

November 15, 2022



Upper Mississippi River
Basin Association

164th Quarterly Meeting

Agenda
with
Background
and
Supporting
Materials

**Hotel Blackhawk
Davenport, Iowa**



Upper Mississippi River Basin Association

November 15, 2022

Agenda

Time	Topic	Presenter
9:30 a.m.	Call to Order and Introductions	<i>Tim Hall, Iowa DNR</i>
9:35	A1-13 Approval of Minutes of August 9, 2022 Meeting	
9:40	B1-17 Executive Director's Report	<i>Kirsten Wallace, UMRBA</i>
9:50	Report from UMRBA WQ Executive Committee <ul style="list-style-type: none">▪ 2021 Report and 2022 Outlook	<i>Dana Vanderbosch, Minnesota DNR</i>
10:20	C1-8 Illinois River Next Generation Water Observing System	<i>Jim Duncker, USGS</i>
10:40	D1-9 USACE Harmful Algal Bloom Program	<i>Mandy Michaelsen, USACE</i>
11:00	Break	
11:10 a.m.	Navigation Report <ul style="list-style-type: none">▪ Container-On-Barge Shipping▪ Illinois Waterway Major Rehabilitation	<i>Aimee Andres, IRPT</i> <i>Adam Ziegler, USACE</i>
12:00 noon	Lunch	
1:00 p.m.	Navigation Report (Continued) E1-38 <ul style="list-style-type: none">▪ Low Water Impacts to Shipping<ul style="list-style-type: none">— Lower Mississippi River Condition Report— Middle Mississippi River Condition Report— Middle Mississippi River Dredging Status and Outlook— Economic Implications of Low Water and Other Factors	<i>Pat Chambers, USACE</i> <i>Joan Stemler, USACE</i> <i>Andy Schimpf and Lance Engle, USACE</i> <i>Paul Rohde, Waterways Council and Rich Henderson, USDA</i>
2:10	UMRR and NESP Reports F1 <ul style="list-style-type: none">▪ FY 2023 Report and FY 2024 Capability Outlook F2-9 <ul style="list-style-type: none">▪ UMRR 2022 Report to Congress Draft F10-11 <ul style="list-style-type: none">▪ L&D 22 Fish Passage Monitoring	<i>Marshall Plumley and Andrew Goodall, USACE</i> <i>Mark Cornish, USACE</i>
3:00	Break	
3:15	G1-2 Brandon Road Interbasin Project	<i>Loren Wobig, Illinois DNR</i>
3:35	H1-15 Mississippi Interstate Cooperative Resource Association <ul style="list-style-type: none">▪ Mississippi River Proposal	<i>Ashlee Smith, Mississippi Wildlife Federation</i>
3:50	Administrative Issues I1-8 <ul style="list-style-type: none">▪ UMRBA FY 2024-2025 Dues and Water Quality Assessment▪ Future Meeting Schedule	
4:00 p.m.	Adjourn	

ATTACHMENT A

Minutes of the August 9, 2022
UMRBA Quarterly Meeting

(A-1 to A-13)

**Minutes of the 163rd Quarterly Meeting
of the
Upper Mississippi River Basin Association**

**August 9, 2022
St. Paul, Minnesota**

Tim Hall called the meeting to order at 9:30 a.m. Participants were as follows:

UMRBA Representatives and Alternates:

Rick Pohlman	Illinois Department of Natural Resources
Loren Wobig	Illinois Department of Natural Resources
Dave Glover	Illinois Department of Natural Resources
Tim Hall	Iowa Department of Natural Resources
Jake Hansen	Iowa Department of Agriculture and Land Stewardship
Barb Naramore	Minnesota Department of Natural Resources
Patrick Phenow	Minnesota Department of Transportation
Dru Buntin	Missouri Department of Natural Resources
Jennifer Hoggatt	Missouri Department of Natural Resource
Matt Vitello	Missouri Department of Conservation
Cheryl Ball	Missouri Department of Transportation
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
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Mark Gaikowski	U.S. Geological Survey, UMESC

Others in Attendance:

Kirk Hansen	Iowa Department of Natural Resources
Megan Moore	Minnesota Department of Natural Resources
Nick Schlessler	Minnesota Department of Natural Resources
Ceil Strauss	Minnesota Department of Natural Resources
Katrina Knott	Missouri Department of Conservation
Erin Fanning	Missouri Department of Natural Resources
Jeff Wentzel	Missouri Department of Health and Human Services
Stacey Fowler	Missouri Department of Transportation
Dan Baumann	Wisconsin Department of Natural Resources
Mike Halsted	Wisconsin Department of Transportation
Melissa Mullen	U.S. Army Corps of Engineers, MVD
Jim Cole	U.S. Army Corps of Engineers, MVD
Don Duncan	U.S. Army Corps of Engineers, MVD
Leanne Riggs	U.S. Army Corps of Engineers, MVD
Ann Banitt	U.S. Army Corps of Engineers, MVP
Angela Deen	U.S. Army Corps of Engineers, MVP

Bob Stanick	U.S. Army Corps of Engineers, MVP
Nathan Wallerstedt	U.S. Army Corps of Engineers, MVP
Kim Thomas	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
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Jon Klingman	U.S. Army Corps of Engineers, MVR
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Nicole Manasco	U.S. Army Corps of Engineers, MVR
Davi Michl	U.S. Army Corps of Engineers, MVR
Bre Popkin	U.S. Army Corps of Engineers, MVR
Carl Schoenfield	U.S. Army Corps of Engineers, MVR
Chuck Theiling	U.S. Army Corps of Engineers, MVR
Abby Hoyt	U.S. Army Corps of Engineers, MVS (<i>virtual</i>)
Lance Engle	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Brian Markert	U.S. Army Corps of Engineers, MVS
Shawn Sullivan	U.S. Army Corps of Engineers, MVS
Jodi Creswell	U.S. Army Corps of Engineers, Regional Planning Division North
Brian Johnson	U.S. Army Corps of Engineers, Regional Planning Division North
Kat McCain	U.S. Army Corps of Engineers, IWR
Anthony Civiello	U.S. Army Corps of Engineers, NWK
Travis Black	U.S. Department of Transportation, MARAD
Jennifer Kissel	U.S. Environmental Protection Agency, Region 7
Ann Lavaty	U.S. Environmental Protection Agency, Region 7
Zachary Leibowitz	U.S. Environmental Protection Agency, Region 7
Megan Maksimowicz	U.S. Environmental Protection Agency, Region 7
Chelsea Paxson	U.S. Environmental Protection Agency, Region 7
Steve Schaff	U.S. Environmental Protection Agency, Region 7
Jared Schmalstieg	U.S. Environmental Protection Agency, Region 7
Amy Shields	U.S. Environmental Protection Agency, Region 7
Kraig McPeek	U.S. Fish and Wildlife Service, Illinois-Iowa Ecological Services
Laura Muzal	U.S. Fish and Wildlife Service, Illinois-Iowa Field Office
Matt Mangan	U.S. Fish and Wildlife Service, Illinois Ecological Services
Olivia LeDee	U.S. Geological Survey, Midwest Climate Adaptation Science Center
Jennifer Dieck	U.S. Geological Survey, UMESC
Steve Buan	National Oceanic and Atmospheric Administration, NWS
Mike Welvaert	National Oceanic and Atmospheric Administration, NWS
Kim Lutz	America's Watershed Initiative
Lindsay Brice	Audubon
Paul Lewis	Eno Center for Transportation
Bob Beduhn	HDR Engineering
Paul Dierking	HDR Engineering
Doug Daigle	Lower Mississippi River Sub-Basin Committee (Hypoxia Task Force)
Heather Navaro	Midwest Climate Collaborative
Rick Stoff	<i>Our Mississippi</i>
Christine Favilla	Sierra Club
Olivia Dorothy	American Rivers
Jill Craftman	Izaak Walton League

Bryan Hopkins	The Nature Conservancy
Ibrahim Demir	University of Iowa
Enes Yildirim	University of Iowa
Kirsten Wallace	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Natalie Lenzen	Upper Mississippi River Basin Association
Lauren Salvato	Upper Mississippi River Basin Association
Erin Spry	Upper Mississippi River Basin Association
Andrew Stephenson	Upper Mississippi River Basin Association

Remembering Scott Morlock

UMRBA Board Chair Tim Hall and USGS Mark Gaikowski paid tribute to Scott Morlock following his recent death. Morlock served as UMRBA’s Federal Liaison from USGS, and was committed to advancing UMRBA’s mission through science and strong partnership.

Minutes

Barb Naramore moved and Jennifer Hoggatt seconded a motion to approve the draft minutes of the May 24, 2022 UMRBA quarterly meeting as written. The motion was approved unanimously.

Executive Director’s Report

Kirsten Wallace announced that Erin Spry joined UMRBA staff as Project Specialist effective May 31, 2022. Spry is working on the water quality and ecosystems portions of UMRBA’s work. Michaela Crowley and Kennedy Domerchie joined UMRBA as GIS and Planning Assistants working on UMRBA’s data development for the USEPA Inland Sensitivity Atlas.

Kirsten Wallace pointed to the Executive Director’s report in the agenda packet for a summary of the Association’s other work efforts since the May 2022 quarterly meeting. Wallace provided a few highlights as follows:

- Wallace extended congratulations to UMRR for its publication of the third LTRM status and trends report. Wallace applauded Jeff Houser and other involved partners at USGS, field stations, and others. This comprehensive analysis of ecological status and trends fulfills the promise, and exceeds expectations, of the program’s early years for long term resource monitoring. The report also provides accessibility of the information to the public.
- The UMRBA Water Level Management Regional Coordinating Committee published two reports that provide an updated quantitative analysis of costs, benefits, and risks associated with implementing water level management as well as consensus around implementing a suite of actions for improving the use of water level management as an ecological restoration and management tool. These two new reports are as follows:
 - Benefits, costs, and risks evaluation: <https://umrba.org/document/wlm-benefits-costs-risks>
 - Priority actions for implementation: <https://umrba.org/wlm-actions>
- Through NESP, UMRBA, the UMR states, USFWS, USGS, and the Corps continue to work hard to ramp up NESP to fully execute its appropriations and realize its potential as authorized. UMRBA staff met with DOI leadership on July 22, 2022 for the purposes of communicating the regional

opportunity to advance UMRR and NESP and to ensure top-down support for USFWS and USGS to effectively participate in those two programs as well as UMRBA's other regional planning efforts.

- UMRBA, NOAA, and the University of Minnesota announced a new partnership to enhance our knowledge on climate change and communications networks to facilitate two-way communications with less resources, more vulnerability communities in UMRBA's floodplain resilience planning work.

Mark Gaikowski thanked UMRBA for its outreach to DOI leadership. Gaikowski said JC Nelson is currently traveling with Assistant Secretary Tanya Trujillo and will highlight the Upper Mississippi River System region. Assistant Secretary Trujillo has indicated interest in traveling to the river and touring a habitat project. Olivia LeDee said she discussed the Upper Mississippi River with Assistant Secretary Trujillo in a meeting yesterday, during which the Assistant Secretary reiterated her interest in visiting the Upper Mississippi River.

Tim Hall pointed to UMRBA's April 2022 to June 2022 financial statements provided on pages B-30 to B-36 of the agenda packet. Steve Galarneau moved and Barb Naramore seconded a motion to approve the Association's budget report and balance sheet as included in the agenda packet. In response to a question from Barb Naramore, Wallace explained that the FY 2022 deficit will be around \$25,000 but that end-year adjustments are still being made. Departures from the budget include facilitation services for the April 2022 NESP meeting, reemergence of travel, and some delays in work for which UMRBA will invoice in FY 2023 rather than FY 2022. Wallace said she will provide a more detailed explanation of budget departures when all of the remaining items are finalized. The motion was approved unanimously.

Climate Initiatives in the Midwest

Midwest Climate Collaborative

Heather Navaro provided an introduction of the Midwest Climate Collaborative (MCC), which was launched via summit in January of 2022 for the purpose of creating a carbon neutral, climate resilient, and interconnected Midwest region. With climate change disproportionately affecting low-income communities and communities of color, equity and justice is at the core of MCC's work. MCC is housed within Washington University in St. Louis. It provides a forum for collaboration among researchers, practitioners, educators, industry, nongovernmental entities, and local governments located in 12 Midwest states. MCC programs feature researchers at the forefront of climate science, including sponsoring climate ambassadors, tracking commitments, and a climate asset map. MCC also aims to build capacity in climate research and adaptation. Navaro encouraged contacting MCC and to share research questions with the group. MCC's website is: midwestclimatecollaborative.wustl.edu.

