of carbon from land to riverbeds, and leverage existing carbon cycling modeling. The University of Maryland is hoping to have the results finalized in 2023 to support the USFWS Upper Mississippi River National Wildlife and Fish Refuge's Water Resource Inventory and Assessment (WRIA) as well as other ongoing activities in the basin.

Kelly Wickland explained the use of carbon isotopes to evaluate the sources and processes of organic and inorganic carbon. Through this research, USGS found that the mainstem Upper Mississippi River is slightly net heterotrophic (annually across seasonal differences) although dams and reservoirs shift the river system towards autotrophic processes.

Wickland explained that certain types of aquatic carbon maintain a signature of land cover/land use (LC/LU) source while other types of carbon reflect the variable rates of photosynthesis and respiration occurring at different locations. Dissolved organic carbon (DOC) composition is highly correlated with LC/LU, allowing for differentiating species among subbasins. For example, DOC found in the Chippewa River basin dominated by forest cover was distinct from DOC found in the Minnesota River basin dominated by agriculture. The oldest DOC found was from the Minnesota and Upper Mississippi Rivers, likely a signal of influence of wastewater inputs.

Particulate organic carbon composition varied widely across the eastern rivers, transitioning from aged, terrestrial signal linked to soil erosion in the Minnesota River to a modern, instream algal production

signal measured in places like the Mississippi River at Wabasha. Dissolved inorganic carbon composition integrates the influence of both photosynthesis and respiration of organic matter. There is a clear distinction between respiration-dominated signal in the Chippewa and St. Croix Rivers and a photosynthesis-dominated signal in Minnesota River and Mississippi River at Wabasha. This reveals the differences in the relative dominance of these processes across the system.

Ultrahigh-resolution mass spectrometry is a powerful tool that allows to see whether carbon molecular composition in stream varies between watersheds with differing dominant land cover. Three main conclusions included:

- Dissolved organic matter molecular diversity is higher in agriculture and urban watersheds than forested watershed
- Most compounds are associated with a certain land cover
- Small amount of compounds that were unique to one type of land cover

Wickland also explained a laboratory experiment to quantify the spatial and seasonal variability of carbon processing rates. The results concluded that the highest degradation rates occurred in winter and spring and the lowest degradation rates in summer and fall.

Wickland concluded by observing that insights from these types of studies help to constrain and verify carbon cycling models. Because carbon, nitrogen, and phosphorus are coupled, these studies have the potential to improve overall understanding of the system drivers of water quality.

Sabrina Chandler offered her appreciation for the work and the potential that it could bring to river basin management.

America's Watershed Initiative

Kim Lutz provided a brief background on the America's Watershed Initiative, and described its recent efforts to publish a 2020 report card that evaluates the condition of the Mississippi River watershed's sectors. Lutz explained the structure of the report and its findings.

Overall, the report card gave the watershed a grade of C-. The most pressing challenges to the watershed that are described in the report focus on nutrient runoff, flood frequency, aged infrastructure, water supply, and economic diversity. The Upper Mississippi River was rated C, mostly due to a low water quality score as a result of high nutrient runoff, increasing flood frequency, and lower lock delays in comparison to historical data.

Lutz said America's Watershed Initiative is considering additional indicators reflecting the value of the energy sector within the basin. The report card explains the value for natural infrastructure solutions to advance multi-purpose projects, but that more cross-sector coordination is required. America's Watershed Initiative's next steps include communicating shared values across the basin, measuring progress towards shared goals, advancing integrated watershed planning, and elevating basin champions.

2021 Spring Flood Outlook

Jessica Brooks said NWS's forecasts for potential flood risk on the Upper Mississippi River in spring 2021 is generally near normal but slightly above normal for minor flooding downstream of the Quad Cities based on the following factors:

- Snowpack is well above normal from Iowa into southern Wisconsin and northern Illinois while areas upstream are averaging below normal snowpack conditions.
- Warm temperatures through January 2021 combined with a deep snowpack to insulate the ground has kept frost depths shallow when compared to normal. Recent cold has caused further freezing.
- Near to below normal soil moisture regionally and shallower than normal frost depth will reduce the flood risk as well as the risk for longer term flooding.
- Watersheds with deep snowpack as well as higher soil moisture will see an increased risk for flooding, but the degree of flooding will depend on the rate of snowmelt in combination with spring rainfall.

Administrative Issues

Election of Officers

Kirsten Wallace thanked Steve Galarneau for his service as Board Chair over the past year, particularly as the quarterly meetings and other UMRBA partner meetings moved remotely. Steve Galarneau moved and Tim Hall seconded a motion to nominate Dru Buntin to serve as UMRBA Chair, Tim Hall to serve as UMRBA Vice Chair, and Jason Tidemann to serve as UMRBA Treasurer. All three motions carried unanimously by voice vote.

Future Meeting Schedule

May 2021 — Remote

- UMRBA quarterly meeting May 25
- UMRR Coordinating Committee quarterly meeting May 26

August 2021 — Remote

- UMRBA quarterly meeting August 10
- UMRR Coordinating Committee quarterly meeting August 11

November 2021 — TBD

- UMRBA quarterly meeting November 16
- UMRR Coordinating Committee quarterly meeting November 17

With no further business, the meeting adjourned at 3:05 p.m.

ATTACHMENT B

Executive Director's Report

- Executive Director's Report (B-1 to B-4)
- UMRBA WRDA 2020 Implementation Guidance Letter (5/7/2021) (B-5 to B-9)
- ICWP USGS Streamgaging Program Appropriations Request Letter (4/14/2021) (B-10 to B-14)'
- UMRBA Resilience Planning Partnership Letter (3/19/2021) (B-15 to B-18)
- USACE Response to UMRBA's Resilience Planning Partnership Letter (5/10/2021) (B-19 to B-20)
- UMR Spills Group Strategic Planning Scoping Framework (B-21 to B-23)
- Treasurer's Quarterly Statement (5/18/2021) (B-24)
- FY 2021 Budget Report and Balance Sheet (5/18/2021) (B-25 to B-27)



Executive Director's Report May 2021

WEBSITE

On April 27, 2021, UMRBA launched a new web presence. The primary goal was to create a more accessible, useful resource for you to find information on the river, the ongoing and historic programs and projects, and UMRBA's current events and upcoming meetings. Staff will continue to expand website content, particularly with information about the river ecosystem, economy, and people who live along the river, and work to improve it.

ADVOCACY

Water Resources Development Act

On May 7, 2021, UMRBA submitted comments with respect to the Corps' implementation guidance for provisions in the Water Resources Development Act of 2020. In the letter provided on pages B-5 to B-9 of the agenda packet, UMRBA requests that:

- The Administration place a higher priority on financing NESP
- Resolve liability issues associated in the project partnership agreements
- Convene a representative team of interdisciplinary and interagency experts from the Upper Mississippi River and other regions across the country
- Employ a Section 729 planning process to enhance floodplain resilience related to floods, droughts, and sediment with UMRBA as the cost-share sponsor

Additionally, UMRBA lays out specific questions or considerations related to policies related to beneficial use of dredged material.

USGS Streamgaging Program

On April 14, 2021, the Interstate Council on Water Policy (ICWP) sent letters to Congress seeking support for USGS's streamgaging program. In particular, ICWP requested FY 2022 appropriations of \$28.7 million for federal priority streamgages, \$33 million for cooperative matching funds, and \$28.1 million for the next generation water observing system and data delivery modernization. The letter is provided on pages B-10 to B-14 of the agenda packet.

Navigation and Ecosystem Sustainability Program

UMRBA staff joined Waterway Council's meetings with key Congressional staff in Minnesota and Wisconsin requesting a construction new start in FY 2022 for the Navigation and Ecosystem Sustainability Program (NESP). Additionally, UMRBA staff briefed Sen. Tammy Baldwin's staff regarding the forestry condition in the Mississippi River in Wisconsin and NESP potential opportunity to protect and restore forest health.

UMRBA staff attended the Corps' May 21, 2021 public meeting regarding the NESP L&D 22 fish passage tentatively selected plan.

ECOSYSTEM HEALTH

Upper Mississippi River Restoration

Per its annual support services agreement, UMRBA continues work on the program's 2022 Report to Congress, LTRM strategic planning, and third decadal status and trends report public rollout, among other initiatives.

UMRBA staff attended UMRCC's March 15-19, 2021 annual meeting, UMRR's LTRM March 30-31, 2021 biennial meeting, and the Mississippi River Research Consortium's April 22-23, 2021 meeting.

Water Level Management

UMRBA hosted a March 10, 2021 WLM Regional Coordinating Committee meeting. Participants reviewed the Corps' estimates of dredging needs, acres exposed, and success rates of water level management in each of the UMR pools and at different drawdown levels.

UMRBA and the Corps hosted a series of water level management in mid-May using the structured decision-making facilitation method to clarify ecological objectives for employing water level management as a management tool. Funding for the workshop was provided through the Corps' Sustainable Rivers Program, the Upper Mississippi River Restoration program, and partners' in-kind staff contributions.

UMRBA hired a GIS intern to help quantify ecosystem benefits from water level management with funding for the intern provided by the Missouri Department of Conservation.

FLOOD, SEDIMENT, AND DROUGHT PLANNING

Keys to the River 2020 Report

UMRBA requested public comments on an April 29, 2021 draft version of the Keys to the River Report in a written format by May 18, 2021 as well as orally during the May 25, 2021 quarterly meeting. The UMRBA Board hosted two webinars to provide stakeholders with an overview of how the report ideas were identified and developed. This included background information leading up to the report planning process.

Section 729 Planning Authority

UMRBA sent a letter of intent to partner with the Corps in development of long term resilience plans for managing floods, droughts, and sediment. The letter, sent on March 19, 2021, also requests more information on the Section 408 analysis informing the reinstatement of levee districts on the Upper Mississippi River into the P.L. 84-99 program. In response, the USACE Civil Works Director Al Lee expressed the Corps' mutual commitment to "utilizing an integrated water resources approach to further river management activities" and discussed the Corps' ongoing efforts to advance UMRBA's priorities. Both letters are provided on pages B-15 to B-20 of the agenda packet.

Beneficial Use Working Groups

As an outgrowth of the report, the MVP and MVR Districts formed beneficial use working groups. UMRBA staff attended the groups' first joint meeting on April 11, 2021. The purpose was to discuss the establishment of the working groups, identify appropriate participants, and define a path forward.

NIDIS Drought Planning Platform

NIDIS recently launched a relaunch of its drought.gov website that includes interactive features designed to help planners better visualize and understand drought conditions, outlooks, impacts, and available resources. NIDIS initiated its second phase of the drought.gov website development to add state-of-the-art resources to help planners build long term resilience to future drought events. UMRBA participated on NIDIS's April 28, 2021 virtual meeting to preview the website's capabilities and to talk about potential interest in using the new tools for long term resilience planning.

HAZARDOUS SPILLS COORDINATION, MAPPING, AND PLANNING

Oil Pollution Act (OPA) Planning and Mapping

UMRBA staff have completed the Illinois statewide Inland Sensitivity Atlas (ISA) update. Data collection and verification continues for the Wisconsin statewide ISA update, with focus on marinas and special designated areas.