USGS Climate Adaptation Science Center

Olivia LeDee provided an overview of the Midwest Climate Adaptation Science Center (CASC), which is a USGS and university partnership. The Midwest CASC is founded on a five-year agreement to fund yearly research projects. Its FY 2023 research priorities include heavy precipitation and drought, loss of winter, barriers to adaptation, altered hydrology, and novel terrestrial landscapes. LeDee stated there is currently \$1.5 million in funds available for 4-6 future research projects in FY 2023 and encouraged proposals be submitted to her. LeDee highlighted three projects occurring this fiscal year: quantifying changes in wetland connectivity and nutrient reduction, integrating process-based modeling, and natural solutions to reducing impacts of extreme precipitation events in the Upper Mississippi River basin. LeDee noted UMRBA's involvement in the latter project.

Expansion of the Middle Mississippi National Wildlife Refuge

Sabrina Carpenter announced the USFWS proposed expansion of Middle Mississippi National Wildlife Refuge by 90,000 acres. Public scoping is occurring August 3-14, 2022. Chandler requested input be directed to her.

Flood Vulnerability

National Flood Insurance Program Risk Rating 2.0

Overview of new pricing methodology

Ceil Strauss provided information about changes to FEMA flood insurance calculations. FEMA is offering training for the new Risk Rating 2.0 to reflect the risk more accurately and to address inequities. As of November 1, 2021, sites are rated with the new system and renewals are being updated as of April 1, 2022. Previously insurance rates were determined based the 100-year floodplain; new assessments are based on multiple factors, such as local topography, first floor elevation, flood frequency, replacement cost value, among others. FEMA maps are still in use but FEMA has discontinued its rating table. Mandatory flood insurance is still in place in the mapped areas for borrowers with a federal loan.

Additional resources are as follows:

- FEMA Risk Rating 2.0: <https://www.fema.gov/flood-insurance/risk-rating>
- Minnesota DNR Floodplain Training and Education: https://www.dnr.state.mn.us/waters/watermgmt_section/floodplain/training.html
- Association of State Floodplain Managers Flood Insurance: <https://www.floods.org/membership-communities/engage-and-serve/policy-committees/flood-insurance/>

Perspective on potential implications to UMRS

Bob Beduhn of HDR Engineering explained how Risk Rating 2.0 impacts levee projects. Federal levees are now judged on a quality rating from a risk assessment process via a USACE score. Under the new Risk Rating 2.0, structures behind a certified levee are assigned a score that impacts their insurance rate. The Federal Flood Risk Management Standard outlines new funding for flood resilience projects. Projects must evaluate flood protection systems via three design perspectives: 500-year floodplain, freeboard value approach, or a climate informed science evaluation. For existing levees, engineers follow Corps guidance and use Levee Safety Tool: a 125-point checklist tool to gather information used to establish a rating for a levee. Levee design is influenced by Risk Rating 2.0 and new Corps guidance. Corps manual EM1110-2-1913 is now out for evaluation and comment.

In response to a question, Beduhn stated that planning costs are absorbed in design process and planning. Engineers use risk and consequence to assess risk of geotechnical levee failure; there is now more emphasis on flooding behind levees in high rain events. In response to a question from Sabrina Chandler regarding private levee requirements, Beduhn explained that there are requirements for new levee designs to include assessments of riverine impact and residual risk of flooding behind the levee. Engineers must consider a joint probability risk of both a flood and rain event.

Iowa Agriculture Flood Vulnerability

Ibrahim Demir presented on the University of Iowa's recent research of agricultural flood vulnerability in Iowa, noting that the state is made up of 85 percent agricultural land. Floods have resulted in \$1.6 billion in losses in 2019. As the magnitude and frequency of flooding increases, there is greater need for quantitative risk analyses of vulnerabilities.

Enes Yildirim introduced the partners involved in the research, which uses data from USDA, USACE, and University of Iowa data to depict land use, loss, inundation, and crop info. Maps are used to display the findings. Answering a question from Lauren Salvato, Yildirim said this vulnerability assessment could be used to identify high-risk areas helps decision makers. As an example, quantitative analyses may show that peak flood reductions outweigh crop production losses when making mitigation choices.

Missouri River Flood Projects

Jennifer Hoggatt of Missouri Geological Survey presented Missouri River Flood Resiliency actions, founded on a memorandum of agreement (MOU) between Iowa, Kansas, Missouri, and Nebraska. Phase 1 uses a Planning Assistance to States (PAS) agreement; phase 2 includes a Flood Risk and Resiliency Study. The PAS was initiated in late 2019 with the Kansas City and Omaha Districts and the four states, based on stakeholder conversations to hear local perspectives. The group is acting on the Flood Risk and Resiliency Study to develop a flow frequency study and a suite of solutions having local input and ideas, with great cooperation between states and USACE. The group seeks a range of reasonable, actionable solutions, and provides USACE report-outs monthly as opportunities for states to ask questions.

Hoggatt discussed Missouri's actions, which included addition of verbiage in WRDA 2022 to allow study and construction projects and a cost-share pilot in Holt County launching later this year. A report will be completed in September. The Missouri Hydrology Information Center is funded to continue its work for the next four years as of July 2022, has added staff, and is currently working on gathering data from flood to drought conditions.

Tim Hall added that, from Iowa's perspective, the group is similar to a UMRBA framework on the Missouri River, and that cooperation with Kansas and Nebraska has been beneficial. Answering a question about the Systematic Development of Informed Consent (SDIC) process, Hall said that there were three PAS virtual stakeholder listening sessions, which will inform the group's next steps. The sessions are held in partnership with the University of Missouri to bring folks together and break through barriers. Dru Buntin added that informed consent is critical to the process.

UMRBA Reaches 8-9 Monitoring Pilot

PFAS Monitoring

Jeff Wenzel, Missouri Department of Health and Senior Services, presented on an opportunity to collaborate on data collection of PFAS through the Reaches 8-9 pilot of the UMRBA Interstate Water Quality Monitoring Plan. Thanks to collaboration with UMRBA and USEPA, including funding from the an USEPA multi-purpose grant, staff are now able to review PFAS data and can now watch as UCMR5 and other projects emerge to test fish. Lauren Salvato noted that the Reaches 8-9 pilot report is available on the website, including a fish tissue sample appendix: <https://umrba.org/document/reaches8-9pilot>. Wenzel said Missouri DNR's next steps are to implement the Unregulated Contaminant Monitoring Rule at a smaller water intake to see if there are locations for fish testing.

Data Results and Implementation Feasibility Evaluation

Salvato presented a summary of the UMRBA Interstate Water Quality Monitoring Plan Reaches 8-9 Pilot Condition Assessment. The UMRBA Interstate Water Quality Monitoring Plan facilitates interstate water quality management on the main stem of the Upper Mississippi River. The geographic extent of the Reaches 8-9 pilot includes the main stem of the Mississippi River from L&D 17 to L&D 21, 109 miles of river. Notably, three water intake operators participated in the pilot at Keokuk, Warsaw, and Quincy.

The pilot's condition class summary rates the Clean Water Act's (CWA's) four designated uses of the Mississippi on a scale of good, fair, or poor. The result of the pilot's condition summary shows only one "good" rating at Reach 9 in the aquatic life category. The drinking water assessment was rated "poor" in both reaches due to cyanotoxin detections, and the recreation assessment was rated "poor" in both reaches due to chlorophyll and *E. coli* in one reach. The fish consumption assessment showed decline of common carp and greater largemouth bass, PCBs, mercury, and PFAS.

The Evaluation Report released in tandem with the pilot's Condition Assessment provides recommendations to create a permanent data management system, dedicated staff, and reassessing the inclusion of water suppliers. Salvato stated that UMRBA's next steps are to revise the Interstate Water Quality Monitoring Plan, resolve outstanding questions, and secure resources to prepare for full-scale monitoring. Kirsten Wallace thanked the partners for working as a team to cover tasks and Lauren Salvato for her work in convening and leading the interstate project.

In response to a question from Tim Hall, Salvato said it would take an estimated \$2.4 million annually to monitor all 13 CWA reaches. Barb Naramore pointed out that the plan evaluates raw results for drinking water raw results but judging support of the drinking water standard based on finished results. Salvato confirmed that is correct but is unsure about the rationale for that approach.

UMRS Navigation and Ecosystem Management Report

Navigation and Ecosystem Sustainability Program

Andrew Goodall announced Rachel Hawes as the new NESP Ecosystem Program Manager as of June 2022.

Goodall explained NESP updates through the last quarter, as follows:

- The Corps is working to secure funding agreements to support UMRBA, the states, and federal agencies listed in NESP's authorizing legislation in their respective roles. The UMRBA Board submitted a request to transfer their \$200,000 financial support to UMRBA, which would hire staff that would serve on behalf of the states and at their direction. Goodall said that would require the Corps to arrange an MOU between the agency and UMRBA. Goodall said the MOUs will specify partners' responsibilities per the authorizing language, which will allow the Corps to enter into these financial arrangements and execute the program.
- An *ad hoc* group of NESP representatives is developing a charter for NESP partner agency consultation. An *ad hoc* group of agency partners are drafting a proposal that would be provided to the NESP representatives for their feedback and consideration.
- The Corps is drafting a recommendation to submit to its vertical team to establish the Advisory Panel with the membership of government agencies and river users per NESP's authorization.

Goodall referenced a question from Olivia Dorothy earlier in the meeting, and explained that the Advisory Panel will serve as a formal means for nongovernmental organizations to consult with the Corps on NESP.

- The Corps is currently evaluating NESP’s compliance with the National Environmental Policy Act (NEPA).
- ESA coordination was initiated with USFWS on June 27, 2022.
- The Corps is consulting with the construction contractor industry and navigation industry to identify and mitigate potential risks to project implementation of the L&D 25 lock modernization project, and anticipates awarding a construction contract in September 2022. The Corps will also work with ecosystem partners in identifying site-specific mitigation needs.
- The Corps has submitted a request for proposal for the design of L&D 22 fish passage, anticipating the award of a design contract in September 2022 pending negotiations. Goodall reported that, in early June 2022, the Chief of Engineers approved the final project implementation report for L&D 22 fish passage. The Corps has established the L&D 22 fish passage science team and is working with USFWS and USGS on pre-project monitoring activities.
- The Corps published a map of NESP projects in “active implementation” as well as ecosystem projects that have been approved by MVD and the three focus areas for navigation – i.e., mooring facilities, systemic mitigation, and the 1,200-foot lock at La Grange. The map is available at the following link: <https://www.mvr.usace.army.mil/Missions/Navigation/NESP/>.

Olivia Dorothy asked about the Corps’ plans to request input from environmental nongovernmental organizations on navigation-related projects. Goodall said the Corps plans to utilize the Advisory Panel as a means for seeking input on NESP from the stakeholder interest groups, and the Corps plans to submit a recommendation for establishing the Advisory Panel to its Vertical Team by the end of this calendar year. In response to a question from Dorothy, Goodall said the ASA(CW) will determine who will serve on the Advisory Panel but that process-related details regarding the process for applications and selection are unknown.

Dorothy referred to the Office of Special Counsel’s recommendations in 2000 that resulted in an adaptive management approach to implementing the navigation projects and asked for a status update on that work. Goodall said he is unfamiliar with the Counsel’s findings and would respond to Dorothy’s question at a future time. Dorothy recalled that, following the Office of Special Council’s findings that the Corps was manipulating its economic analysis of the Navigation Feasibility Study, the Corps agreed to an adaptive management approach to navigation improvements to safeguard from that occurring again. Dorothy observed that the Advisory Panel does not appear to serve as an independent body and raised concern with the Corps’ schedule of lock construction without having established the Advisory Panel or initiated adaptive management.

In response to a question from Dorothy, Goodall explained that the Corps is currently evaluating NESP’s NEPA compliance and will be publishing a report on the findings. Dorothy asked whether the Corps’ environmental advisors are reviewing the economic data submitted to OMB that were attached to the 2019 NESP navigation cost evaluation. Dorothy explained that the Corps’ economists have provided a written assessment that the USDA economic information regarding NESP lock improvements that were provided by ASA(CW) R.D. James to OMB were incorrect. In response to a question from Dorothy, Goodall said the Corps’ 2019 economic analysis was done in accordance with guidelines and that there has been no further developments in respect to the report as transmitted by ASA(CW) James in 2019. Goodall said

he is unsure of the Corps' statement to which Dorothy is referring. Goodall offered to talk with Dorothy further about this matter offline but is unable to provide any further information at this time.

Christine Favilla asked whether mitigation is required and the process for determining needs and what the mitigation will entail. Goodall explained that mitigation is required for the L&D 25 lock modernization project and that the Corps will seek public input in alignment with the agency's typical processes. The Corps is evaluating the L&D 25 project-specific needs outside of the lock's immediate footprint that is needed to determine appropriate mitigation needs – e.g., staging areas. Noting the schedule for L&D 25 construction, Dorothy said she understands that the Corps will need a mitigation plan in order to initiate lock construction and mitigation concurrently. Goodall stated that the Corps is developing a draft mitigation plan for L&D 25 and would follow up with an anticipated timeframe for its release.

In response to a question from Dorothy, Goodall explained that the results of the NEPA compliance assessment will determine future needs related to environmental compliance. Dorothy raised concern with the timing for awarding a construction contract for L&D 25 prior to these decisions, and asked if Goodall anticipates delaying the award. Goodall said that the Corps will continue to evaluate projects on a case-by-case basis.

Andrew Stephenson read a comment from Nick Schlessler in the chat forum regarding defining comparable progress. Goodall explained that the District describes capability for NESP based on comparable progress in navigation and ecosystem based on their respective impact. Comparable progress is a decision that is deliberately evaluated in collaboration with partners.

Favilla asked if there will be a nongovernmental representative that will serve on the Advisory Panel. Goodall confirmed that NESP's authorization calls for two representatives from conservation and environmental advocacy interest groups. Dorothy expressed concern that the Corps is seeking input from navigation industry groups and is not providing the same opportunity from conservation or environmental nongovernmental interests. Goodall said he understands the concern, and said the Corps participated in public meetings of the Inland Waterways Users Board but has not had other special meetings with navigation interests. Dorothy referred to the June 25, 2022 meeting regarding L&D 25 and NESP small scale efficiency projects and asked for clarity on that meeting. Goodall confirmed that that meeting did occur with navigation industry and construction contractors.

Jill Crafton expressed confusion and frustration that environmental and conversation nongovernmental entities are not being included in the NESP deliberations, and underscored the regional agreement to balanced management of the river for navigation and ecosystem purposes. Goodall said the Corps has been focusing on establishing partnership with the state and federal agencies included in NESP's authorizing legislation and said NESP will work on opportunities to engage stakeholders in NESP. Kim Thomas acknowledged that NESP received a substantial amount of money with a new construction start with only piecemeal funding up to this point. Thomas explained the challenges associated with expeditiously building the program and partnership and acknowledged that the ecosystem investments will take longer to plan and implement than the navigation projects. For example, whereas the navigation projects are solely on Corps-owned lands, the ecosystem projects require multi-agency planning and real estate or project partnership agreements. Thomas asked for patience as NESP ramps up to implement its appropriations.

In response to Crafton's reference of the Missouri River collaboration, Tim Hall explained that the planning work has been ongoing for 3.5 years and acknowledged the time it took to ramp up and establish those lines of communication.

Barb Naramore referenced the PowerPoint slides that show the membership of the Advisory Panel per NESP's authorizing legislation, which includes state and federal agencies, a landowner, and representatives from conservation and environmental advocacy groups and agriculture and navigation industry advocacy groups. Naramore said she is hearing frustration in the absence of establishing that group, and pointed to Thomas' explanation of the challenges in doing so. Thomas said the Corps asked ASA(CW) to establish the Advisory Panel in 2009, but that request was denied in light of the inconsistent funding for NESP at the time. The District is elevating the establishment of the Advisory Panel as a priority, particularly following the Infrastructure Investment and Jobs Act (IIJA) and FY 2022 appropriations to NESP. Thomas expressed appreciation for the feedback on where the program needs to focus.

Dorothy clarified that the problem is that the Corps is seeking advice from the navigation sector prior to establishing the Advisory Panel and not providing that same opportunity to conservation and environmental groups, who are supposed to be involved in the program. Dorothy also voiced confusion with the Advisory Panel's roles with respect to the program when decisions are already being made.

Upper Mississippi River Restoration (UMRR) Program

Marshall Plumley reported that the 2022 UMRR Report to Congress has undergone two cycles of partner review. MVR submitted the draft report to MVD on August 5, 2022. USACE Headquarters is scheduled to review the draft by end of August. Plumley expects the report to be completed and delivered to Congress in December 2022.

USGS published UMRR's third ecological status and trends using its long term resource monitoring dataset on June 22, 2022. The report's release was accompanied by a press release jointly issued by USACE and USGS. To date, the collective partners of federal and state agencies and nongovernmental organizations who shared the report on their respective platforms have tracked 70 engagements with media. Many of those engagements involved UMESC staff. Plumley applauded all partners who were involved in the development of the report (including data collection and research) and in the associated communications.

The Senate Environment and Public Works Committee's water resources development act (WRDA) measure includes an increase of UMRR's annual appropriation of its habitat projects from \$40 million to \$75 million. It does not include a provision for increasing UMRR's long term resource monitoring annual appropriation authorization. Plumley acknowledged the current pressure on partners' staffing resources, and noted that an increase in HREPs appropriation of that magnitude would require substantial interagency coordination.

Plumley provide an overview of the ongoing HREPs and the schedule for implementation under the current \$55 million program (i.e., \$40 million for HREPs). Plumley explained that UMRR is currently evaluating inflation impacts, noting that this year's starting contractor bids have been up to 27 percent higher than estimated. Four construction contracts are due for completion this year, totaling 10 thousand acres of restored habitat.

Sabrina Chandler voiced concern over current funding levels for USFWS, stating that the agency could not meet current expectations. Chandler stated that leadership and biologist roles are currently unfilled, significantly limiting USFWS's capacity to meet its HREP and LTRM roles. With the increase in funding for HREPs, USFWS will continue to struggle to meet the needs of the program. Kim Thomas recognized Chandler's concerns and said the Corps will continue to carry message during its

Congressional visits and “effects statements.” Plumley said he anticipates that the increase of funding will cover additional inflation expenses on existing projects, but noted that an increase in ongoing habitat projects would begin in about five years. Chandler explained that USFWS is under a hiring freeze within the Midwest that will likely continue into the next year.

Barb Naramore asked if there are any interim opportunities to provide USFWS with some additional capacity or relief. Chandler answered that USFWS is engaging in conversations with the Corps about potential authorities to allow for creativity.

Karen Hagerty commented that the *ad hoc* LTRM implementation team is going back to the agency for information needs.

Navigation Report

District-Based Channel Condition Reports

St. Louis District

Lance Engle of the St. Louis District (MVS) reported moderate water levels, with the Meredosia gauge on the Illinois Waterway at three feet above minimum for the last month. Crews removed six million cubic yards of sediment from the river last year. The Dredge Potter, used for 95 percent of the work on the Mississippi River, was mobilized July 7, 2022 and will likely work through September. On the edges of the District, barges Dredge Goetz, Rock Island Strike Removal, and LEL Contract – Bill Holman are being borrowed from other Corps Districts to dredge geographically remote areas. Engle noted that Pool 25 has required no dredging for the season, which is very unusual. This pool usually requires 1 million cubic yards removed yearly. Other pools with chronic dredging areas are also seeing no work. The District plans to borrow the Jadwin from MVD in Memphis to work on some sites starting mid-August. Engle closed by announcing the Dredge Master Plan is nearly finalized.

Rock Island District

Jon Klingman of the Rock Island District (MVR) reported that staff are tracking 12 sites as having dredging needs, which is half of the normal site load. Goetz entered the District in August to assist with three jobs on the Illinois Waterway. Rock work is being done in Pool 13 at Soupbone Island beginning September 1, 2022. Pool 22 wing dams have made a big difference, changing a chronic dredge site to self-sustaining. The Pool 11 placement site is complete except for seeding of berms. The Pool 16 Buffalo placement site has had its entrance dredged; crews reworked berms and must hook up a pipe for the drop structure. The Pool 20 Canton agricultural field site now has a license from the railroad to pipe water to and from the river under the rail tracks. On the Illinois Waterway, Mackinaw DMMP has added 2.5 million cubic yards of capacity; Bulls Island DMMP is a 47-acre acquisition; Spring Valley DMMP is 98 percent complete. Corps Staff are undertaking an ambitious preliminary assessment to conduct a single DMMP for the District’s entire portion of the Illinois Waterway.

St. Paul District

Bob Stanick said the St. Paul District (MVP) has 284 miles of navigable channel and uses the m/v Goetz and mechanical dredge contracts. These contractors also do maintenance work. The channel is in good condition. The District dredges an average of 969,000 cubic yards annually; this year, the District has dredged 600,000 cubic yards to-date. DMMPs are at different stages. In Pool 2 implementation; Pool 4

is in signatory process and will seek RRT endorsement; Pool 5 land use plan; Pool 6 held a public meeting in June and comments are currently being evaluated. Jim Fischer asked if a DMMP assessment could be done on the entire Upper Mississippi River. Stanick said the Corps will evaluate that as an option following the Illinois Waterway assessment to determine feasibility and cost. Stanick said rural dredge locations are often more difficult to manage because there is no DMMP nearby or place to take the material. Cassville has this problem, USACE needs fee title to be able to place material. In response to a question from Fischer about the Pool 11 transfer site, Stanick said the Corps will acquire the site but not yet. Fischer urged the Corps to action on the real estate because the next flood could be very challenging.

Sediment Budget Scoring Project

Nicole Manasco presented the USACE sediment budget blueprint, a proposed nationwide sediment management program. One of the biggest challenges of maintaining the Mississippi River's navigable channel is finding places to place sediment, and the goal of the report is to create a blueprint of sediment deposition designed by multiple groups. Data for scoping the blueprint were gathered from the Illinois State Water Survey and the USACE 2000 Cumulate Effects Study, which uses sediment monitoring station data that is no longer widely available as few sediment monitoring stations remain. The proposal for the Upper Mississippi River, "How to Develop a Large River Sediment Budget Blueprint Through Leveraging of Multi-Agency Partnerships," is organized around four tasks: methods research, a data inventory, a stakeholder and technical expert workshop, and a final sediment budget blueprint. Funding is not scoped currently, but NESP may fund initial sediment budget research at different scales. Monasco stated that she would like to see an interagency MOU to guide development of goals for the project. Jill Crafton expressed concern that dredging is creating a sediment problem and asserted that ecological approaches are needed to reduce sediment.

Waterborne Competitiveness

Paul Lewis of the Eno Center for Transportation shared a report on Waterborne Competitiveness, an analysis of major inland waterways globally. The study asked how the U.S. compares to other countries by investigating funding and freight flows and provides recommendations to keep the nation competitive. The U.S. inland waterways include 12,000 miles of river systems which transport 500 million tons of domestic shipping annually. South America's inland navigation systems including the Amazon and the Paraguay-Paraná River systems are exhibiting growth, whereas Europe's and China's inland navigation systems are experiencing declines. In the case of China's systems, fragmentation of shipping routes is occurring. Lewis stated that the U.S. waterway system holds a lot of value as a waterway within its borders. Multi-agency planning is complex but a necessary tactic to maintain competitiveness. The final report is available at: <https://www.enotrans.org/eno-resources/waterborne-competitiveness-u-s-and-foreign-investments-in-inland-waterways/>.

Invasive Carp / Copi

Invasive Carp presentations were rescheduled to the next UMRBA Quarterly meeting.