Staff incorporated updates for Illinois into a regional geodatabase as well as updates for Indiana and Michigan with information from the Great Lakes Commission. UMRBA delivered the geodatabase to USEPA Region 5 on May 3, 2021.

Staff participated in Mapping Group conference calls on March 8, May 3, and May 10, 2021. Staff will hold discussions with USEPA Region 5 on May 24 and 27, 2021 about new data development methods and potential additional planning project work.

Staff took part in sub-area planning calls for Greater St. Louis on March 17, 2021 and the Quad Cities on March 25, 2021. UMRBA has continued to support sub-area planning work as requested by USEPA.

UMRBA participated in the Regional Response Team 5 semi-annual subcommittee and general meetings on April 14-15, 2021.

Strategic Planning

The UMR Spills Group has initiated planning process to develop a five-year strategic plan for the purposes of "position[ing] the UMR Hazardous Spills Coordination Group (UMR Spills Group), including UMRBA staff, to effectively increase the prevention of, and preparation for, spills of hazardous materials as a means to maintain the multiple uses of the river." The first strategic planning session was convened virtually on April 21, 2021. The next planned meeting is scheduled for June 9, 2021 and will also be held remotely. A scoping framework for the strategic planning process is provided on B-21 to B-23 of the agenda packet.

WATER QUALITY

Nutrient Reduction Progress Tracking

On April 9 and April 13, 2021, UMRBA hosted a workshop on progress tracking related to the states' implementation of their respective nutrient reduction strategies. The purpose was to facilitate focused conversation on the following four topics related to progress tracking: measuring nutrient reduction from BMP implementation, capturing private investment in BMPs, monitoring water quality to detect changes in nutrient reduction, and incorporating new datasets.

Ongoing Work

UMRBA and Illinois, Iowa, and Missouri continue implementing the Interstate WQ Monitoring Plan Pilot in CWA Reaches 8-9. Participating agencies are preparing to initiate probabilistic sampling starting in July 2021.

Other

UMRBA staff participated in the following regional and national meetings and events:

- April 6-8, 2021 USEPA National Recreational Water Quality Workshop
- April 27-28, 2021 NOAA HAB Preparedness and Response Workshop
- April 29, 2021 USEPA Region 5 HABs conference call

INTERBASIN WATER TRANSFERS

On March 25, 2021, the UMRBA Board joined the *ad hoc* UMRB Diversion Charter review team's meeting to talk jointly about the out-of-basin diversion scenario planning exercises. Additionally, Landon Marston from Virginia Tech, discussed ongoing research into out-of-basin diversions throughout the country at the HUC-4 scale. Since then, the *ad hoc* group has been scoping the individual scenarios that will be presented to the UMRBA Board for further refinement.

COLLABORATION

Interstate Council on Water Policy

Kirsten Wallace continues to serve as Chair of the Interstate Council on Water Policy (ICWP), which hosted its annual Roundtable on April 15-16, 2021. The Roundtable included panel discussions regarding federal water and climate programs, including detailed presentations from NOAA (NWS, NIDIS), USGS, USACE, USEPA, and CEQ as well as Congressional water-related committees.

ICWP finalized its strategic planning for the next five years. The strategic planning sessions have focused on ICWP's mission for meeting the needs of states' and interstate organizations' work on water planning.

America's Watershed Initiative

The America's Watershed Initiative (AWI) published its second report card of the Mississippi River watershed on December 8, 2020. AWI spent the past couple months seeking input from stakeholders on the report card's effectiveness, including its indicators and communications. UMRBA staff participated on the April 15, 2021 webinar focused on indicators within the Upper Mississippi River.

FINANCIAL REPORT

Attached as page B-24 is UMRBA Treasurer Jason Tidemann's statement regarding his review of UMRBA's financial statement for the period of January 1, 2021 to May 4, 2021.

Attached as pages B-25 to B-27 are UMRBA's FY 21 budget report and balance sheet. As of May 18, 2021, ordinary income for FY 21 totaled \$553,887 and expenses totaled \$508,730 for net ordinary income of \$45,157. As of this date, UMRBA's cash assets totaled \$877,343.



May 7, 2021

Honorable Jaime Pinkham Assistant Secretary of the Army (Civil Works) 108 Army Pentagon Room 3E446 Washington, DC 20310-0108

Dear Secretary Pinkham:

The passage of the 2020 Water Resources Development Act (WRDA) reinforced Congress' commitment to integrated, multipurpose management on the Upper Mississippi River and water resources across the nation. In the same action, Congress supported the region's goals for improving disaster preparedness, economic growth and resilience, and ecological health on the Upper Mississippi River. This includes:

- Substantially increasing the annual authorized appropriation for the Upper Mississippi River Restoration program
- Alleviating constraints to the Inland Waterways Trust Fund that will fund the Navigation and Ecosystem Sustainability Program (NESP)
- Removing the largest policy impediment to beneficial use of dredged material i.e., modifying the Federal low-cost standard
- Authorizing the construction of GLRMIS construction for a total cost of \$858 million as well as the Grand River Basin ecosystem restoration project in Iowa and Missouri and the Meramec River Basin ecosystem restoration project in Missouri

On behalf of the Upper Mississippi River Basin Association (UMRBA), I am writing to offer our input for your consideration as you develop guidance for implementing the provisions authorized in WRDA 2020. UMRBA is a five-state organization representing the joint perspectives of the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin with members from the states' departments of agriculture, natural resources, transportation, environmental protection, and economic development. Since its inception in 1981, UMRBA has served as the dedicated regional forum for our five states to remain informed and engaged on Upper Mississippi River issues in partnership with the U.S. Army Corps of Engineers and other federal agencies with river-related management responsibilities.

Page 2 May 7, 2021

Inland Waterways Trust Fund — We are pleased by the adjustment of the Inland Waterway Trust Fund cost share allocation to inland waterway lock construction and major rehabilitation projects. We believe it will help ensure that the Upper Mississippi River and nation's inland waterways are able to reliably and efficiently serve an integral role in domestic and international transportation. But, federal investment in the nation's waterways infrastructure must be equitable. There is dismaying discrepancy between the Upper Mississippi River System's contributions to the Inland Waterways Trust Fund and the return investment in the river's infrastructure. UMRBA respectfully requests that the Administration place a higher priority on financing the Navigation and Ecosystem Sustainability Program for the Upper Mississippi River System.

Project partnership agreements — In advancing our shared commitment to multi-use management, the states and Corps Districts work collaboratively to develop solutions through sound water resource projects. In addition, local communities and nonprofit organizations also serve as key partners in sponsoring water resource solutions constructed by the Corps. However, implementing the solutions that involve the states or other nonfederal entities serving as cost-share sponsors is impeded, or are dramatically slowed, by the terms required in the cost-share project partnership agreements (PPAs).

The key impediments include the terms requiring the nonfederal sponsor to assume complete liability for constructed projects (except for when fault or negligence is proven) and operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) in perpetuity. These terms are simply not reasonable and are not acceptable to many states, local communities, and nonprofit organizations. At a fundamental level, the current PPA terms conflict with many states' constitutions and tort law. There are examples of lost opportunities with nonfederal project sponsors to complete ecosystem restoration projects due to the very one-sided PPA terms.

We understand that Congressional action is required to remove the indemnification requirement, and therefore, encourage the Administration to participate actively with Congress, UMRBA, and other nonfederal sponsors to seek a legislative solution to shared liability. We understand that the Corps has discretion to provide a clear termination date for the OMRR&R responsibilities. Section 143 of WRDA 2020 directs the Corps to include a brief description and estimation of the anticipated OMRR&R costs for nonfederal sponsors in the project partnership agreements. We respectfully request that the provision also include a defined end-term based on the expected useful life of the project's construction features – i.e., match the 50-year project design life.

In addition, we also suggest that a provision be added providing greater specificity regarding adaptive management to address risk and uncertainty with respect to achieving project outcomes as well as the need and ability to perform OMRR&R obligations dependent on whether the project features perform as intended.

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Congress has attempted to facilitate nonfederal cost share projects by alleviating the problematic provisions of the project partnership agreements in the 2014, 2016, 2018, and 2020 WRDAs. The National Academy of Public Administration published a November 2018 report evaluating the Corps' public project partnership agreements. Chapter 3 of that report includes the perspectives of nonfederal sponsors in partnering through the PPAs.

Beneficial Use of Dredged Material — Increasingly in recent years, the Corps has undertaken emergency measures to reopen or maintain the navigation channel as a result of channel conditions. Emergency situations are costly to industry and the taxpayers, place the states in difficult, reactive positions of having to expedite environmental reviews, and create undue impacts on communities and environmental resources. The lack of places to put dredged material often results in channel constrictions and, sometimes, imminent closures. Many permanent placement sites previously used within the Mississippi River are at capacity. In addition, several existing island transfer sites have limited remaining capacity. Dredged material placed at island transfer sites will need to be offloaded to permanent sites prior to reaching capacity limitations that could result in channel restrictions or emergency dredging events in the future. This issue of limited capacity is severe throughout the Upper Mississippi River System. It is becoming a more pressing issue as flooding events occur more often.

UMRBA's member states believe that securing innovative and effective ways to utilize dredged material for public or private use can minimize the amount of the material needing to be stored temporarily or permanently. Beneficial use as a consistent, dependable, and actionable strategy could greatly expand the system's capacity to accommodate large sedimentation events while also avoiding, minimizing, and/or mitigating social and environmental impacts of dredging operations and material placement. This approach will extend the lifespan of existing Corps' facilities and reduce the need for land acquisition over the long term.

We applaud District staff who have done a tremendous job of working within significant resource constraints to maintain a safe and reliable navigation system. We understand the complex and challenging issues with having to manage the dredged material and we want to work collectively to transition from reactive to proactive and strategic channel maintenance and management strategies. That includes moving from opportunistic beneficial use to planned beneficial use, where those partnerships are arranged and integrated into channel management schedules.

We understand the tremendous opportunity in Congress' change to the Federal standard calculation – not only for the Upper Mississippi River but for the coasts, Great Lakes, and rivers across the country. We see implementation guidance as particularly important to ensuring that beneficial use can play a significant role in the river's long term resilience to sedimentation as well as in advancing integrated river management. Therefore, we respectfully request that a representative team of interdisciplinary and interagency experts from the Upper Mississippi River and other regions across the country serve on a team to

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consider implementation guidance. UMRBA would welcome the opportunity to participate in such a dialogue.