Administrative Issues

Future Meeting Schedule

November 2022 — Quad Cities

— UMRBA quarterly meeting — November 15

— UMRB Coordinating Committee quarterly meeting — November 16

February-March 2023 — Virtual

— UMRBA quarterly meeting — February 28

— UMRB Coordinating Committee quarterly meeting — March 1

May 2023 — St. Paul

— UMRBA quarterly meeting — May 23

— UMRB Coordinating Committee quarterly meeting — May 24

With no further business, the meeting adjourned at 2:47 p.m.

ATTACHMENT B

Executive Director's Report

- **Executive Director's Report** *(B-1 to B-6)*
- **UMRBA UMRR 2022 Report to Congress Support Letter (10/19/2022)** *(B-7 to B-8)*
- **ICWP 2022 Year-in-Review** *(B-9 to B-12)*
- **Treasurer's Quarterly Statement (10/31/2022)** *(B-13)*
- **FY 2023 Budget Report and Balance Sheet (11/1/2022)** *(B-14 to B-17)*



Executive Director's Report August 2022

ADVOCACY

Administration and Congressional Meetings

On October 5, 2022, UMRBA met with Corps Headquarters leadership in Washington, D.C. to discuss UMRBA's priorities relating to UMRR, NESP, and a flow frequency analysis for the UMRS as well as resolving the current project partnership agreement (PPA) impasse. UMRBA representatives included Tim Hall, Loren Wobig, Rick Pohlman, and Chad Craycraft. Waterways Council and The Nature Conservancy joined the meeting.

On October 4-5, 2022, UMRBA met with Congressional staff regarding the issues noted above as well as USFWS's capacity to participate in these programs and UMRBA's other activities. UMRBA has also met with Congressional Committee staff regarding these answers.

Federal Water Subcabinet

On October 12, 2022, UMRBA attended a meeting of the Federal Water Subcabinet. In addition to its federal members, the Interstate Council of Water Policy and Western States Water Council and several of their members attended. The meeting focused on coordination and engagement on water resource issues across the country.

ECOSYSTEM HEALTH

Upper Mississippi River Restoration

2022 UMRR Report to Congress

UMRR Program Manager Marshall Plumley hosted a second internal peer review (IPR) on August 29, 2022 with Corps Headquarters. MVD is finalizing its review of the report, which is on schedule to be transferred to Congress in December 2022. UMRBA's letter of support for UMRR that will be included in the report is included on pages B-7 to B-8 of the agenda packet.

On August 31, 2022, UMRBA convened the UMRR Coordinating Committee to further refine a suite of implementation issues. The Committee agreed upon revisions to the issue papers in response to comments received and discussed next steps for acting upon the recommendations.

UMRBA's involvement in the development of the 2022 Report to Congress and implementation issues papers is provided through a support services contract specific to the 2022 UMRR Report to Congress.

LTRM-Related Initiatives

UMRR is employing an implementation planning process for LTRM, focusing on the potential to expand knowledge of the UMRS and to inform ecosystem restoration and management. The objective is to work under the umbrella of the UMRR 2015-2025 Strategic Plan to identify specific unmet information and

research needs and determine a set of priority actions to address those needs. In addition to biweekly meetings, UMRBA staff participated in an in-person session on September 13-15, 2022 in the Quad Cities.

Navigation and Ecosystem Sustainability Program

UMRBA staff continue to participate in efforts to implement the Navigation and Ecosystem Sustainability Program (NESP) through its FY 2022 appropriations and anticipated out-year funding. This includes developing a charter for interagency cooperation, securing funding agreements to support UMRBA and its member states participation in the program, and participating in discussions of program execution. UMRBA staff participated in the L&D 22 fish passage science team open house on October 12, 2022 as well as a meeting of the NESP representatives on November 1-2, 2022 in the Quad Cities. The purpose for the latter meeting is to discuss roles and responsibilities in greater detail for the entities listed in NESP's authorizing legislation.

Water Level Management

UMRBA convened a meeting of the Water Level Management Regional Coordinating Committee on September 26, 2022 to determine next steps for the Committee's work in advancing water level management implementation and scientific understanding. This meeting followed the publication of the reports regarding water level management benefits, costs, and risks as well as the establishment of a suite of recommended actions (an update to the 2004 NESP Environmental Report 53). As an immediate resulting action from the September 26 meeting, UMRBA convened a small *ad hoc* group of volunteers on October 20 to discuss outreach and communication strategies for the two publications.

RESILIENCE PLANNING

Illinois Climate Summit

The University of Illinois' Prairie Research Institute hosted a state-wide climate summit for the purposes of sharing information about, and discussing opportunities for improving, climate knowledge and services in Illinois. UMRBA staff participated in the meeting, which occurred on September 7-8, 2022 in Champaign.

UMN CIROH Partnership

In early August, UMRBA along with National Oceanic and Atmospheric Administration (NOAA) and the University of Minnesota's Institute on the Environment (UMN IonE) announced a new project this fall to explore how to enhance climate resilience in communities along the Upper Mississippi River from Minnesota to Missouri. UMN IonE hosted a first meeting of this new partnership on September 20-21, 2022. Representing UMRBA were Kirsten Wallace as Association staff, Brian Stenquist of *Meeting Challenges*, Melissa Kuske of Minnesota DNR, and Jason Conn of Iowa DNR.

NOAA National Integrated Drought Information System (NIDIS) Executive Council Meeting

UMRBA staff participated as a guest in the NOAA NIDIS Executive Council meeting on October 6, 2022 in Washington, D.C. In part, UMRBA was invited to attend via its membership in the Interstate Council on Water Policy. The meeting focused on better understanding, preparing for, and recovering from drought, NIDIS reauthorization, new drought research.

NOAA National Integrated Drought Information System (NIDIS) Midwest and Missouri River Basin Drought Early Warning Systems Joint Meeting

UMRBA staff attended the October 13-14, 2022 NOAA NIDIS joint partner meeting of its Midwest and Missouri River Basin drought early warning systems (DEWS). The meeting was held in Omaha, Nebraska. The agenda included information on recent droughts, regional planning and science and relevant partner activities as well as briefings on recent science related to rapid transitions in precipitation extremes and drought assessment in a changing climate. Kirsten Wallace presented on UMRBA's Keys to the River Report and its drought-related resilience planning program, including Association staff support to the states in their joint out-of-basin water diversion notification and consultation agreement.

UMR Basin Charter (Out-of-Basin Diversions)

The UMRBA *ad hoc* UMR Basin Charter review team met on September 12 and October 18. The team is currently building its understand of differences in the ways that UMRBA's member states collect consumptive use data. This comparison will inform scoping of a cumulative impacts assessment. The team also met with the Susquehanna River Basin Commission to learn from its cumulative water use and availability study.

Extreme Precipitation Workshop

UMRBA staff continue to serve on a planning group for the Midwest Climate Adaptation Science Center's workshop regarding natural solutions to ecological and economic problems caused by extreme precipitation events in the Upper Mississippi River Basin. The event is scheduled for March 21-23, 2023 and will be hosted at the Forest Products Laboratory in Madison, Wisconsin.

HAZARDOUS SPILLS COORDINATION, MAPPING, AND PLANNING

Oil Pollution Act (OPA) Planning and Mapping

After one and a half years with the Association, Lauren Holmes left for a new position in October 2022. Tyler Leske, Michaela Crowley, and Kennedy Domerchie are continuing as staff into the new federal fiscal year.

UMRBA staff continue working on the Minnesota statewide ISA update and have begun working on Illinois ISA data layers. Staff have also incorporated partial updates from the Great Lakes Commission (GLC) for Michigan and Ohio into the regional geodatabase. GLC also provided a boat access update that adds parking capacity for all public boat accesses within USEPA Region 5. The most recent geodatabase was delivered to USEPA Region 5 on November 4, 2022.

UMRBA staff participated in Mapping Group meetings on September 12, October 3, and November 7, 2022 and in USEPA Region 5 Inland Zone planning meetings on September 15 and October 20, 2022.

UMRBA is supporting USEPA hazard planning within Minnesota by identifying potential worst-case discharges from pipelines and Class 1 railroads as well as sub-area planning. UMRBA is also working with USEPA Region 5 to restart planning work in the long-idle Red River Sub-area.

UMRBA supported and presented at the Regional Response Team 5 semi-annual subcommittee and general meetings on October 12-13, 2022.

Upper Mississippi River Hazardous Spills Coordination Group

A major focal area for the UMR Spills Coordination Group is updating the UMR Spill Response Plan and Resource Manual (UMR Plan). Staff incorporated updates from members also produced updated maps for the document. The draft UMR Plan has been distributed to the Spills Group for final review. Following which, a final version of the UMR Plan will be routed to member agencies for signature. This is anticipated to occur in September 2022.

WATER QUALITY

Water Quality Task Force

The UMRBA Water Quality Task Force (WQTF) met on October 4-5, 2022 in St. Paul Minnesota. The agenda includes a series of presentations regarding contaminants of concern and states' updates on their nutrient and Clean Water Act programs as well as facilitated discussions for the purposes of updating the UMR Interstate Water Quality Monitoring Plan, including scoping a monitoring plan for contaminants of concern.

Nutrient Management

Hypoxia Task Force

On September 7, 2022, the UMRBA Board met with the UMRBA Water Quality Executive Committee and state members of the Hypoxia Task Force Coordinating Committee. The discussion centered around UMRBA's role as the Upper Mississippi River Sub-Basin Committee for the purpose of providing direction to UMRBA staff for developing draft work plans.

Multi-Benefit Conservation Practices Workshop

On November 9-10, 2022 UMRBA convened the Multi-Benefit Conservation Practices Nutrient Workshop in St. Louis, Missouri. This is the first in a series of two workshops that UMRBA will convene for the purpose of enhancing the collaborative nature of conservation practice implementation and accelerate nutrient reduction in the Upper Mississippi River Basin. The November 9-10 workshop included panel presentations and facilitated discussions regarding research initiatives, financial tools and incentives, and communication and social science.

On September 13 and October 5, UMRBA convened pre-workshop webinars to build a shared understanding on conservation systems with multiple benefits. Presentations provided examples of leveraging state and partner resources to advance adoption of conservation practices with multiple benefits.

Region 5 and 7 Leadership Engagement

The UMRBA Board and the UMRBA Water Quality Executive Committee met with the Regional Administrators from USEPA Regions 5 and 7 on November 8, 2022 in St. Louis. Meeting topics included the UMRBA Interstate Water Quality Monitoring, basin-wide nutrient management, environmental justice, climate resilience, lead and copper rule, and national primary drinking water regulations for PFAS.

Meetings and Conferences

UMRBA staff participated in the following conferences and partnership meetings:

- August 30-31, 2022 USEPA Drinking Water Workshop, focusing on PFAS, water quality, methods and analytics, contaminants of emerging concern, equity and environmental justice, and the Infrastructure Investment and Jobs Act (also referred to as Bipartisan Infrastructure Law).
- September 15, 2022 USEPA Region 5 monitoring virtual meeting regarding nitrogen compounds, specifically nitrite.
- September 29, 2022 Chloride Technical Management Workgroup meeting, focusing on chloride reduction resources clearinghouse, success stories of chloride management, and updates on Minnesota’s Smart Salting Assessment Tool and Water Softening Rebate Program. The meeting also included a focused discussion on communicating (writing and orally) with individual having limited English proficiency – i.e., providing translation services. UMRBA staff provided an update on the UMRBA Chloride resolution and the How Clean is the River? Report.
- October 6, 2022 FEWScapes working session for developing scenarios for food, energy, and ecosystem security in 2050. The North Central Region Water Network facilitated an exercise called backcasting, which involves describing a preferred future and working backwards to develop an implementation plan.
- October 25, 2022, USGS National Water Census user interview. UMRBA staff provided input on the development of the USGS National Water Census’ data delivery system and how the Census might serve UMRBA’s data needs.
- October 27, 2022 USEPA Regions 5 and 7 Harmful Algal Bloom (HAB) virtual meeting, focusing on projects using USEPA multi-purpose grants, USGS cooperative matching funds projects, and state and federal agencies’ and regional groups’ related activities.
- November 1, 2022 Illinois Nutrient Loss Reduction Strategy (NLRs) Conference, with presentations and discussions on the USEPA Gulf Hypoxia Program grants, Illinois River watershed study group, Illinois’ nutrient assessment reduction plans, Illinois River Basin NGWOS, various research projects, and the Illinois NLRs policy working group.

COLLABORATION

River Resources Action Team

UMRBA staff participated in the River Resources Action Team (RRAT) on-site meeting traveling the open river stretch of the Mississippi River. The agenda included wide ranging navigation, ecosystem, and floodplain projects in that area as well as relevant monitoring, research, and policy efforts. UMRBA staff presented on the UMRBA Interstate Water Quality Monitoring Plan pilot in CWA Reaches 8-9, UMRBA’s review of the interstate UMR Basin Charter governing notification and consultation of out-of-basin water diversions, and the recent water level management reports regarding costs, benefits, and risks associated with implementation and agencies’ recommendations for priority actions, including adaptive management and rating pools as being in “good” or “poor” conditions.

Interstate Council on Water Policy

The Interstate Council on Water Policy (ICWP) held its annual meeting on October 25-27, 2020 in the Quad Cities. The meeting featured the Upper Mississippi River Restoration (UMRR) program, Navigation and Ecosystem Sustainability Program (NESP), Illinois River Next Generation Water

Observing System, drought planning in Minnesota and Iowa, as well as UMRBA's planning assistance to the states (PAS) partnership with the Corps, USFWS, USGS, states, and non-governmental entities. The meeting also included briefings on TNC's Mississippi River monitoring initiative and briefings from USGS, USEPA, and other federal agencies on their water resources science and investments. The ICWP Board reflected on its FY 2022 year-in-review, which is provided on pages B-9 to B-12 of the agenda packet, and established priorities for FY 2023. Wallace was elected to serve as a member of the Board of Directors and Chair of its Legislative and Policy Committee.

America's Watershed Initiative

As a Board member, Kirsten Wallace attended the America's Watershed Initiative's (AWI's) annual meeting on September 26, 2022 in St. Louis. AWI's Board heard from St. Louis District staff Dave Busse and Shawn Sullivan and had a facilitated strategic planning session for the organization, including confirming a work plan for FYs 2023-2025.

FINANCIAL REPORT

Attached as page B-13 is UMRBA Treasurer Jason Tidemann's statement regarding his review of UMRBA's financial statement for the period of July 1, 2022 to September 30, 2022.

Attached as pages B-14 to B-17 are UMRBA's FY 2022 and 2023 budget reports and balance sheet. As of November 1, 2022, ordinary income for FY 2022 totaled \$404,217.09 and expenses totaled \$292,150.60 for net ordinary income of \$112,066.49. As of this date, UMRBA's cash assets totaled \$339,637.89.



October 19, 2022

Colonel Jesse Curry
District Commander
U.S. Army Corps of Engineers
Rock Island District
P.O. Box 2004
Rock Island, Illinois 61204

Dear Colonel Curry:

The Upper Mississippi River Basin Association (UMRBA) is pleased to endorse the Upper Mississippi River Restoration (UMRR) program's 2022 Report to Congress and to offer the states' enthusiastic support for the report's recommendations. As an active partner in the report's development, we are confident that it represents a comprehensive evaluation of UMRR and a sound vision for its future.

UMRBA is the Governor-established forum for interstate water resource planning and management on the Upper Mississippi River System, representing the common interests of Illinois, Iowa, Minnesota, Missouri, and Wisconsin. In the same action that Congress made to establish UMRR in 1986, it declared UMRBA to be the steward of multi-purpose river management and foster interagency and interdisciplinary cooperation through UMRR and beyond.

UMRR operates through a truly unique and remarkable partnership that builds upon the region's deeply-rooted commitment to integrated, multi-purpose management of the river. UMRR benefits from the U.S. Fish and Wildlife Refuges on the Upper Mississippi River System and leverages the unique expertise and capabilities of state and federal agencies as well as nongovernmental and private partners.

Since its inception, UMRR has clearly established itself as vital to balanced management of the Upper Mississippi River System. The promise of the program's early years is being met and exceeding expectations. UMRR is increasing important habitat quantity, quality, and diversity for the many fish and wildlife species that live and migrate through the Upper Mississippi River System. Cumulatively, the projects are also improving the broader ecological functions and processes and strengthening the resilience of important ecological conditions to various river stressors.

UMRR's uninterrupted 25 years of ecological monitoring provides a much clearer understanding of the complex and dynamic relationships among various ecosystem components and the factors influencing the river's health. UMRR's long term resource monitoring has produced the most comprehensive large river

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dataset in the world; and its continuation is even more important for understanding river ecosystems across the country and globally, particularly as they are affected by climate change and invasive species.

UMRBA applauds UMRR's complimentary evaluation of implementation issues, allowing the UMRR partners to consider several policy and program implementation issues at greater length. These are issues not anticipated to require Congressional action, but rather that lend themselves to resolution within the Corps or partnership. We believe that careful reflection on these issues will enhance UMRR's overall efficiency and effectiveness, and may well also benefit the Navigation and Ecosystem Sustainability Program as it rapidly builds its own foundation.

Of particular importance is resolving the current impasse between the Corps and non-federal cost share partners regarding the terms of the current Corps' project partnership agreements (PPAs). In partnership with conservation nonprofit organizations and the Interstate Council on Water Policy, UMRBA and its member states are actively seeking a more equitable and reasonable approach to the liability that non-federal entities assume when cost-share partnering with the Corps on water resource projects.

UMRBA's member states are especially satisfied with the collaborative effort that went into assessing the program and developing the report. The process provided the entire UMRR partnership with a valuable opportunity to reflect on the program's current status, its accomplishments and effectiveness, and its future direction.

In closing, I would like to emphasize UMRBA's strong support for UMRR's ongoing implementation. UMRBA's member states sincerely appreciate the Corps' commitment to collaboration, not only in development of this report, but more broadly in implementation of UMRR.

Sincerely,

A handwritten signature in blue ink that reads "Kirsten Wallace". The signature is written in a cursive style and is positioned to the left of a vertical line.

Kirsten Wallace
Executive Director
Upper Mississippi River Basin Association



ICWP

INTERSTATE COUNCIL ON WATER POLICY

2021-22 YEAR IN REVIEW



INFORMATION

- NIDIS Executive Council
- Federal Water Subcabinet
- Washington, D.C. Roundtable
- Transbasin Diversions webinar series



INFLUENCE

- USGS Streamgaging program
- WRDA 2022
- Resilience, USGS and 3DEP Coalitions
- Van Scoyoc & Associates



IMPLEMENTATION

- Subseasonal to seasonal forecasting
- NHD mapping
- NGWOS
- LiDAR
- Atlas 14 and beyond

BY THE NUMBERS

- 36 attendees at our 2021 Annual Meeting in Philadelphia, PA
- 20 committee meetings held
- 13 advocacy letters submitted
- 70 registrants and 6 federal agencies reps + staff of 4 Congressional committees at our 2022 Washington D.C. Roundtable

TRANSITIONS

- Sue Lowry retired in June
- Beth Callaway joined as new Director

Leader in water policy information, influence and implementation

POLICY ENGAGEMENT

KEY ACCOMPLISHMENTS

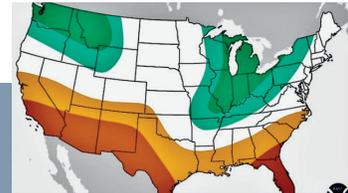
CONGRESS | COALITIONS | FEDERAL AGENCIES & PROGRAMS



USGS



USACE



NOAA

CONGRESS

- FY 2023 Streamgaging support letter to the House and Senate Appropriations
- WRDA 2022 letters of support to House and Senate committees
- Coalition support letter for USACE Project Partnership Agreements to House T&I
- NOAA Subseasonal to Seasonal forecasting FY2022 budget support letter to Senate leadership
- Regular engagement with House/Senate Appropriations and other relevant committee staff

COALITIONS

- US Chamber of Commerce Resiliency Coalition
- 3DEP Coalition
- USGS Coalition

FEDERAL AGENCIES & PROGRAMS

- Member of the National Integrated Drought Information System (NIDIS) Executive Council
- Engagement with Federal Water Agency Subcabinet agencies and Executive Branch agency staff throughout the year

FEMA



USDA



DOI



ICWP.ORG

COMMITTEES IN ACTION

KEY ACCOMPLISHMENTS

WATER DATA & SCIENCE | LEGISLATION & POLICY WATER PLANNING | INTERSTATE WATER MANAGEMENT



WD&S

- Conducted 5 meetings
- Explored support for wider use of FIRO at USACE, the latest trends in water data/tech
- Welcome guest speakers on USGS streamgaging data, Landsat program, weather data for water management



L&P

- Conducted 7 meetings
- WRDA 2022, FY2023 USGS Streamgaging letters to Congress
- USACE PPA advocacy; IJJA implementation
- HR7792 Water Data Act endorsement
- HR5689, HR7242, S3510, S3531, S3875 Resiliency Coalition support



PLANNING

- Conducted 3 meetings
- Evaluated methods for water availability, use and management in planning
- Tracked Corps of Engineers IJJA infrastructure funding
- Supported 3 successful ICWP internships



INTERSTATE

- Conducted 5 meetings
- Guest presentations on Interstate litigation case studies, interstate commission survey
- Hosted 3 Transbasin Diversion webinars

ICWP.ORG

INFORMING OUR NETWORKS

KEY ACCOMPLISHMENTS

PRESENTATIONS | NETWORKING | WEBINARS



All-Committee Transbasin Diversions Webinar Series

- *California State Water Project -- Past, Present and Future*
- *Republican and Platte River Diversion Project case study*
- *Transbasin Diversions in the Susquehanna River Basin*
- *Transbasin Diversions from the Delaware River Basin*

2022 ICWP internships -- 3 successfully completed reports

Networking through our committees

- Member presentations on planning, interstate water management, and water data/science
- Federal program updates from USGS, USACE

ICWP.ORG

Natalie Lenzen

From: Tidemann, Jason (DNR) <jason.tidemann@state.mn.us>
Sent: Monday, October 31, 2022 1:45 PM
To: Natalie Lenzen
Subject: RE: UMRBA July 1- September 30 Treasurer Report

Hello Kirsten,

As Treasurer, I have reviewed the monthly financial statements for the period 7/1/22-9/30/22. 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.

Jason Tidemann

From: Natalie Lenzen <nlenzen@umrba.org>
Sent: Monday, October 31, 2022 11:17 AM
To: Tidemann, Jason (DNR) <jason.tidemann@state.mn.us>
Subject: UMRBA July 1- September 30 Treasurer Report

This message may be from an external email source.

Do not select links or open attachments unless verified. Report all suspicious emails to Minnesota IT Services Security Operations Center.

Jason –

I would like to request your statement of review of our July 2022 through September 2022 financials for the Treasurer's report in the November 15, 2022 UMRBA Board meeting packet.

Please let me know if you have any questions or need any further information.