Given the numerous project types and unique ecological and social factors throughout the country, we encourage the Corps to consider how to balance the need for long term flexibility with the necessary direction that Districts will require. UMRBA understands that the policies related to beneficial use are complex, including methods for calculating environmental and economic benefits and efficiencies. We want to offer a few observations of beneficial use limitations as examples:

- The use of dredged material for ecosystem restoration projects is often omitted because such projects cannot generally accommodate a full 40-year dredging volume.
- The Corps' real estate policies and procedures inhibit beneficial use in two fundamental ways: 1) the requirement for placement activities to occur on lands owned in fee-title deters willing landowners who offer good beneficial use opportunities and 2) beneficial use options must be included in a planning document and identified as being within the federal interest to pursue. These two things result in an inability to be opportunistic with respect to beneficial use. We encourage implementation guidance that provides an approach for amending the planning documents, in consultation with the states and other agency partners, to incorporate beneficial use opportunities as they arise and are found to be in the Federal interest.
- The federal standard changes over the course of a plan or even the span of an individual beneficial use project as a result of "newer" alternative options and changes to placement sites i.e., the federal standard included in a dredged material management plan cannot be used as a "not-to-exceed" value. We believe that there should be a balance between allowing for new alternatives to be considered or options that were once too expensive to be reevaluated over the course of a plan while maintaining a manageable planning process. We encourage the use of a suite of metrics involving environmental and social benefits to allow for the appropriate flexibility in the plans to reflect the reality of changing costs and new alternatives.
- Accounting policies and procedures (e.g., cost categories) do not provide for an allowable comparison of beneficial use projects with standard dredged material placement activities
 e.g., unique handling requirements or stabilization measures. We would encourage a review of those accounting practices to operationalize the beneficial use of dredged material.

Floodplain Resilience Planning — We are pleased by Congress' support for the Corps' Section 729 planning authority to advance resilience planning on the Upper Mississippi River System. UMRBA would be the cost-share sponsor of the Section 729 study as directed by Congress in Section 214 of WRDA 2020. UMRBA is interested in using the planning authority to develop integrated, systemic plans to managing floods, drought, and sediment in the Upper Mississippi River System floodplain. We believe that it will be important to consider the changing weather, landscape, hydrology, and geomorphology as

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well as the region's economic, social, and ecological values when advancing each of the following specific objectives:

- Develop an integrated, comprehensive, and systems-based plan to minimize the threat to health and safety resulting from flooding by using structural and nonstructural floodplain management measures
- Develop new, or renew existing, comprehensive long-term channel management plans that are sustainable, cost-effective, and ecologically sensitive
- Develop mitigation strategies for multi-year drought events that would increase the resilience of communities and economies adjacent to, or dependent on, the Upper Mississippi and Illinois Rivers

For decades, UMRBA and its five member states have worked hand-in-hand with the Corps and our other federal partners as well as local communities, levee districts, industry, and conservation, labor, and commodity groups. The Corps has been a strong partner in the states' pursuit of integrated, balanced, adaptive, and collaborative management of the Upper Mississippi River System. The Corps has helped the states to foster a deeply-rooted culture of interagency partnership that has been critical in sustaining and enhancing the river's many economic, ecological, and social values.

We are eager to continue our partnership with the Corps in advancing integrated, multipurpose management of the Upper Mississippi River System. Please contact me or UMRBA's Executive Director Kirsten Wallace at 651-224-2880 to arrange an opportunity to discuss our request in more detail.

Sincerely,

Dru Buntin

Dru Buntin Chair Upper Mississippi River Basin Association

cc: Vance Stewart, Performing the Duties of ASA(CW) MG Diana Holland, MVD Commander Amy Franz, CEW-P

COALITION SUPPORTING USGS STREAMGAGE NETWORKS & MODERNIZATION

Senator Jeff Merkley, Chair Senator Lisa Murkowski, Ranking Member Senate Appropriations Subcommittee on Interior, Environment & Related Agencies 131 Dirksen Senate Office Building Washington, D.C. 20510

April 14, 2021

Regarding: WATER DATA & SCIENCE PROGRAM FUNDING Interior Department Appropriations for FY-2022

Summary of Coalition's Requests for FY 2022: Federal Priorities Streamgages is \$28.7 M Cooperative Matching Funds for Streamgage Network is \$33.0 M NGWOS and Data Delivery Modernization is \$28.1 M

Dear Senator Merkley and Senator Murkowski:

As leaders in the undersigned organizations, we urge your support to enable the US Geological Survey (USGS), an agency in the Department of Interior (DOI), to fully support its streamgaging networks. These vital networks, managed within the USGS Groundwater and Streamflow Information Program, provide critical, life-saving information and serve the national interest with continuous streamflow information at over 8,400 locations. Due to inadequate funding, gages supported by these necessary USGS programs are being discontinued annually, and our coalition is particularly concerned with the impact of the lack of resources over many years on the Federal Priority Streamgage network (details below). Maintaining and adding to the streamgaging networks is paramount to adequately quantify and manage the nation's critical water supplies and infrastructure. The members of our organizations rely on the streamgage data and science that USGS produces and many of us represent active, cost-share partners in funding the data collection that Congress and the federal agencies require. Data from streamgages provides necessary trend information and is the basis for understanding climate science and for making modeling and forecasted predictions about how climate change may impact our nation's total water supply and timing of its availability. Streamgage information is also critical for natural resource decisions made on U.S. Indian Reservations and for determining environmental impacts to disadvantaged communities throughout the nation.

Data and information from these valuable streamgages are utilized by emergency responders, water supply managers, water quality administrators, recreationists, consulting engineers, and many others in forecasting and response during floods, droughts, and other extreme events, design of bridges and other infrastructure, energy generation, management of federal lands, design and operation of federal reservoirs and navigation infrastructure. These networks provide critical information to other agencies of the DOI and to the U.S. Army Corps of Engineers, NOAA, FEMA, EPA, USDA, and other federal agencies, as well as providing information essential to Congressional oversight and revision of many federal laws, including the Clean Water Act, Safe Drinking Water Act, Endangered Species Act, and many interstate river basin compacts and international treaties.

Federal Priority Streamgage (FPS) Network (formerly referred to as the National Streamflow Information Program, "NSIP"): Authorized by Congress in 2009, to operate and maintain a stable "federal backbone" network of streamgages to meet five specific national needs for streamflow information at (1) interstate and international boundaries, (2) National Weather Service flood forecast sites, (3) outflows of major river basins, (4) "sentinel watersheds," needed to evaluate and anticipate the potential consequences of ongoing changes in American land use, water use, climate etc., and (5) national priority water-quality monitoring sites. Our national ability to collect sufficient water data at the needed locations to answer the necessary federal, state, tribal, local, business and NGO questions is seriously compromised by the insufficient funding for the FPS Network.

The budget for the FPS Network has been flat since 2016, yet operational costs of the network nationwide have grown by approximately 1%-3% per year since 2016 due to increases in salary, travel, equipment, and communication costs. Historically, these cost increases have been covered by 1) USGS partners, where gages are jointly funded, or 2) delaying planned network enhancements. Network enhancements include cyclical upgrades to equipment (e.g. for monitoring, telecommunication, and data transmission) to ensure sites meet requirements for successful data collection and transmission, as well as activities to flood-harden existing FPS sites. However, after 5 years of flat funding, the USGS reached a tipping point where network enhancements could no longer be delayed and operational costs continued to increase another 1%-3%. With these considerations in mind, the shortfall of approximately \$0.5M between the FPS funding needed to cover costs in 2021 (\$25.2M) over what was available in the enacted 2021 funding levels (\$24.7M) resulted in 29 gages being discontinued. If no increase is made in the program's budget for FY2022, another 33 additional gages (62 total) will be at risk for being discontinued. Of our requested amount for the FPS, \$1.25 M is based on the need to re-instate these lost gages (\$20K/gage x 62 gages lost).

Also, contemporary water management issues such as ecological flows were not considered when the original national criteria were developed for the Network. Additional funding would begin to meet these needs. Today, only 25 % of the Federal Priority Streamgages are fully funded by the federal government. The USGS is unable to complete development of the Network, as Congress directed in 2009, without additional funding. Full implementation of the Federal Priority Streamgage Network is estimated at \$130M. Requested Funding Level for Federal Priorities Streamgages is \$28.7 M for FY 2022 to begin to address the critical shortfall for the FPS network and to reinstate gages discontinued since 2016.

<u>Cooperative Matching Funds</u>: The USGS works with over fourteen hundred partners nationwide (federal, state, tribal, local, and NGO) using Cooperative Matching Funds to jointly support USGS streamgages, many of which meet the criteria of the FPS Network. This matching program, which began as a 50-50 program, has seen the federal cost-share contribution decrease from 50 % to less than 30 %. Given the ability for this program to enable and encourage the expansion of vitally needed streamgages on a two for one (or greater) cost basis, an increase over the FY2021 level of \$29.6 M will allow for an expansion beyond the 5,273 streamgages currently covered under this program. **Requested Funding Level for Cooperative Matching Funds for Streamgage Network is \$33M for FY2022.**
Related Programs within the USGS Water Mission Area-- Next Generation Water Observation System (NGWOS) and Modernization of the Networks and Data Delivery: Our coalition very much appreciates Congress' recent support of NGWOS and modernization efforts. Build-out of this innovative program will provide focused monitoring in ten basins nationwide to better calibrate modeling, thus improving the ability to estimate water supply in the nation's many ungaged areas. Additional gaging stations added in the NGWOS basins supports the goals of increasing gages nationwide under the FPS Network and through Cooperative Matching Funds. We are supportive of the modeling and predictive analytical work being developed by the USGS. A robust network of physical gages is crucial to the calibration of many models (including NOAA's National Water Model and those developed by others); however, this coalition's primary support remains directed toward adequately supporting, invigorating and expanding the real-time stream gages across the U.S. A recent quote from USGS is illustrative on the continued need for physical streamgages to calibrate innovative modeling efforts:

"Looking nationwide, there are about 10,000 streamgages, but that is only about three one hundredths of one percent of the Nation's stream reaches. When we talk about groundwater, it is even more sparse. <u>As models and predictive capabilities have advanced over the years, we're starting to exceed</u> <u>in the modeling what we have observations to support.</u> The density of observations starts to get too low to calibrate and validate the new high-fidelity models that we need to project what water will look like in the next few weeks to the next few years."

Requested Funding Level for NGWOS and Data Delivery Modernization is \$28.1 M to enable additional pilot basins to be added to the NGWOS program and to allow USGS to continue to modernize water data delivery systems that benefit all water users across the nation. An increase of \$3.6M in FY2022 over FY2021 amount of \$24.5 would allow USGS to stay on the planned NGWOS implementation track – Operation & Maintenance for the Delaware River Basin network, complete capital monitoring investments in the Upper Colorado River basin, implement about 65% of monitoring investments in Illinois River basin, begin preliminary work in Basin #4 and continue critical NWIS modernization activities

For additional, independent analysis of the USGS' needs for supplying the nation's water science, we encourage you to review the recently released "U.S. Geological Survey (USGS) Streamgaging Network: Overview and Issues for Congress" Report (R45695) by Anna Normand at the Congressional Research Service (released March 2, 2021). The report provides many more funding details and ramifications in its 28 pages, including impacts to the streamgaging program budgets in nominal dollars. The full Report can be found at: https://crsreports.congress.gov/product/pdf/R/R45695

With your help and continued support, Congress can enable the USGS to fulfill its Water Resources Mission Area goals, including working toward full implementation of the Federal Priority Streamgage Network, adequately funding the Cooperative Matching Funds for streamgaging and moving water science into the 21st century through much needed modernization upgrades. Meaningful climate change and adaptation work cannot be completed without the hydrologic knowledge gained from our Streamgage networks.