Thank you,
Natalie

Natalie Lenzen
Operations Manager | Upper Mississippi River Basin Association (UMRBA)
7831 E. Bush Lake Rd., Suite 302, Bloomington, MN 55439
nlenzen@umrba.org | 651-224-2880 (*office*)
Find us online at www.umrba.org or [Facebook](#)

12:01 PM
 11/01/22
 Accrual Basis

Upper Mississippi River Basin Association
FY 2023 Profit & Loss Budget Overview
 July 2022 through June 2023

	Jul '22 - Jun 23	Budget	\$ Over Budget
Ordinary Income/Expense			
Income			
Contracts and Grants			
USEPA NRS Workshops	7,551.73	60,000.00	-52,448.27
COE (UMRR)	7,982.77	85,716.00	-77,733.23
COE (RTC)	13,400.00	11,000.00	2,400.00
EPA (OPA)	0.00	250,000.00	-250,000.00
Interstate WQ Pilot	2,641.40	0.00	2,641.40
Total Contracts and Grants	31,575.90	406,716.00	-375,140.10
State Dues			
Illinois Dues	63,500.00	63,500.00	0.00
Iowa Dues	63,500.00	63,500.00	0.00
Minnesota Dues	15,875.00	63,500.00	-47,625.00
Missouri Dues	63,500.00	63,500.00	0.00
Wisconsin Dues	63,500.00	63,500.00	0.00
WQ Assessment	102,500.00	102,500.00	0.00
Total State Dues	372,375.00	420,000.00	-47,625.00
Interest Income			
Short Term Interest			
Short Term (Checking)	143.10	0.00	143.10
Short Term (Savings)	123.09	60.00	63.09
Short Term (Sweep)	0.00	1.00	-1.00
Short Term (CD)	0.00	4,000.00	-4,000.00
Total Short Term Interest	266.19	4,061.00	-3,794.81
Total Interest Income	266.19	4,061.00	-3,794.81
Total Income	404,217.09	830,777.00	-426,559.91
Gross Profit	404,217.09	830,777.00	-426,559.91
Expense			
USEPA NRS Workshops			
Meeting Expenses	0.00	30,000.00	-30,000.00
Communications	0.00	8,000.00	-8,000.00
Supplies	0.00	1,200.00	-1,200.00
Travel Assistance	0.00	17,500.00	-17,500.00
Travel	0.00	2,000.00	-2,000.00
Total USEPA NRS Workshops	0.00	58,700.00	-58,700.00
Gross Payroll			
Salary	126,019.28	404,600.00	-278,580.72
UMRBA Time Wages	1.75	5,000.00	-4,998.25
OPA Wages	42,122.05	62,634.00	-20,511.95
Benefits	31,504.86	101,150.00	-69,645.14
Benefits UMRBA Time	0.00	500.00	-500.00
Benefits OPA	1,913.04	6,263.40	-4,350.36
Total Gross Payroll	201,560.98	580,147.40	-378,586.42
Payroll Expenses			
SocSec Company	12,496.78	35,969.14	-23,472.36
Medicare Company	3,248.12	8,412.14	-5,164.02
SUTA (Minnesota UC)	222.11	290.07	-67.96

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 Accrual Basis

Upper Mississippi River Basin Association
FY 2023 Profit & Loss Budget Overview
 July 2022 through June 2023

	Jul '22 - Jun 23	Budget	\$ Over Budget
Workforce Enhancement Fee	92.90	290.07	-197.17
Total Payroll Expenses	16,059.91	44,961.42	-28,901.51
Travel	18,481.61	25,000.00	-6,518.39
Space Rental			
Office Rental	21,880.45	53,000.00	-31,119.55
Total Space Rental	21,880.45	53,000.00	-31,119.55
Reproduction			
Copy Service	322.58	1,360.00	-1,037.42
Printing	0.00	500.00	-500.00
Total Reproduction	322.58	1,860.00	-1,537.42
Meeting Expenses	5,043.27	30,000.00	-24,956.73
Supplies	124.81	3,000.00	-2,875.19
Equipment			
Equipment (Maint./Rental)	150.88	1,600.00	-1,449.12
Total Equipment	2,723.58	1,600.00	1,123.58
Legal and Financial			
Insurance	2,100.95	6,200.00	-4,099.05
Legal and Tax Services	4,000.00	13,000.00	-9,000.00
Bank Charges	39.00	10.00	29.00
Total Legal and Financial	6,139.95	19,210.00	-13,070.05
Telephone/Communications	2,993.71	6,500.00	-3,506.29
Postage	95.89	1,200.00	-1,104.11
Other Services	9,500.00	5,000.00	4,500.00
Publications	61.00	40,000.00	-39,939.00
State Travel Reimbursement			
Illinois	0.00	5,000.00	-5,000.00
Iowa	1,678.62	5,000.00	-3,321.38
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 Reimbusem...	1,678.62	28,500.00	-26,821.38
OPA Expenses			
Equipment OPA	0.00	1,000.00	-1,000.00
Equipment (Maint./Rental) O...	5,484.24	6,500.00	-1,015.76
Travel OPA	0.00	1,000.00	-1,000.00
Other OPA	0.00	800.00	-800.00
Total OPA Expenses	5,484.24	9,300.00	-3,815.76
Total Expense	292,150.60	907,978.82	-615,828.22
Net Ordinary Income	112,066.49	-77,201.82	189,268.31
Net Income	112,066.49	-77,201.82	189,268.31

Upper Mississippi River Basin Association
Balance Sheet
 As of November 1, 2022

	Nov 1, 22
ASSETS	
Current Assets	
Checking/Savings	
Checking HT 2732	339,637.89
Savings HT 2575	187,364.58
Investment	
CD	406,693.73
Total Investment	406,693.73
Total Checking/Savings	933,696.20
Accounts Receivable	
Contract/grants	
Invoiced/Billable	10,624.17
Total Contract/grants	10,624.17
Total Accounts Receivable	10,624.17
Other Current Assets	
Prepaid Expense	
Office Rental Prepaid Expense	3,868.01
Prepaid Expense - Other	8.00
Total Prepaid Expense	3,876.01
Total Other Current Assets	3,876.01
Total Current Assets	948,196.38
Fixed Assets	
Accum. Deprec. UMRBA	-33,321.09
Accum. Deprec. OPA	-21,703.53
Accum. Deprec. WQ	-1,290.00
Accum. Deprec. 604(b)	-568.95
Accum. Deprec. STC	-2,989.68
UMRBA Equipment	33,455.89
OPA Equipment	21,705.26
WQ Equipment	1,290.47
604(b) Equipment	568.95
STC Equipment	2,989.68
Total Fixed Assets	137.00
TOTAL ASSETS	948,333.38
LIABILITIES & EQUITY	
Liabilities	
Current Liabilities	
Credit Cards	
Visa Chase 5294	6,967.26
Total Credit Cards	6,967.26
Other Current Liabilities	
Deferred MO DoC (WLM) Revenue	4,206.05
Office Expense Liabilities	
Travel Expense	1,619.60
Total Office Expense Liabilities	1,619.60
Payroll Liabilities	
SUTA (Minnesota UC)	-257.51
Workforce Enhancement Fee	198.28
Accrued Vacation	45,786.20
Accrued Vacation FICA	3,502.65
Total Payroll Liabilities	49,229.62

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Accrual Basis

Upper Mississippi River Basin Association

Balance Sheet

As of November 1, 2022

	Nov 1, 22
Total Other Current Liabilities	55,055.27
Total Current Liabilities	62,022.53
Total Liabilities	62,022.53
Equity	
Retained Earnings	774,244.36
Net Income	112,066.49
Total Equity	886,310.85
TOTAL LIABILITIES & EQUITY	948,333.38

ATTACHMENT C

Illinois River Next Generation Water Observing System (NGWOS)

- **USGS Integrated Water Science Basin Fact Sheet (7/27/2021)**
(C-1 to C-2)
- **Illinois River NGWOS Fact Sheet (4/1/2021)** *(C-3 to C-4)*
- **Central Midwest Water Science Center Harmful Algal Blooms Team Fact Sheet (5/2022)** *(C-5 to C-8)*

Water Priorities for the Nation— USGS Integrated Water Science Basins

The United States faces growing challenges to its water supply, infrastructure, and aquatic ecosystems because of population growth, climate change, floods, and droughts (National Academies of Sciences, Engineering, and Medicine, 2018). To help address these challenges, the U.S. Geological Survey (USGS) Water Resources Mission Area (WMA) is integrating recent advances in monitoring, research, and modeling to improve assessments of water availability throughout the United States. A key part of this effort is the intensive study of 10 Integrated Water Science (IWS) basins across the Nation between 2019 and 2028.

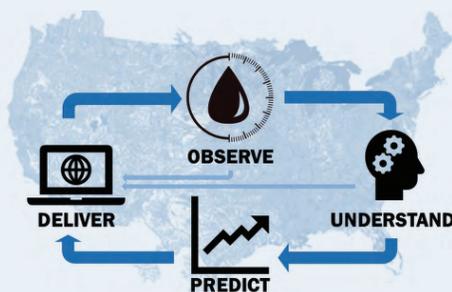
The Integrated Water Science Basin Plan—Intensive Study of Representative Basins in the United States

The goal is to study 10 IWS basins that are representative of large geographic regions across the United States (see candidates on fig. 1) and that encompass a variety of potential threats to the amount and quality of water across the Nation. Lessons learned from these smaller IWS basins (10,000–20,000 square miles in size) about the interactions among climate, human effects, surface water, groundwater, water quality, and water supply and demand will be used to help quantify and forecast water availability in the larger regions and ultimately the Nation.

Strategies for individual IWS basins will be informed by the following:

1. stakeholder input on the most pressing regional water availability issues and information needs;
2. a catalog of existing data, observation networks, and models that could be used to help assess basin and regional water availability; and
3. data and research gaps that may limit the accuracy of basin models and their broader regional application.

Once key gaps have been identified, targeted new observations and research will fill those gaps and lead to better understanding of factors that limit water availability. The new data and understanding will promote development of the most accurate basin and regional models possible. In turn, these models will be used to improve delivery of information and predictions about the Nation’s water supplies, now and into the future.



Observe, understand, predict, and deliver: Each of these processes are necessary for acquiring reliable and actionable information about water availability. For example, if observing systems are not advanced, understanding is limited, as is the ability to build better models for prediction. This interdependence is why science integration is critical and why it is a priority at the USGS.



Figure 1. Candidate hydrologic regions for the Integrated Water Science (IWS) basin plan. The Delaware River Basin, the Upper Colorado River Basin, and the Upper and Lower Illinois River Basins were selected in 2019, 2020, and 2021, respectively, as IWS basins. Additional basins are planned for addition each year through 2028.

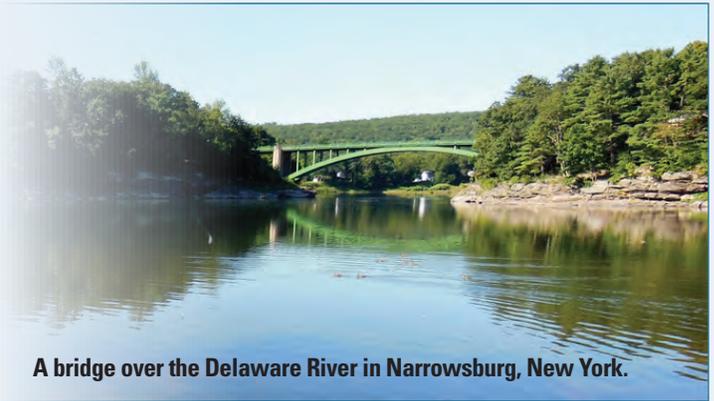
Implementing the USGS Integrated Water Science Basin Plan

IWS activities are in progress within the Delaware River, Upper Colorado River, and Upper and Lower Illinois River Basins (fig. 1), where planning began in 2019, 2020, and 2021, respectively. New basins will be added each year, as funding is available, until activities in 10 IWS basins are underway.

Basins have been or will be selected by combining stakeholder input with objective quantitative rankings that account for environmental, engineered, and social settings; ecological resources; water demand; water quality and water quantity; and changes to water resources in different regions (Van Metre and others, 2020). The end result will be the intensive study of a representative suite of basins in the United States that have diverse water availability and use attributes.



Water managers in the Delaware River Basin have a long history of developing innovative, regional solutions to ensure the long-term sustainability of this treasured resource that supplies drinking water to more than 17 million people (Hutson and others, 2016). Integrating USGS water science in the Delaware River Basin provides insights that support innovative modern water prediction and decision-support systems in a nationally important, complex interstate river system. As an example, the USGS deployed autonomous underwater vehicles in the lower Delaware River during 2019–20 to improve understanding of processes that affect current velocity, salinity, water temperature, and water quality in the Delaware Estuary. These valuable data will be used to inform models of the effects of flow management and sea-level rise on salinity intrusion.



A bridge over the Delaware River in Narrowsburg, New York.



A section of the Colorado River near Grand Junction, Colorado.

The Upper and Lower Illinois River Basins provide an opportunity to conduct integrated water science in a system challenged by an overabundance of nutrients—primarily nitrogen and phosphorus—and associated harmful algal blooms that excessive nutrient loads can produce (Leland and Porter, 2000; Panno and others, 2008). These basins consist of extensive urban and agricultural land uses, which makes them an ideal setting to help improve understanding of how nutrient sources, in combination with climate and land-use change, may limit water availability.

In the Upper Colorado River Basin, integrated data and models of streamflow, groundwater, evapotranspiration, snowpack, soil moisture, water quality, and water use are being developed to inform water availability assessments for the region. An integrated data-to-modeling approach in the Upper Colorado River Basin will help improve regional water prediction in other snowmelt-dominated systems in the Rocky Mountains and beyond. The approach is useful for addressing issues of water availability and water quality and for evaluating the effects of short-term climate perturbation (for example, fire and drought) and long-term climate change. As an example, the USGS is developing advanced methods for estimating the spatial variability of snow water equivalent that will be incorporated into models to improve prediction of the volume, timing, and duration of streamflow resulting from snowmelt.



A barge navigating the Illinois River in the Illinois River Basin.

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Publishing support provided by Rolla Publishing Service Center

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ISSN 2327-6916 (print)
 ISSN 2327-6932 (online)
<https://doi.org/10.3133/fs20213041>

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?

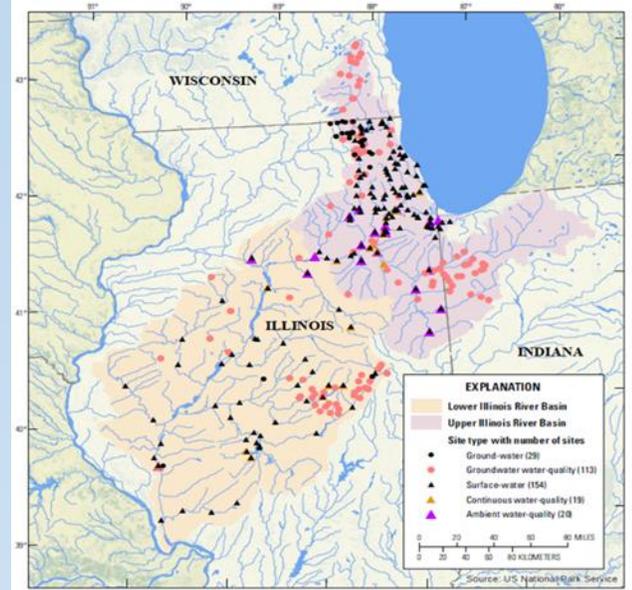


Next Generation Water Observing System in the Illinois River Basin

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:

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

Central Midwest Water Science Center— Harmful Algal Blooms Team

The U.S. Geological Survey (USGS) Central Midwest Water Science Center (CMWSC) includes three States—Illinois, Iowa, and Missouri. USGS water science centers across the Nation provide information on water resources including stream-flow, water use, water availability, and the quality of surface water and groundwater (<https://www.usgs.gov/mission-areas/water-resources>).

The USGS CMWSC Harmful Algal Blooms (HABs) team is dedicated to studying the complexity of HABs and is currently (2021) researching ways to better predict the timing, magnitude, and toxicity of HABs. Updated information about the HABs team including current projects, data releases, and publications are available on the CMWSC website (<https://www.usgs.gov/centers/cm-water/science-topics/harmful-algal-blooms>).

What are HABs?

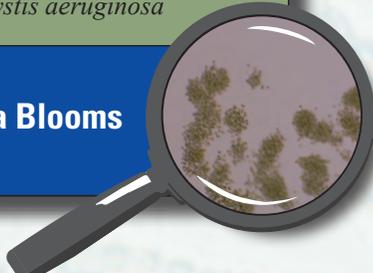
Algal blooms are defined as a rapid increase of algae populations. Algae are aquatic organisms that contain chlorophyll, most needing sunlight to grow, and have no true leaves or flowers. There are many different types of algae including green algae, red algae, diatoms, and cyanobacteria (also known as blue-green algae), which are bacteria but function like algae, and others. Algae range in size from single-celled microscopic organisms to large multicellular organisms, such as seaweed or giant kelp. Most algal blooms are composed of cyanobacteria or green algae. Algal blooms become harmful when the blooms add substantial amounts of organic matter to fresh and saltwater. After algae die, decomposers use an oxygen consuming process that can reduce dissolved oxygen concentrations below critical thresholds for living organisms and cause fish kills. Algal blooms can alter natural aquatic biodiversity and reduce recreational opportunities including swimming, boating, and fishing. Also, some cyanobacteria can produce toxins that are directly harmful to humans, pets, and wildlife, and produce taste and odor compounds that make drinking water and fish flesh smell and taste bad.

What Causes HABs?

The conditions that trigger HABs production are complex and often site specific. Blooms are typically considered to result from excessive nutrients and warm waters, which provide ideal conditions for algal growth. However, lakes with low nutrient concentrations also experience algal blooms but much less is understood about what triggers HABs during these conditions.

- Comprised of cyanobacteria, a group of bacteria that photosynthesize
- Prokaryotes: small simple cells containing no nucleus or organelles
- Capable of nitrogen fixation
- Can produce cyanotoxins
- Pictured: *Microcystis aeruginosa*

Cyanobacteria Blooms



- Comprised of green algae, a group of unicellular or multicellular aquatic organisms that photosynthesize
- Eukaryotes: unicellular or multicellular organisms that contain a nucleus and organelles
- Are not known to produce toxins
- Pictured: *Closterium diana*

Green Algal Blooms



Are Algae Always Harmful?

Algae are not always harmful. They have a vital role in ecosystem function—as primary producers, algae are the base of the food web and, therefore, are an important food source to many aquatic organisms, including fish. Primary producers acquire energy from sunlight (photosynthesis) or from nonliving organic sources (chemosynthesis). These processes maintain ecosystem functions, and algae also produce oxygen that is used by many respiring organisms. When algae are in appropriate concentrations, they can support a natural biodiversity and healthy ecosystem.

Common Effects from HABs

The effects of HABs are extensive and expand across multiple disciplines including recreational management, economics, public health, and ecology. Resulting effects can include increased costs for treatment and management, reductions in public health and recreational uses, and unquantifiable ecological losses.

Recreational Management

Many aspects of recreation involve water, including swimming, kayaking, fishing, boating, and more. However, when HABs occur, water recreation is more difficult, unpleasant, and discouraged by the U.S. Environmental Protection Agency (2021a) because of the potential toxicity to humans and pets. A recent study indicated a 10–13 percent decline in recreational fishing license sales on Lake Erie between 2011 and 2014 during a period coinciding with algal blooms (Wolf and others, 2017). Many river and lake towns rely on seasonal recreational tourism that can be affected by HABs.

Economics

Hoagland and others (2002) analyzed a survey of experts from individual coastal States, reviewed the literature, and used their own calculations to estimate costs associated with HABs. In the United States, an estimated \$20 million is spent annually on public health effects from HABs based on shellfish and ciguatera fish poisoning in humans. The effects of HABs cost commercial fisheries an average of \$18 million annually, and for recreation and tourism, a total annual effect of \$7 million was estimated. Hoagland and others (2002) estimated that \$2 million annually goes towards monitoring and management of HABs.

With the occurrence of blooms increasing, these estimates are expected to increase (Anderson and others, 2000). Estimates since this study have yet to be made because of the complexity of estimating highly variable data. Although taste and odor compounds produced by cyanobacteria have no known health effects, they can affect water supplies resulting in unpalatable drinking water. Public water suppliers spend additional funds to remove these compounds from drinking water.

Public Health

Cyanobacterial HABs can produce cyanotoxins that are directly toxic to humans, pets, and wildlife. Exposure to cyanotoxins can occur from drinking water, recreational waters, and fish from areas of contamination. These toxins have various effects to human health including skin rashes, fever-like symptoms, respiratory, and gastrointestinal problems (Merel and others, 2013). Some cyanobacteria are capable of producing multiple toxins.

Ecology

Toxins can buildup in an organism over time, which is a process known as bioaccumulation. Bioaccumulation can affect organisms throughout the food chain. Additionally, HABs can alter the community structure lowering species richness and biodiversity. As HABs complete their life cycle, respiring microbes break down the algae in a process known as decomposition, which consumes oxygen. Lowering dissolved-oxygen concentrations can result in concentrations below critical thresholds for most living organisms, often resulting in fish kills.



Photograph of a visible algal bloom in the Illinois River at Henry, Illinois. Photograph by Jessica Garrett, U.S. Geological Survey.

Common Cyanotoxins

Microcystins

- Can affect liver (hepatotoxin), kidney, and reproductive systems
- Produced by *Microcystis*

Cylindrospermopsin

- Can affect kidney (hepatotoxin) and liver
- Produced by *Raphidiopsis*, *Aphanizomenon*, and other genera

Anatoxins

- Capable of affecting the central nervous system (neurotoxin)
- Produced by *Chrysochlorum*, *Cuspidothrix*, *Raphidiopsis* and other genera

Saxitoxins

- Commonly referred to as Paralytic Shellfish Poisoning toxins
- Produced by *Aphanizomenon*, *Dolichospermum*, and other genera

CMWSC HABs Team Efforts to Better Understand HABs

As of 2020 the CMWSC is working on multiple projects that involve HABs. Scientists within the CMWSC are interested in data collection and analysis to predict the timing, magnitude, and toxicity of HABs.

Next Generation Water Observing System

USGS scientists and collaborators are monitoring algal blooms on the Illinois River. The Illinois River Basin was selected as the third Next Generation Water Observing basin with appropriated funding directed towards monitoring, sampling, and studying the complexities of algal blooms with new technologies and methodologies. The basin is susceptible to algal blooms, which are becoming increasingly common, because of multiple urban and agricultural effects on water quality. Scientists are interested in understanding the environmental factors that affect the timing, magnitude, and toxicity of HABs. Large sampling efforts, real-time data with continuous sensors, and satellite imagery are used to improve the overall understanding of HABs and associated toxin production on the Illinois River. Large sampling efforts, real-time data with continuous sensors, and satellite imagery are used to improve the overall understanding of HABs and associated toxin production on the Illinois River.

Upper Illinois River Hydrodynamic and Temperature Modeling

USGS scientists, in cooperation with the Illinois Environmental Protection Agency, are developing a model of an area of the upper Illinois River that is known to experience HABs (Gregg Good, Illinois EPA, written commun., 2020). Real-time water-quality monitors, streamgages, and meteorological measurements including wind speed, air temperature, and solar radiation can provide data for the model. This model can be used to better understand how hydrodynamics and meteorologic conditions contribute to the development of HABs in the Illinois River.

Water-Quality Monitoring Plan at Mozingo Lake in Maryville, Missouri

USGS scientists, in cooperation with the Missouri Department of Natural Resources, are working to develop a water-quality monitoring plan for Mozingo Lake, a reservoir that serves as a large recreational area and provides drinking water to the city of Maryville. The lake has been susceptible to HABs, causing taste and odor issues in the drinking water and a loss of recreational opportunities. A streamgage that includes continuous water-quality data is planned to be installed at the primary inflow to the reservoir, Mozingo Creek. The streamgage data, in addition to nutrient and suspended-sediment samples within the watershed, can provide information on the timing and magnitude of nutrients and other environmental factors that are contributing to the blooms. These data can be used to support best management practices that may potentially reduce the frequency of HABs while quantifying the nutrient and sediment concentrations entering the reservoir.



Hydrologists sampling harmful algal blooms in Henry, Illinois. Photographs by the U.S. Geological Survey.

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U.S. Geological Survey scientist checking a streamgage at Starved Rock Lock and Dam, Ottawa, Illinois. Photograph by the U.S. Geological Survey.



The bullnose on the Starved Rock Lock and Dam that will house water quality and harmful algal bloom monitoring equipment as part of the Next Generation Water Observing Project. Photograph by the U.S. Geological Survey.