We are happy to answer your questions or provide additional information; please contact any of us or Sue Lowry at the Interstate Council on Water Policy (Sue@ICWP.org_or 307-630-5804).

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Organizations Signing	on to FY 2022 Streamgage	Support Letter (April 14, 2021)
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Organization	Signor	Title
American Fisheries Society	Drue Winters	Policy Director
American Rivers	Ted Illston	Senior Director-Policy
American Society of Civil Engineers	Thomas W Smith	Secretary & Exec Dir
American Water Resources Association	Dresden Farrand	Executive VP/CEO
American Water Works Association	Tracy Mehan	Exec. Dir./Gov't Affairs
American Whitewater	Mark Singleton	Executive Director
Appalachian Mountain Club	Susan Arnold	VP for Conservation
Association of American State Geologists	Rich Ortt	President
Association of California Water Agencies	David Reynolds	Director/Federal Relations
Association of Clean Water Administrators	Tom Stiles	ACWA President
Association of Fish & Wildlife Agencies	Jennifer Mock Schaeffer	Gov't Affairs Director
Association of Metropolitan Water Agencies	Diane VanDe Hei	CEO
Association of State Dam Safety Officials, Inc.	Lori C. Spragens	Executive Director
Association of State Floodplain Managers	Chad Berginnis	Executive Director
Association of State Wetland Managers	Marla J. Stalk	Executive Director
Bear River Commission	Don A. Barnett	Engineer-Manager
Big Hole Watershed Committee	Pedro Marques	Executive Director
Big Horn River Alliance	Anne Marie Emery	Executive Director
California Sportfishing Protection Alliance	Bill Jennings	Executive Director
Cascade Water Alliance	Ray Hoffman	CEO
CDM-Smith	Timothy D. Feather	Vice President
Cobb County-Marietta Water Authority	Glenn M. Page	General Manager
Colorado Lake & Reservoir Management Assn.	Kate Dunlap	President
Colorado River Salinity Control Forum	Don A. Barnett	Executive Director
Delaware River Basin Commission	Steven J. Tambini	Executive Director
Environmental Defense Fund	Steve Cochran	Assoc. VP/Coastal Resilience
Fly Fishers International	Patrick Berry	President & CEO
Freshwater Mollusk Conservation Society	Jeremy Tiemann	President
Great Lakes Observing System	Kelli Paige	CEO
Henry's Fork Foundation	Brandon Hoffner	Executive Director
Hydrological Services America	Peter Ward	General Manager
Idaho Rivers United	Nic Nelson	Executive Director
Idaho Water Users Association	Paul L. Arrington	Executive Director
Interstate Commission on the Potomac River Basin	Michael Nardolilli	Executive Director
Interstate Council on Water Policy	Kirsten Wallace	ICWP Chair
Kansas-Oklahoma Arkansas River Compact Comm.	Earnie Gilder	Federal Chair
KISTERS North America, Inc.	Becca Emery	Business Develop. Mngr.
Madison River Foundation	Jonathan Malovich	Executive Director
Metropolitan North Georgia Water Planning District	Katherine Zitsch	Director
Missouri Department of Natural Resources	Jennifer Hoggatt	Director/Water Res. Center
Minnesota Department of Natural Resources	Ann Pierce	Director/Ecol. & Water Res.
Montana DNRC	Anna Pakenham-Stevens	son Director
Montana Trout Unlimited	David Brooks	Executive Director
Montana Watershed Coordination Council	Ethan Kunard	Executive Director
North American Lake Management Society	Lisa Borre	President
Nat'l. Assoc. Flood & Stormwater Management Agencies	Susan Gilson	Executive Director
National Assoc. State Boating Law Administrators	John Fetterman	Director/Law Enforcement
National Audubon Society	Julie Hill-Gabriel	VP/Water Conservation
National Drought Mitigation Center	Dr. Mark Svoboda	Director

Organization	Signor	Title
National Ground Water Association	Terry S. Morse	CAE, CIC, CEO
National Hydrologic Warning Council	Bruce Rindahl	President
National Hydropower Association	Malcolm Woolf	President and CEO
National Society of Professional Surveyors	Curtis Sumner	Executive Director
National Water Resources Association	Ian Lyle	Executive Vice President
National Water Supply Alliance	Dave Mitamura	Executive Director
National Wildlife Federation	Melissa Samet	Sr. Water Res. Counsel
Nebraska Department of Natural Resources	Thomas E. Riley	Director
New England Interstate Water Pollution Control Comm.	Susan J. Sullivan	Executive Director
Ohio R. Valley Water Sanitation Commission	Richard Harrison	Executive Director
Oklahoma Water Resources Board	Julie Cunningham	Executive Director
Oregon Water Resources Congress	April Snell	Executive Director
Phycological Society of America	Eric W. Linton	President
Red River Compact Commission	Sue Lowry	Chairman
Republican River Compact Commission	Thomas E. Riley	Nebraska Commissioner
Rivers Alliance of Connecticut	Alicea Charamut	Executive Director
Society of Wetland Scientists	Loretta L. Battaglia	President
Susquehanna River Basin Commission	Drew Dehoff	Executive Director
The Nature Conservancy	Jimmy Hague	Sr. Water Policy Adv
Three Rivers QUEST	Melissa O'Neal	Associate Director
Tri-State Water Resource Coalition	Gail Melgren	Executive Director
Trout Unlimited	Steve Moyer	VP/Gov't Affairs
Upper Colorado River Commission	Amy Haas	Exec. Director/Secretary
Upper Mississippi River Basin Association	Kirsten Wallace	Executive Director
Upper Missouri Watershed Alliance	Sherry Meador	Board Chair
Washington State Water Resources Association	Tom Myrum	Executive Director
Water Environment Federation	Walter Marlowe	Executive Director
West Virginia Rivers Coalition	Angie Rosser	Executive Director
West Virginia Water Research Institute	Paul Ziemkiewicz	Director
Western Landowners Alliance	Lesli Allison	Executive Director
Western States Water Council	Tony Willardson	Executive Director
Wild Salmon Center	Cavlin Barter	Water Policy Pam Mngr
Wyoming State Engineer's Office	Greg Lanning	State Engineer
Wyoming Water Association	Jodee Pring	President
Yulem Analytics	Timothy A Grooms	Marketing Director
Ayıcın Anarytics	Thiothy A. Oroonis	Marketing Director

Attachments: USGS listing of Threatened gages due to budget shortfalls: <u>https://water.usgs.gov/networks/fundingstability/</u> Map of locations of USGS Streamgages across the nation: <u>https://maps.waterdata.usgs.gov/mapper/index.html</u>

Copy: Appropriations Subcommittee Members Secretary of the Interior Director, OMB Director, USGS



March 19, 2021

Mr. Al Lee U.S. Army Corps of Engineers, Headquarters Director of Civil Works 441 G. Street NW Washington, D.C. 20314-1000

Dear Mr. Lee:

On behalf of the Upper Mississippi River Basin Association (UMRBA), I am writing to express our readiness to partner with the U.S. Army Corps of Engineers (Corps) to develop long term resilience plans for managing floods, drought, and sediment. We share with the Corps similar goals for improving disaster preparedness, economic growth and resilience, and ecological health as well as many overlapping roles and responsibilities with respect to floodplain management, watershed management, and navigation.

UMRBA and its member states firmly believe in, and remain committed to an integrated approach to river management. In fact, UMRBA was founded as a means to foster integrated management among the river's multiple uses.

Enclosed is a fact sheet articulating UMRBA's perspectives for long term resilience planning. We believe that it will be important to consider the changing weather, landscape, hydrology, and geomorphology as well as the region's economic, social, and ecological values when advancing each of the following specific objectives:

- 1) Develop an integrated, comprehensive, and systems-based plan to minimize the threat to health and safety resulting from flooding by using structural and nonstructural floodplain management measures
- 2) Develop new, or renew existing, comprehensive long-term channel management plans that are sustainable, cost-effective, and ecologically sensitive
- 3) Develop mitigation strategies for multi-year drought events that would increase the resilience of communities and economies adjacent to, or dependent on, the Upper Mississippi and Illinois Rivers

We understand that the Assistant Secretary for the Army of Civil Works reinstated levee districts into the P.L. 84-99 program that had been subject to a Section 408 analysis regarding levee heights. Neither the appropriate states or UMRBA were consulted on the matter. We would appreciate knowing which levee districts were reinstated, the results of the Section 408 analysis, and the Corps' plans moving forward using the Section 729 planning authority. Page 2 March 10, 2021

Please contact me or UMRBA's Executive Director Kirsten Wallace at 651-224-2880 to arrange an opportunity to discuss our request in more detail.

Sincerely,

Dru Burtin

Dru Buntin Chair Upper Mississippi River Basin Association

cc: Vance Stewart, Performing the Duties of ASA(CW) Kelly Colyar, OMB Budget Examiner MG Diana Holland, MVD Commander

Enclosure: UMRBA Resilience Planning Fact Sheet



Contact: Kirsten Wallace, Executive Director (651) 224-2880, <u>kwallace@umrba.org</u>

Upper Mississippi River States Seek a Strategic, Integrated Path Forward for Managing Floods, Sediment, and Extended Drought

Managing floods, droughts, and sediment on the Upper Mississippi River System, with its vast geographic scale, tremendous economic productivity, and globally significant resources, presents extraordinary challenges and opportunities. Through UMRBA, the Governors' joint interstate collaborative, the states of Illinois, Iowa, Minnesota, Missouri, and Wisconsin are bringing together those who live and work in the floodplain to improve disaster preparedness, economic growth and resilience, and ecological health.

Purpose

- 1) Increase the economic, ecological, and social resilience of the Upper Mississippi River to major flood events, prolonged drought, and excessive sediment
- 2) Foster dynamic, balanced, objective, and adaptive approaches to flood, drought, and sediment management in a multi-purpose management context

Objectives

- 1) Develop an integrated, comprehensive, and systems-based approach to minimize the threat to health and safety resulting from flooding by using structural and nonstructural floodplain management measures
- 2) Develop new, or renew existing, comprehensive long-term channel management strategies that are sustainable, cost-effective, and ecologically sensitive
- 3) Develop mitigation strategies for multi-year drought events that would increase the resilience of communities and economies adjacent to, or dependent on, the river
- 4) Seek opportunities to support environmental sustainability, restoration, and water quality goals for the Upper Mississippi and Illinois Rivers
- 5) Accelerate efforts in the watershed that reduce the volume and rate of runoff to the Mississippi River

Action Priorities

Flood management	Drought management	Integrated actions
Build 2-D hydraulic modeling	Define drought characteristics	Assess economic vulnerabilities
Renew flow frequency profiles	Support interstate cooperation	Facilitate information exchange
Sediment management	Watershed management	
Maintain jurisdictional agreements	Improve climate prediction tools	
Market of dredged material	Invest in nutrient reduction strategies	
Facilitate beneficial use of dredged material		

Resilience Planning Questions

Substantial changes in land use throughout the Upper Mississippi River watershed compounded with climate-driven shifts in precipitation are threatening public safety and critical infrastructure, impeding the safety and reliability of commercial navigation, limiting the economic resilience of communities, industries, and agriculture and degrading fish and wildlife habitat in the river floodplain. Solutions will primarily focus on actions in the river-floodplain but will also illuminate where and how actions in the watershed would be most effective for improving the river's resilience.

- 1. Which tributaries and sub-watersheds have the greatest impact on the river's long term resilience?
- 2. How might current land use patterns in sub-watersheds and the river-floodplain be sustained or changed to enhance the river's long term resilience?
- 3. How might the river-floodplain be physically altered to enhance flood water storage and conveyance, sediment deposition, and drought risk reduction?
- 4. How can management actions minimize the economic and social vulnerabilities to flood, drought, and sediment?

Key Explanations

Informed Consent

The Upper Mississippi River involves a complex array of human uses and interactions that require thoughtful and inclusive dialogue among the diverse suite of stakeholder representatives throughout the region. Solutions reside in our ability to work together and integrate science-based knowledge of watershed and floodplain dynamics. Developing a commonly-held vision with shared goals, objectives, and implementation strategies that are regionally supported among stakeholders will require a collaborative, consent-based planning process to:

- a) Build understanding and mutual acceptance and empathy of the challenges affected interests face living and working in a highly dynamic river-floodplain and ideas for addressing local and regional issues
- b) Guide deliberations that foster productive discourse among affected interests and state and federal government agencies in the development of solutions and prioritization of investments
- c) Improve, leverage, and better utilize knowledge that is used to inform the deliberation of solutions
- d) Establish and maintain the legitimacy of the planning process, outcomes (including decisions and assumptions), and public and private agencies/entities that will work to advance the outcomes
- e) Motivate productive action that advances the path forward following the plan's acceptance

Next Steps (as of March 4, 2021)

UMRBA put together a summary of the actions and questions listed above into a draft "Keys to the River 2020" report, dated January 14, 2021. This is the first time in several years that action-oriented ideas and a description of geography and socio-political dynamics were provided in a written report as well as a recommended approach for long term resilience planning. UMRBA received incredibly insightful feedback from a several people and organizations and is now reviewing that feedback and considering ways to improve the report presentation and content. UMRBA will also be working with regional partners to develop a more detailed scope of work for implementing the actions and answering the questions listed above. This information will be provided at the UMRBA's May 25, 2021 quarterly meeting.

About the Upper Mississippi River Basin Association — The Upper Mississippi River Basin Association (UMRBA) is a five-state interstate organization formed by the Governors of Illinois, Iowa, Minnesota, Missouri, and Wisconsin to coordinate the states' river-related programs and policies and work with federal agencies that have river responsibilities. The UMRBA is structured as a 501(c) non-profit association, with the Board of Directors composed of all duly Governor-appointed representatives and alternatives. For more information about UMRBA, visit its website at www.umrba.org.



May 10, 2021

Mr. Dru Buntin, Chairman Upper Mississippi River Basin Association 7831 East Bush Lake Road, Suite 302 Bloomington, Minnesota 55439

Dear Chairman Buntin:

This is in response to your letter dated March 19, 2021, in support of developing a long-term resilience plan for managing floods, drought, and sediment in the Upper Mississippi River in partnership with the U.S. Army Corps of Engineers (Corps). You also expressed interest in the Assistant Secretary for the Army Civil Works (ASA(CW)) reinstatement of levee districts into the P.L. 84-99 program that had been subject to a Section 408 analysis.

The Corps shares in your commitment to utilizing an integrated water resources approach to further river management activities. This approach is also fundamental to successful water resources studies. Although a new study addressing the challenges outlined in your letter was not funded in Fiscal Year 2021, the Corps is working towards some of the action priorities identified in your fact sheet titled, *Upper Mississippi River States Seek a Strategic, Integrated Path Forward for Managing Floods, Sediment, and Extended Drought.* These include completion of a flood risk management model for the Upper Mississippi River (UMR), developing a detailed scope of work for updating the UMR flow frequencies, and seeking innovative solutions for dredge material placement.

As noted in your letter, the ASA(CW) directed the Corps to reinstate the Sny Island Levee and Drainage District (Sny) Reaches I, II, and III and to delay any action to make the Fabius Levee Drainage District (Fabius) inactive in the Public Law (PL) 84-99 Rehabilitation Program (See Enclosures). Reinstatement was effective January 19, 2021. The ASA(CW) also directed that questions regarding whether current heights of the levees within those systems require additional authorization under Section 408 will be deferred until the completion of the UMR study provided certain conditions are met, including that both sponsors fully participate in the UMR watershed study, once appropriated.

Thank you for your inquiry about the Corps Civil Works program. If you have further questions regarding ASA(CW) actions to affect the status of Sny and Fabius in PL 84-99, please contact Mr. Gib Owen, Office of the Assistant Secretary of the Army for Civil Works, at (703) 695-4641 or gib.a.owen.civ@mail.mil. For all other questions, please contact me or your staff may contact Ms. Katie Williams, Deputy Chief, Mississippi Valley Division Regional Integration Team, at (202) 761-0315 or kathleen.a.williams@usace.army.mil.

Sincerely,

Mar Lee

Alvin B. Lee Director of Civil Works

Enclosures

UMRBA Upper Mississippi River Spills Group

2021 Strategic Plan Process Scoping Document

<u>Goal</u>: To position the UMR Hazardous Spills Coordination Group (UMR Spills Group), including UMRBA staff, to effectively increase the prevention of, and preparation for, spills of hazardous materials as a means to maintain the multiple uses of the river.

Objective of the Planning Process: To develop a 5-year strategic plan that:

- 1) Establishes priorities and actions to achieve strategic goals
- 2) Guides in identifying and effectively addressing key policy and technical issues
- 3) Positions UMRBA to effectively facilitate interstate spill response planning
- 4) Integrates spill response coordination with other state and federal hazardous planning e.g., harmful algal blooms, flood and drought management
- 5) Identifies and examines foreseeable challenges to program implementation e.g., climate change, federal budget processes and appropriation levels

Example topics for consideration might include internal and external engagement, flood-related planning needs, and building response tools, designing exercises and providing training.

Major Assumptions:

- 1) The plan will articulate a long-term vision for the UMR Spills Group, which will reflect its members' roles and authorities and define implementation priorities for advancing that vision in the next five years. The plan will also define review periods.
- 2) Basic administrative provisions and program infrastructure will remain in place.
 - A. Since 1989, UMRBA has provided staff support for UMR Spills Group, which includes representatives of state and federal agencies who play a role in contingency planning and spill response on the river. Local response agencies, industry, cooperatives, and response contractors are selectively engaged, which typically is influenced by meeting location and agenda topics.
 - B. UMRBA staff whose role is to facilitate, and build tools for, interstate spill response planning are primarily funded by USEPA cooperative grants. Therefore, most of staff resources are spent on developing OPA-specific projects. Any new work would require additional resources such as grants, private contributions, or other sources.
- 3) The plan will build upon and incorporate partner-supported planning and other documents. These include, but are not limited to, the UMR Spill Response Plan and Resource Manual, the Minneapolis/St. Paul, Quad Cities, Greater St. Louis, and Great Rivers Sub-area Contingency Plans, UMR Pool Plans, Habitat Fact Sheets, and the Inland Zone Tactics Manual. See References below.

<u>Planning Team</u>: The strategic planning team will coordinate directly with their respective agencies to ensure that the outcomes are consistent with their goals and priorities. The team's composition reflects representation from the various program functions and responsibilities related to spill response:

- Joe Sanfilippo Iowa Dept. of Natural Resources — Bobby Elzie Illinois Environmental Protection Agency — Mike Rose Minnesota Pollution Control Agency — Rick Gann Missouri Dept. of Natural Resources — Jayson Schrank Wisconsin Dept. of Natural Resources — Andy Maguire USEPA Region 5 Joe Davis **USEPA Region 7** — Aleshia Kenney U.S. Fish & Wildlife Service — Jeff McCrery U.S. Army Corps of Engineers Adam Davis NOAA — TBD U.S. Coast Guard — Tony Houdyshell CP Rail — Jim Holland **Pinnacle Engineering** — Dave Donovan Scott Co. (IA) and Quad Cities CAER — Matt Stokes Safety Training and Response Strategies
- Bill Lazarz Bay West and Wakota CAER

<u>Planning Process and Meeting Management:</u> The planning process will begin on April 21, 2021, with the goal of finalizing the five-year plan no later than December 31, 2021. The process will involve about 4 meetings. All meetings will be held remotely except the Fall 2021 UMR Spills Group meeting, pending the lifting of pandemic restrictions. The anticipated schedule will be developed when a facilitator is secured.

USEPA is providing a trained facilitator per its contractual relationship with Tetra Tech (Eric Deselich) to guide discussions, assist in the planning process, and develop a document of the strategic priorities. Mark Ellis (UMRBA) will provide support services for the process, including preparing meeting arrangements and materials and developing draft meeting summaries.

References:

UMR Spill Response Plan and Resource Manual: <u>http://www.umrba.org/hazspills/umrplan.pdf</u>

Minneapolis/St. Paul Sub-area Contingency Plan: https://rrt5.org/Portals/0/PDFs/MplsStP_SACP_MainBodyPlan%20Final%20Jan%202021.pdf

Quad Cities Sub-area Contingency Plan: <u>https://response.epa.gov/sites/11807/files/Quad%20Cities%20SACP_Public_July%202018.pdf</u> Greater St. Louis Sub-area Contingency Plan https://epaosc.org/sites/6065/files/GSL%20SACP_public%20access_Sept-2013.pdf

Great Rivers Sub-area Contingency Plan: https://response.epa.gov/sites/8554/files/Great%20Rivers%20SACP_Public%20Version_Oct%202020.pdf

UMR Pool Plans https://rrt5.org/SubAreas.aspx

Habitat Fact Sheets: <u>https://rrt5.org/RCPACPTools/HabitatFactSheets.aspx</u>

Inland Zone Tactics Manual: <u>https://rrt5.org/RCPACPTools/InSituBurning/InlandResponseTacticsManual.aspx</u>

Spill Equipment Viewer:

https://umrba.maps.arcgis.com/home/signin.html?returnUrl=https://umrba.maps.arcgis.com/apps/weba ppviewer/index.html?id=c3e6468e20644d05960cbad9e6fc44b6 (login required)

From:	Tidemann, Jason (DNR) <jason.tidemann@state.mn.us></jason.tidemann@state.mn.us>
Sent:	Tuesday, May 18, 2021 2:07 PM
То:	Kirsten Wallace
Cc:	Margie Daniels
Subject:	UMRBA January 2021-April 2021 Treasurer Report

Hello Kirsten,

As Treasurer, I have reviewed the monthly financial statements for the period <u>1/1/21-5/4/21</u>. Activity reported on the Balance Sheet, Profit/Loss Budget Overview, Check Register, Visa statements and Open Invoices Report provide a reasonable and consistent representation of the monthly financial activity for the referenced period.

Thanks

Jason Tidemann MN Department of Natural Resources Grants Coordinator Liaison to Legislative-Citizen Commission on MN Resources 500 Lafayette Road St. Paul, MN 55155 651-259-5534

12:05 PM

05/18/21

Accrual Basis

Upper Mississippi River Basin Association FY 2021 Profit & Loss Budget Overview July 1, 2020 through May 18, 2021

	Jul 1, '20 - May 18, 21	Budget	\$ Over Budget
Ordinary Income/Expense			
Contracts and Grants			
COE (UMRR)	38,254,87	97.650.75	-59.395.88
EPA (OPA)	110.366.25	150.000.00	-39.633.75
Interstate WQ Pilot	10,282.23	30,100.00	-19,817.77
Total Contracts and Grants	158,903.35	277,750.75	-118,847.40
State Dues			
Illinois Dues	61.500.00	61.500.00	0.00
lowa Dues	61.500.00	61.500.00	0.00
Minnesota Dues	46,125.00	61,500.00	-15,375.00
Missouri Dues	61.500.00	61.500.00	0.00
Wisconsin Dues	61.500.00	61.500.00	0.00
WQ Assessment	102,500.00	102,500.00	0.00
Total State Dues	394,625.00	410,000.00	-15,375.00
Other Income			
Travel Reimbursed Received	0.00	1.00	-1.00
Total Other Income	0.00	1.00	-1.00
Interest Income			
Short Term Interest			
Short Term (Checking)	78.52	0.00	78.52
Short Term (Savings)	279.88	60.00	219.88
Short Term (Sweep)	0.00	1.00	-1.00
Short Term (CD)	0.00	8,500.00	-8,500.00
Total Short Term Interest	358.40	8,561.00	-8,202.60
Total Interest Income	358.40	8,561.00	-8,202.60
Total Income	553,886.75	696,312.75	-142,426.00
Expense			
Gross Payroll			
Salary	283,675.84	330,743.00	-47,067.16
UMRBA Time Wages	780.20	2,000.00	-1,219.80
OPA Wages	35,914.82	76,128.00	-40,213.18
Benefits	70,918.91	82,685.75	-11,766.84
Benefits UMRBA Time	78.01	200.00	-121.99
Benefits OPA	3,591.49	7,612.80	-4,021.31
Total Gross Payroll	394,959.27	499,369.55	-104,410.28
Payroll Expenses			
SocSec Company	24,286.00	30,960.91	-6,674.91
Medicare Company	5,916.02	7,240.86	-1,324.84
SUTA (Minnesota UC)	178.98	249.68	-70.70
Workforce Enhancement Fee	178.98	249.68	-70.70
Federal Loan Interest Assess	4.00	0.00	4.00
Total Payroll Expenses	30,563.98	38,701.13	-8,137.15
Travel Speece Bestel	0.00	18,000.00	-18,000.00
Office Rental	45,226.62	48,805.00	-3,578.38
Total Space Rental	45,226.62	48,805.00	-3,578.38

05/18/21 Accrual Basis

Upper Mississippi River Basin Association FY 2021 Profit & Loss Budget Overview July 1, 2020 through May 18, 2021

	Jul 1, '20 - May 18, 21	Budget	\$ Over Budget
Reproduction			
Copy Service	860.20	1,360.00	-499.80
Printing	0.00	800.00	-800.00
Total Reproduction	860.20	2,160.00	-1,299.80
Meeting Expenses	350.00	20,000.00	-19,650.00
Supplies	1,599.71	4,000.00	-2,400.29
Equipment Equipment (Maint./Rental)	1,982.25	1,600.00	382.25
Total Equipment	1,982.25	1,600.00	382.25
Legal and Financial			
Insurance	4,052.94	6,200.00	-2,147.06
Legal and Tax Services	3,500.00	9,500.00	-6,000.00
Bank Charges	209.30	10.00	199.30
Total Legal and Financial	7,762.24	15,710.00	-7,947.76
Telephone/Communications	6,164.56	6,500.00	-335.44
Postage	0.00	1,200.00	-1,200.00
Other Services	6,045.00	7,000.00	-955.00
Publications	3,321.00	3,200.00	121.00
State Travel Reimbursement			
Illinois	0.00	5,000.00	-5,000.00
lowa	0.00	5,000.00	-5,000.00
Minnesota	0.00	5,000.00	-5,000.00
Missouri	0.00	5,000.00	-5,000.00
Wisconsin	0.00	5,000.00	-5,000.00
State WQ Travel	0.00	3,500.00	-3,500.00
Total State Travel Reimbursem	0.00	28,500.00	-28,500.00
OPA Expenses			
Equipment OPA	0.00	1,000.00	-1,000.00
Equipment (Maint./Rental) O	3,955.19	6,500.00	-2,544.81
Travel OPA	0.00	2,800.00	-2,800.00
Other OPA	1,433.46	800.00	633.46
Total OPA Expenses	5,388.65	11,100.00	-5,711.35
Interstate WQ Expenses			
Travel Interstate WQ	0.00	800.00	-800.00
Data Collection/Analysis Int	4,341.20	22,300.00	-17,958.80
Other Interstate WQ	164.88	550.00	-385.12
Total Interstate WQ Expenses	4,506.08	23,650.00	-19,143.92
Fotal Expense	508,729.56	729,495.68	-220,766.12
Ordinary Income	45,157.19	-33,182.93	78,340.12
icome	45,157.19	-33,182.93	78,340.12

12:06 PM

05/18/21 Accrual Basis

Upper Mississippi River Basin Association Balance Sheet

As of May 18, 2021

	May 18, 21
ASSETS	
Current Assets Checking/Savings Checking HT 2732 Savings HT 2575 Checking 1696	41,879.59 92,138.04 224,646.08
Savings 6935 Investment	87,292.67
CD	402,481.23
Total Investment	402,481.23
Total Checking/Savings	848,437.61
Accounts Receivable Contract/grants Invoiced/Billable	23,603.83
Total Contract/grants	23,603.83
Total Accounts Receivable	23,603.83
Other Current Assets Prepaid Expense Office Rental Prepaid Expense	3,868.01
Total Prepaid Expense	3,868.01
Total Other Current Assets	3,868.01
Total Current Assets	875,909.45
Fixed Assets Accum. Deprec. UMRBA Accum. Deprec. OPA Accum. Deprec. WQ Accum. Deprec. 604(b) Accum. Deprec. STC UMRBA Equipment OPA Equipment WQ Equipment 604(b) Equipment STC Equipment	-32,192.05 -21,535.72 -1,290.00 -568.95 -2,989.68 33,455.89 21,705.26 1,290.47 568.95 2,989.68
Total Fixed Assets	1,433.85
TOTAL ASSETS	877,343.30
LIABILITIES & EQUITY Liabilities Current Liabilities Credit Cards Visa Wells Fargo 0198	1,686.39
Total Credit Cards	1,686.39
Other Current Liabilities Payroll Liabilities SUTA (Minnesota UC) Workforce Enhancement Fee Accrued Vacation Accrued Vacation FICA	25.36 25.36 48,126.85 3,681.70
Total Payroll Liabilities	51,859.27
Total Other Current Liabilities	51,859.27
Total Current Liabilities	53,545.66
Total Liabilities	53,545.66
Equity Retained Earnings Net Income	778,640.45 45,157.19
Total Equity	823,797.64
TOTAL LIABILITIES & EQUITY	877,343.30

ATTACHMENT C

USGS Next Generation Water Observing System

- Program Overview Fact Sheet (8/2019) (C-1 to C-2)
- Illinois River Basin Fact Sheet (C-3 to C-4)



Water Priorities for the Nation—The U.S. Geological Survey Next Generation Water Observing System

The challenges of providing safe and sustainable water supplies for human and ecological uses and protecting lives and property during water emergencies are well recognized. The U.S. Geological Survey (USGS) plays an essential role in meeting these challenges through its observational networks and renowned water science and research activities (National Academies of Science, Engineering, and Medicine, 2018). Substantial advances in water science, together with emerging breakthroughs in technical and computational capabilities, have led the USGS to develop a **Next Generation Water Observing System (NGWOS)**. The NGWOS will provide real-time data on water quantity and quality in more affordable and rapid ways than previously possible, and in more locations. The data will be served through a modernized USGS National Water Information System that will be coupled to advanced modeling tools to inform daily water operations, decision-making during water emergencies (like floods, droughts, and contaminant spills), assessments of past trends in water quantity and quality, and forecasts of future water availability.

NGWOS Design Strategy

The USGS has a nearly 140-year history of providing reliable and relevant scientific information to decision makers. Today (2019), the USGS operates and maintains real-time, continuous monitoring networks nationwide consisting of more than 8,200 streamflow-gaging stations, 2,100 water-quality stations, 1,700 groundwater-level monitoring wells, and 1,000 precipitation stations. USGS hydrographers make tens of thousands of discrete water measurements each year. Requests for USGS data exceed 670 million annually. Yet, the current National Streamflow Network-although providing data at critical locations-covers less than 1 percent of the Nation's streams and rivers. This sampling density helps to inform current and past water conditions (see, for example, WaterWatch) but is not sufficient for predicting interactions between climate, surface water, groundwater and soil moisture across large watersheds.

It is not necessary or feasible to collect data at a high spatial density throughout all large watersheds and aquifers. A more practical approach is to develop intensive monitoring networks in a small number of medium-sized watersheds (10,000–20,000 square miles) and underlying aquifers that are representative of larger regions across the Nation. Data from these intensively monitored watersheds can then be used, alongside data from existing monitoring networks, to construct and reduce the uncertainty in advanced models to fill in data and knowledge gaps in regional and national water assessments and predictions. At present, it is anticipated that the NGWOS will include at least 10 intensively monitored medium-sized watersheds, selected with input from USGS stakeholders, to represent a wide range of environmental, hydrologic, and landscape settings across the Nation.

NGWOS monitoring networks will integrate fixed and mobile monitoring assets in the water, ground, and air, including innovative webcams and new ground- and space-based sensors. When fully implemented, the NGWOS will provide high temporal- and spatial-resolution data on (1) streamflow; (2) water-cycle components, including evapotranspiration, snowpack, and soil moisture; (3) a broad suite of water-quality constituents, including temperature, nutrients, salinity, and turbidity; (4) connections



Mapping river-water depth by using a drone-mounted ground-penetrating radar system (white equipment). Photograph by John Lane, U.S. Geological Survey.

Characteristics of a Next Generation Water Observing System

- State-of-the-art measurements
- Dense array of sensors at selected sites
- Increased spatial and temporal coverage
- New technology testing and implementation
- Improved operational efficiency
- Modernized and timely data storage and delivery

between groundwater and surface water; (5) stream velocity distribution; (6) sediment transport; and (7) water use.

The USGS information systems for water-data management and delivery are being transformed and modernized as part of the NGWOS to accommodate new data and sensor networks, allow for integration with water data from multiple agencies and sectors, display observational data uncertainty, and enable data and analytical products to feed directly into models. Data telemetry systems also are being updated to allow for two-way communications and more frequent transmission of data to the internet.



The USGS is advancing the use of large-scale particle-image velocimetry (LSPIV)—a method that uses innovative video analyzation techniques to measure streamflow. Photograph by Mike Woodside, U.S. Geological Survey.

Emerging and Innovative Technologies

The NGWOS aims to foster innovation and development of monitoring technologies and methodologies to make data more affordable and more rapidly available. Monitoring innovations also are expected to lead to more types of data at higher temporal and spatial frequencies. Innovation testing sites will be identified on main-stem streams and small streams within NGWOS watersheds. These locations will provide a platform for rigorous, transparent, and reproducible testing of emerging and innovative monitoring technologies by the USGS and other entities. Technologies of interest include radar and image velocimetry for remotely sensing surface-water velocities, dronemounted ground-penetrating radar for measuring bathymetry for improving flow estimates, new sensors for monitoring continuous water-quality and suspended sediment, and others. The application and benefits of these innovations will extend beyond the NGWOS watersheds and be incorporated into routine operation of USGS monitoring networks.



The USGS's NGWOS, when fully implemented, will provide real-time data on water quantity and quality. USGS partner and stakeholder needs are helping to inform the NGWOS design so that the data and information generated by the NGWOS will help them anticipate water shortages more accurately and react to water hazards more quickly.

Delaware River Basin Pilot

In 2018, the USGS began a pilot of the NGWOS in the Delaware River Basin. This pilot is providing an opportunity to demonstrate a water-observing system that will support innovative modern water prediction and decision-support systems in a nationally important, complex interstate river system. The following are some of the initial NGWOS activities in the Delaware River Basin:

- New streamgages addressing key monitoring gaps to better quantify the amount, temperature, and conductivity of water in headwater and tributary streams and to track the flux of salt water in the main stem of the Delaware River
- Webcams and drone-mounted sensors for operational and science applications
- Limited-scale soil moisture, snowpack, evapotranspiration, water-use, and groundwater/surface water interaction monitoring
- Enhanced two-way communication equipment at existing streamgages to enable remote operation and troubleshooting of monitoring equipment
- Cellular and satellite redundancy to ensure data are delivered during critical streamflow periods
- Innovation sites for testing a suite of new water-quality sensors and noncontact streamflow measurement technologies, and remote sensing of water quantity, quality, and use

Reference Cited

National Academies of Sciences, Engineering, and Medicine, 2018, Future water priorities for the Nation—Directions for the U.S. Geological Survey Water Mission Area: Washington, D.C., The National Academies Press, 96 p. [Also available at https://doi.org/10.17226/25134.]

For more information:

U.S. Geological Survey Water Resources Mission Area Groundwater and Streamflow Information Program https://www.usgs.gov/water-resources/groundwater-andstreamflow-information

Banner photograph by Jack Anstey, Unsplash, February 28, 2018.

By Sandra M. Eberts, Chad R. Wagner, and Michael D. Woodside



Groundwater and Streamflow Information Program

Next Generation Water Observing System — the Illinois River Basin

Emergency managers and water resource managers rely on the USGS's water monitoring system and its associated water data delivery and instrument testing infrastructure to provide monitoring data to address complex water challenges involving too much, too little, or poor-quality water. Each year, floods, droughts, and water quality issues remind us of the vulnerability of our physical and socioeconomic well-being and the importance of monitoring our Nation's water. This monitoring system is currently functioning, but it was designed many decades ago to address 20th century challenges and needs major upgrades to meet the increasingly complex water challenges facing communities across the Nation. In fiscal year 2021, the USGS selected the Illinois River Basin as the third basin for implementing the Nation's next-generation integrated water observing system (NGWOS) to provide high-fidelity, real-time data on water quantity and quality necessary to support modern water prediction and decision support systems for water emergencies and daily water operations.

Substantial advances in water science, together with breakthroughs in technological and computational resources, have resulted in sophisticated new capabilities that can provide managers and decision support systems with the information, insights, and data needed to address today's water challenges. Modern models require high-density data describing the major hydrologic characteristics that the models represent, such as streamflow, evapotranspiration, water storage in snowpack, soil moisture, groundwater, and many others. However, these models and tools require more extensive observational data than the current hydrologic monitoring networks can provide.

When fully implemented, the USGS NGWOS will intensively monitor at least 10 medium-sized watersheds (10,000-20,000 square miles) and underlying aquifers that represent larger regions across the Nation. Data from this suite of watersheds will be used, alongside data from existing monitoring networks, to address data gaps that limit integrated water availability assessments and water prediction. This advanced observing system will provide quantitative information on streamflow, evapotranspiration, snowpack, soil moisture, a broad suite of water quality constituents (nutrients, salinity, turbidity, and wastewater indicators), connections between groundwater and surface water, and water use. It will be directly coupled with the National Water Model and other advanced modeling tools to provide state-of-the-art flood and drought forecasts, drive emergency and water-management decision support systems, and to provide data necessary to address difficult questions such as:

- What are the near-term and long-term risks of floods and droughts, and what scenarios change these risks?
- What factors affect water availability in basins that possess a complex mixture of urban and agricultural land use?
- How do nutrient loads influence harmful algal blooms (HABs)?
- What are the best ways to monitor for water supply contaminants such as perfluoroalkyl and polyfluoroalkyl substances (PFAS)?
- What are the best practices to inform federal state and local agencies about sediment loads in watersheds to facilitate planning of dredging operations that maintain navigable waters?



Next Generation Water Observing System in the Illinois River Basin

The USGS has selected the Illinois River Basin as its third NGWOS basin. This decision was based on rigorous quantitative ranking of US basins, input from USGS Regions and Science Centers, and feedback from targeted external stakeholders. Covering ~29,000 square miles that includes ~44% of Illinois and smaller parts of Wisconsin and Indiana, the Illinois River Basin ranked high among US basins because of its socioeconomic importance, ecological significance, and unique combination of mixed urban/rural land use. Principal economic drivers in the upper Illinois Basin are manufacturing/industry and a \$7 billion sport fishing industry in the Great Lakes. The driver in the lower basin is agriculture (corn/soybean), with Illinois' agricultural commodities generating more than \$19 billion annually. The Illinois River Basin likewise plays an important ecological role as the primary connection between the Great Lakes and the Mississippi River.

Long-term issues in the Illinois River Basin that could be informed by NGWOS include:

- Nutrients The Illinois River Basin is one of the largest contributors of nitrogen and phosphorus loading to the Gulf of Mexico. While agricultural runoff from farms in the Illinois River Basin and other parts of the Mississippi River Basin is the main driver of the Gulf dead zone, urban wastewater discharges, such as those in the Illinois River Basin, are also a source of nitrogen and phosphorus delivered to the Gulf of Mexico.
- Sediment Since the enactment of environmental regulations in the 1970s, water quality in the Illinois Waterway has steadily improved. However, erosion and sedimentation continue to degrade water quality in the basin and remain major issues. The US Army Corps of Engineers removes approximately 250,000 cubic yards of sediment from the Illinois Waterway each year for the operation and maintenance of the inland waterway navigation system which is essential to the economy of the Midwest and the Nation.



- Harmful algal blooms (HABS) In Illinois, algal blooms typically occur during the warm-weather months of June through September. Blue-green algae are often present in Illinois lakes in small or moderate amounts, but can grow and proliferate quickly in warm, fresh water that is rich with nutrients. In recent years, extended periods of warm summer weather and a supply of nutrient-laden runoff have combined to produce an increasing number of reports of harmful algal blooms.
- Water availability Water availability is an increasingly important issue within the Illinois River Basin. Population growth in northeastern Illinois and declining regional aquifer (Cambrian-Ordovician aquifer) levels and water quality (radium issues) have municipalities carefully planning water supplies for the future.
- Urban flooding Development of improved water observing systems are needed to protect life and property during major flood events. Urban flooding causes a disproportionate amount of the total monetary damages related to flooding in the Illinois River Basin. New monitoring technology and deployments of relatively low cost and spatially dense arrays of sensors in urban watersheds are needed to further understand the causes and underpinnings of urban flooding as well as prepare for and respond to urban flooding.
- Emerging contaminants The term "emerging contaminants" refers to many kinds of chemicals, including medicines, personal care or household cleaning products, lawn care, and agricultural products, among others. These chemicals enter our Nation's lakes and rivers and have a detrimental effect on fish and other aquatic species. The risk they pose to human health and the environment is not yet fully understood. Several cities within the Illinois River basin have reported perfluoroalkyl and polyfluoroalkyl substances (PFAS) detections within their municipal drinking water systems.

An integrated data-to-modeling approach in the Illinois River Basin will help improve regional water-availability assessments and water prediction in mixed urban/agricultural landscapes in the midwestern US and beyond. Planning and stakeholder engagement for the NGWOS in the Illinois River Basin will begin in fiscal year 2021.

For Additional Information:

Central Midwest Water Science Center Director—Amy Beussink, ambeussi@usgs.gov Ohio-Kentucky-Indiana Water Science Center Director—Michael Griffin, mgriffin@usgs.gov Upper Midwest Water Science Center Director—John Walker, jwalker@usgs.gov Basin Coordinator—Jim Duncker, jduncker@usgs.gov NGWOS Program Manager (acting)—Brian Pellerin, bpeller@usgs.gov Groundwater and Streamflow Information Program Coordinator—Chad Wagner, cwagner@usgs.gov

Next Generation Water Observing System https://www.usgs.gov/NextGenWOS

ATTACHMENT D

Atchinson County Levee Setback

- Website: <u>https://www.nature.org/en-us/about-us/where-we-</u> work/united-states/missouri/stories-in-missouri/missouri-river-levees/
- Full length video: <u>https://www.youtube.com/watch?v=a7TojhjZUVo</u>

ATTACHMENT E

UMRBA Keys to the River Report Draft (4/29/2021)

• Website: <u>https://umrba.org/document/draft-keys-river-report-4-29-2021</u>

ATTACHMENT F

Invasive Carp

- Pool 8 Early Detection and Rapid Response
 - Modified Unified Method of Carp Capture Fact Sheet (F-1 to F-2)
 - Press Release: <u>https://www.dnr.state.mn.us/news/2021/05/06/dnr-taking-aggressive-action-mississippi-river-other-waters-invasive-carp</u>
- Steeppass Fish Ladder Fact Sheet (F-3)
- NESP L&D 22 Fish Passage Tentatively Selected Plan Website: <u>https://www.mvr.usace.army.mil/Missions/Environmental-</u> <u>Stewardship/Navigation-and-Ecosystem-Sustainability-Program/LD22-</u> <u>Fish-Passage/</u>



"Modified Unified Method" of Carp Capture

Background

Populations of *Hypophthalmichthys molitrix* (silver carp) and *Hypophthalmichthys nobilis* (bighead carp), (together referred to herein as "bigheaded carp") have increased exponentially in the greater Mississippi River Basin (Kolar and others, 2007). Detrimental effects on native fish and economically important fisheries have occurred where these filter-feeding fish are abundant (Chick and others, 2020). The Unified Method, a harvest technique developed in China for bigheaded carp in flood plain lakes, uses herding techniques and a variety of nets to drive bigheaded carp and concentrate them into an area where they can be easily harvested (Li and Xu, 1995).

Adaptation for North America

In China, lakes encompassing thousands of hectares are used as private aquaculture facilities (Chapman and others, 2016), and they are harvested with the Unified Method. Without the constraints of public access and competing interests, Chinese managers can harvest as much as 85 percent of bigheaded carp. A Unified Method effort in China would typically last for 2–3 months. Infrastructure and nets can be left in position as desired because there are no other users of the lake. There are no restrictions on the harvest of nontarget species.

The U.S. Geological Survey (USGS) is adapting the Chinese Unified Method concepts to be consistent with North American financial, societal, and environmental conditions. We have modified these techniques and incorporated modern technology to reduce the time and expense of Unified Methods and to allow them to be used in public waters. Thus, the operations in North America are often described as the "Modified Unified Method" (MUM). The USGS is studying and refining MUM methods to provide stakeholders with efficient, validated, and environmentally friendly methods for carp removal.

Location and Timing

MUM operations are usually performed in the winter because low water temperatures decrease fish activity, including most jumping. In warm water conditions, silver carp leap over block nets and escape capture. The MUM is usually performed in water bodies with little current that are shallow enough for block nets to reach from top to bottom, but new techniques may be developed for other water bodies.

Herding Techniques

Block nets are used to create compartments or "cells" from which the fish can be driven. The USGS uses electrofishing boats



Seining of fish has been the typical final step of a MUM operation in the United States. Photograph by USGS.

and boats outfitted with underwater speakers to herd carp from each cell. When a cell is cleared, another net is used to close the cell and prevent the fish from returning. This process is repeated one cell at a time, gradually reducing the area available to the carp and concentrating the fish into a harvest area. Native game fish do not seem to respond in the same way, preferring to hide, rather than run, from the sound stimulus. For this reason, few game fish are typically caught.



Harvesting of bigheaded carp using a brailer. Photograph by USGS.

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Adaptations

The USGS uses side-scan sound navigation ranging (sonar) to determine when a cell is cleared and to determine the location of the school of carp when deploying a seine. The use of sonar greatly improves efficiency over traditional Chinese methods. Underwater speakers are not used in China; electricity is sometimes used, but the USGS is developing improved methods for herding fish with electricity. In China, trap nets are used to harvest carp over months, whereas the harvest portion of a MUM operation in North America usually is done by seining the fish after they have been concentrated. A long net is laid around the school of carp and the net is slowly pulled to shore. A MUM harvest can thus sometimes be completed in less than a day. These adaptations have been highly successful. For example, in 2018, the USGS collaborated with the State of Missouri to remove 240,000 pounds of carp from the 300-acre Creve Coeur Lake in St. Louis, Missouri. With these modifications, the method becomes more reasonable for application for bigheaded carp capture in the United States; however, these methods are still new to the United States and additional research is needed to further increase efficiency of MUM operations.



A USGS scientist with a large bigheaded carp. Photograph by USGS.



Sidescan image from a boat that has passed over a school of thousands of bigheaded carp concentrated by a MUM operation. The block net retaining the fish is visible to the left of the boat. The dark area in the center is an area not imaged by sidescan. Fish that are moving in the same direction as the boat appear as long lines. Image by USGS.

References Cited

- Chapman, D.C., Chen, D., Hoover, J.J., Du, H., Phelps, Q.E., Shen, L., Wang, C., Wei, Q., and Zhang, H., 2016, Bigheaded carps of the Yangtze and Mississippi Rivers—Biology, status, and management, in Chen, Y., Chapman, D.C., Jackson, J.R., Chen, D., Li, Z., Killgore, K.J., Phelps, Q., and Eggleston, M.A., eds., Fishery Resources, Environment, and Conservation in the Mississippi and Yangtze (Changjiang) River Basins: American Fisheries Society (Bethesda, Maryland), p. 113–126.
- Chick, J.H., Gibson-Reinemer, D.K, Soeken-Gitinger, L.S., and Casper, A.F., 2020, Invasive silver carp is empirically linked to declines of native sport fish in the Upper Mississippi River System: Biological Invasions, v. 22, no. 2, p. 723–734.
- Kolar, C.S., Chapman, D.C., Courtenay, W.R., Jr., Housel, C.M., Williams, J.D., and Jennings, D.P., 2007, Bigheaded carps—A biological synopsis and risk assessment: American Fisheries Society (Bethesda, Maryland), Special Publication 33, 204 p.
- Li, S., and Xu, S., 1995, Culture and capture of fish in Chinese reservoirs: Penang, Malaysia, International Development Research Centre, 140 p.

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Evaluation of Asian carp use of a steeppass fish ladder

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Introduction

ILLINOIS

Asian carp continue to be a persistent threat to our Illinois waterways and additional methods that aid their management, control, and removal are being explored. In addition, as various barriers are put in place to limit the spread of Asian carp, impacts on native fish passage is also a concern. Many fish species including Asian carp are attracted by water flow for upstream movements and spawning. To evaluate if this behavior can be exploited for Asian carp removal, we assessed both nonnative and native fish passage using Whoosh Innovations steeppass fish ladder installed at The Nature Conservancy Emiguon Preserve's water control structure.



Figure 1. The steeppass connected to the Emiquon pump station at the Emiguion Nature Preserve, Lewiston Illinois

Objectives

- 1. Will fish be able to use the ladder?
- 2. What factors attract fish to the area and to use the steeppass?

Study Site

TNC's Emiguon Preserve is a restored backwater located along the Illinois River near Havana, Illinois. In 2017 a water control structure became operational and is being used to actively manage water levels within Emiquon.



Figure 2. An aerial photo of the Emiguon Preserve and the pump outflow leading into the Illinois River.

Fish Ladder Design

This design uses a series of tubes connected to our water source, the pump station at the Emiguon Preserve. When the pumps are on, water from Emiguon fills and runs the system. The main passageway that the fish move through has three parts:

flow box.

false weir.

holding pool, where they will be collected for identification and

abundance records.



Figure 3. Overhead view of the steeppass fish ladder installed at Emiquon. With indicators showing the three main parts.

Methods

- The steeppass was operated from 9/14 9/17, 2020. All fish were cleared from the holding pool prior to the trial
- 2 internet-controlled security cameras were installed overlooking the false weir and the outlet into the holding pool to record fish passage.
- Chemical and biological parameters were measured before, during, and after steeppass operation. These included dissolved oxygen, temperature,
- conductivity, plankton abundance, and turbidity.
- At the end of the trial, fish were collected from the holding pool and identified, photographed, measured, and weighed.



Figure 4. Photo of two techs. Blake and Kara, using a seine to remove fish from the holding pool.



Results



Results Cont'd

- Continuous turbidity and chlorophyll-a measurements taken with a YSI Exo2 sonde in the steeppass spillway show increases in both parameters after pumps were turned on, and declining values after pumping stopped.
- Similarly, total zooplankton abundance increased following the start of the trial, with abundance beginning to decline 1 day after pumping stopped.
- The river stage as measured at the Havana, IL river gauge declined over the course of the trial, ending about 1 ft. lower by the end of the trial.
- Of the fish that were observed on the recorded footage. most crossed up to 1 full day after pumping started.



Figure 6. Chemical and biological parameters collected from steeppass spillway during trial. Dotted lines show start and stop times of Emiquon water pumps. Shaded/unshaded regions indicate alternating 12-hour time intervals starting at 6 AM.

Discussion

- No Bighead or Silver carps passed over the steeppass.
- Only 39.5% of fish (30 of 76) were detected on recorded video footage. likely due to low frame capture rate of cameras used.
- Low water levels may have prevented larger fish from utilizing a plunge pool to launch into the steeppass.
- Spring trials are planned to test during different water conditions and utilizing AI scanner with higher frame resolution.
- Native fish use is promising and could have implications for facilitating native fish passage over barriers meant to prevent the spread of invasive carps.

Acknowledgements

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400mm in length F-3



ATTACHMENT G

Illinois Marine Transportation System

- Video: <u>https://youtu.be/h7F6aqf6thU</u>
- **Report:** <u>https://idot.illinois.gov/transportation-system/transportation-management/planning/index</u> [View under marine tab at the bottom of the web page.]

ATTACHMENT H

Additional Items

- Future Meeting Schedule (H-1)
- Frequently Used Acronyms (12/21/2017) (H-2 to H-7)

QUARTERLY MEETINGS FUTURE MEETING SCHEDULE

	August 2021
	Remote
August 10	UMRBA Quarterly Meeting
August 11	UMRR Coordinating Committee Quarterly Meeting

	NOVEMBER 2021
	Location to be determined
November 16	UMRBA Quarterly Meeting
November 17	UMRR Coordinating Committee Quarterly Meeting

Acronyms Frequently Used on the Upper Mississippi River System

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

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

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

M-35	Marine Highway 35
MAFC	Mid-America Freight Coalition
MARAD	U.S. Maritime Administration
MARC 2000	Midwest Area River Coalition 2000
MICRA	Mississippi Interstate Cooperative Resource Association
MIPR	Military Interdepartmental Purchase Request
MMR	Middle Mississippi River
MMRP	Middle Mississippi River Partnership
MNRG	Midwest Natural Resources Group
MOA	Memorandum of Agreement
MoRAST	Missouri River Association of States and Tribes
MOU	Memorandum of Understanding
MRAPS	Missouri River Authorized Purposes Study
MRBI	Mississippi River Basin (Healthy Watersheds) Initiative
MRC	Mississippi River Commission
MRCC	Mississippi River Connections Collaborative
MRCTI	Mississippi River Cities and Towns Initiative
MRRC	Mississippi River Research Consortium
MR&T	Mississippi River and Tributaries (project)
MSP	Minimum Sustainable Program
MVD	Mississippi Valley Division
MVP	St. Paul District
MVR	Rock Island District
MVS	St. Louis District
NAS	National Academies of Science
NAWQA	National Water Quality Assessment
NCP	National Contingency Plan
NIDIS	National Integrated Drought Information System (NOAA)
NEBA	Net Environmental Benefit Analysis
NECC	Navigation Environmental Coordination Committee
NED	National Economic Development
NEPA	National Environmental Policy Act
NESP	Navigation and Ecosystem Sustainability Program
NETS	Navigation Economic Technologies Program
NGO	Non-Governmental Organization
NGRREC	National Great Rivers Research and Education Center
NICC	Navigation Interests Coordinating Committee
NPDES	National Pollution Discharge Elimination System
NPS	Non-Point Source
NPS	National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDAR	Natural Resources Damage Assessment and Restoration
NRT	National Response Team
NSIP	National Streamflow Information Program
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O&M	Operation and Maintenance

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

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