By Katherine M. Summers, Heather M. Krempa, and Jessica D. Garrett

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Publishing support provided by the
Rolla Publishing Service Center

ISSN 2327-6916 (print)
ISSN 2327-6932 (online)
<https://doi.org/10.3133/fs20223011>

ATTACHMENT D

USACE Harmful Algal Bloom Demonstration Project

- **WRDA 2020 Section 128 Implementation Guidance (1/11/2022)** *(D-1 to D-7)*
- **WRDA 2022 Section 138 Excerpt (6/22/2022)** *(D-8)*
- **Senator Grassley Press Release Regarding WRDA 2022 Priorities (7/28/2022)** *(D-9)*



DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
CIVIL WORKS
108 ARMY PENTAGON
WASHINGTON, DC 20310-0108

SACW

1/11/22

MEMORANDUM FOR COMMANDING GENERAL, U.S. ARMY CORPS OF ENGINEERS

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

1. Section 128 of the Water Resources Development Act (WRDA) of 2020 directs the Secretary to implement a demonstration program to determine the causes of, and implement measures to effectively detect, prevent, treat, and eliminate, harmful algal blooms associated with water resources development projects. Section 128 requires the Secretary to consult with and leverage data from Federal and State agencies, and leverage activities of the Secretary carried out through the Engineer Research and Development Center (ERDC) pursuant to Section 1109 of the Water Resources Development Act of 2018 (33 U.S.C. 610 note). Additionally, Section 128 authorizes \$25 million to be appropriated to carry out the demonstration program. The authority directs the Secretary to undertake program activities in the Great Lakes, tidal and inland waters of New Jersey, coastal and tidal waters of Louisiana, waterways of Sacramento-San Joaquin Delta in California, Allegheny Reservoir Watershed in New York, and Lake Okeechobee, Florida. Section 128 directs the Secretary to undertake program activities related to harmful algal blooms at any Federal reservoir located in the Upper Missouri River Basin or the North Platte River Basin, at the request and expense of another Federal agency.
2. This Section is applicable to the Engineer Research and Development Center (ERDC), Headquarters and all Divisions, Districts, and Field Offices of the U.S. Army Corps of Engineers (Corps) with Civil Works responsibilities.
3. The following definitions apply to the Section 128 demonstration program:
 - a. The term "harmful algal bloom" (HAB) means marine and freshwater phytoplankton that proliferate to high concentrations, resulting in nuisance conditions or harmful impacts on marine and aquatic ecosystems, coastal communities, and human health through the production of toxic compounds or other biological, chemical and physical impacts of the algae outbreak. A HAB is "associated with a water resources development project" if the HAB has the potential to
 - (1) be caused or exacerbated by operation of the project; or
 - (2) adversely impact the project's functioning for its authorized purposes.

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

b. The term “demonstration project” means implementation of a HAB prevention, detection, or management technology project, with the primary objective of evaluating and gathering detailed technology cost and performance data that will guide technology use and support technology transfer to field practitioners.

c. The term “water resources development project” means a project constructed by the Corps, or by a non-Federal interest in partnership with the Corps, for purposes of navigation, flood or coastal storm risk management, water supply, or ecosystem restoration. A water resources development project may be operated by the Corps or by a non-Federal interest. The term does not include projects constructed under Environmental Infrastructure authorities.

d. The term “non-Federal interest” is defined in Section 221(b) of the Flood Control Act of 1970 (42 U.S.C. 1962d-5b(b)).

4. The following policies and requirements apply to demonstration projects to address HABs associated with water resources development projects:

a. Eligible applicants. Non-Federal interests are eligible to submit Statements of Interest (SOI) to implement a demonstration project to address a HAB associated with a water resources development project. Other non-Federal entities, that do not meet the definition of non-Federal interest and are interested in a demonstration project should contact ERDC at HABDemoPrgm@usace.army.mil for more information. The ERDC counsel will prepare a legal opinion on whether participation is authorized and if a deviation to the process within this guidance is required for partnering with such entity. This legal opinion must be coordinated with Corps Headquarters counsel. In the case of a demonstration project to address a HAB associated with a water resources development project operated by a non-Federal interest, the written consent of the non-Federal interest is required when the proponent of the demonstration project is not the non-Federal interest.

b. Eligibility Criteria. To be eligible for consideration under the demonstration program, a project must meet the following criteria:

(1) A demonstration project under Section 128 may be implemented anywhere in the nation to address a HAB associated with a water resources development project. Preference will be given to projects located in the six focus areas: the Great Lakes, tidal and inland waters of New Jersey, coastal and tidal waters of Louisiana, waterways of Sacramento-San Joaquin Delta in California, Allegheny Reservoir Watershed in New York, and Lake Okeechobee, Florida.

(2) The proposed project must be for the purpose of determining the causes of, and/or applying technologies to effectively detect, prevent, manage, or eliminate, HAB associated with a water resources development project. The project must

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

include the gathering and evaluation of technology cost and performance data that will guide technology use and support technology transfer.

(3) The proposed project should provide data that could be applied at multiple water resources development projects or federally constructed reservoirs in the Upper Missouri River Basin or the North Platte River Basin and could be expanded at a larger scale than the proposed demonstration.

(4) The applicants may propose to use technology developed by the Corps under Section 1109 of WRDA 2018 (i.e., the Freshwater Harmful Algal Bloom Research and Development Initiative) or viable technology with legal authority and ability to be permitted and applied under appropriate federal laws.

(5) Demonstration projects will be chosen based upon information provided under paragraph 4.b.(2) through 4.b.(4). Projects that provide scalability and do not exceed a \$5M per project limit will have preferential weighted scores. However, larger projects will be considered based on the merits provided in paragraph 4.b.(2) through 4.b.(4).

c. Cost. A demonstration project implemented at a water resources development project will be carried out at 100 percent Federal expense.

d. Funding mechanisms. Subject to available authorities, the Corps may use a Federal contract, or a grant or cooperative agreement with a non-Federal interest to implement a demonstration project at a water resources development project. For a demonstration project implemented through a Federal contract at a water resources development project operated by a non-Federal interest, the Corps will execute a Memorandum of Agreement (MOA) with the non-Federal interest prior to implementing the demonstration project.

e. Funding Source. Funds to carry out demonstration projects to address HABs associated with water resources development projects will be requested in the Aquatic Nuisance Control Research remaining item in the Operation and Maintenance account.

f. Selection Considerations. Projects will be selected for funding based on the following considerations:

(1) The project's potential to significantly reduce the frequency and effects of HABs associated with water resources development projects.

(2) The project's utilization of new, innovative methods or tools, or technology being developed under the Freshwater Harmful Algal Bloom Research and Development Initiative.

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

(3) The degree to which the project leverages existing Federal and State data and ongoing programs and activities of Federal and State agencies.

(4) As stated in Paragraph 4.b(1), preference will be given to projects that address a HAB issue associated with a water resources development project in one of the six focus areas identified.

g. Statements of Interest (SOI). The Director of ERDC or a respective designee will publish a public notice soliciting SOI from interested parties. A SOI must contain sufficient information to demonstrate eligibility under Paragraph 4.(b) and to address the selection considerations in subparagraph 4f. All information provided in a SOI is public information. Therefore, information that is confidential business information, information that should not be disclosed because of statutory restrictions, or other information that a project proponent would not want to appear publicly should not be included in the submittal.

5. The following procedures apply to demonstration projects to address HABs associated with water resources development projects:

a. Upon the appropriation of funds sufficient to initiate the demonstration project program, the HAB Demonstration Program Review Team formed by the Director of ERDC will review and rank all proposals received.

b. The Director of ERDC will establish a HAB Demonstration Program Review Team to evaluate and select demonstration projects. The team may consist of the following:

(1) Members of the Invasive Species Leadership Team.

(2) Corps personnel with expertise in the implementation of environmental scientific principles including invasive and nuisance species science and management.

(3) Members from the Harmful Algal Bloom and Hypoxia Research and Control Act Interagency Working Group.

(4) Personnel from the ERDC, Civil Works office of the Technical Director for Environmental Sciences and Engineering who execute the Aquatic Nuisance Species Research Program.

6. The following policies and requirements apply to demonstration projects at Federal reservoirs under the jurisdiction of another Federal agency in the Upper Missouri River or North Platte River Basins:

a. At any time a Federal agency responsible for operating a Federal reservoir in the Upper Missouri River or North Platte River Basins may request a demonstration project by contacting the Director of ERDC. All requests will be reviewed by the HAB Demonstration Program Review Team.

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

b. A demonstration project implemented at a Federal reservoir will be carried out at the full expense of the Federal agency responsible for operating the reservoir. A General Terms & Conditions (GT&C) Agreement and order consistent with the guidance in Engineer Regulation (ER) 1140-2-211, Support for Others: Reimbursable Services, must be executed prior to implementing a demonstration project for another Federal agency. The Federal agency requesting the demonstration project may provide the required funding on a reimbursable basis.

c. A request for a demonstration project at a Federal reservoir may be accepted if the Director of ERDC determines that there are sufficient resources and the capability to perform the work without adversely affecting activities for which the Corps receives appropriations or preexisting obligations to Federal and non-Federal partners.

d. Funds provided by other Federal agencies for a demonstration project at a Federal reservoir in the Upper Missouri River or North Platte River Basins will not accrue toward the authorized program limit and will not be subject to the evaluation criteria in paragraph 4.b. and 4.f.

8. A draft environmental compliance analysis, to include a draft programmatic National Environmental Policy Act document, will be submitted to the Assistant Secretary of the Army for Civil Works (ASA(CW)) for action prior to the acceptance of any solicitation of proposed projects or proposals from other Federal agencies under this demonstration program. Environmental compliance will analyze the impacts to the human environment of the demonstration program as authorized in Section 128.

9. Under no circumstances shall this policy be modified, supplemented, amended, or rescinded, directly or indirectly, nor shall the Corps take action not in accordance with the direction herein, without the express written approval from the (ASA(CW)). This guidance shall be transmitted to the appropriate Corps Division and District Commanders and posted to the Corps' WRDA website within five business days of receipt (written or electronic) from this office. Guidance shall be transmitted and posted as is and without additional guidance attached.

10. Questions regarding this implementation guidance should be directed to Gib Owen, Office of the ASA(CW), at gib.a.owen.civ@army.mil or 703-695-4641.



MICHAEL L. CONNOR
Assistant Secretary of the Army
(Civil Works)

Encl

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

CF:
DCG-CEO
DCW

SUBJECT: Implementation Guidance for Section 128 of the Water Resources Development Act of 2020, Harmful Algal Bloom Demonstration Program

Section 128, Harmful Algal Bloom Demonstration Program

a) IN GENERAL. The Secretary shall carry out a demonstration program to determine the causes of, and implement measures to effectively detect, prevent, treat, and eliminate, harmful algal blooms associated with water resources development projects.

(b) CONSULTATION; USE OF EXISTING DATA AND PROGRAM AUTHORITIES. In carrying out the demonstration program under subsection (a), the Secretary shall (1) consult with the heads of appropriate Federal and State agencies; and (2) make maximum use of existing Federal and State data and ongoing programs and activities of Federal and State agencies, including the activities of the Secretary carried out through the Engineer Research and Development Center pursuant to section 1109 of the Water Resources Development Act of 2018 (33 U.S.C. 610 note).

(c) FOCUS AREAS. In carrying out the demonstration program under subsection (a), the Secretary shall undertake program activities related to harmful algal blooms in the Great Lakes, the tidal and inland waters of the State of New Jersey, the coastal and tidal waters of the State of Louisiana, the waterways of the counties that comprise the Sacramento-San Joaquin Delta, California, the Allegheny Reservoir Watershed, New York, and Lake Okeechobee, Florida.

(d) ADDITIONAL FOCUS AREAS. In addition to the areas described in subsection (c), in carrying out the demonstration program under subsection (a), the Secretary shall undertake program activities related to harmful algal blooms at any Federal reservoir located in the Upper Missouri River Basin or the North Platte River Basin, at the request and expense of another Federal agency.

(e) AUTHORIZATION OF APPROPRIATIONS. There is authorized to be appropriated to the Secretary \$25,000,000 to carry out this section. Such sums shall remain available until expended.

Sec. 315. Evaluation of hydrologic changes in Souris River basin

This section authorizes the Corps to evaluate hydrologic changes affecting the 1989 “Agreement Between the Government of Canada and the United States of America for Water Supply and Flood Control in the Souris River Basin.”

Sec. 316. Memorandum of understanding relating to Baldhill Dam, North Dakota

This section authorizes the Corps to enter into a memorandum of understanding with a non-Federal interest for the Red River Valley Water Supply Project to accommodate flows for downstream users through Baldhill Dam, North Dakota.

Sec. 317. Upper Mississippi River restoration program

This section amends section 1103(e)(3) of WRDA 1986 (33 U.S.C. 652(e)(3)) by increasing the authorized level of funding available for ecosystem restoration activities in the Upper Mississippi River system.

Sec. 318. Harmful algal bloom demonstration program

This section amends section 128(c) of WRDA 2020 (33 U.S.C. 610 note) to include the Upper Mississippi River and its tributaries as a focus area within the Corps’ harmful algal bloom demonstration program.

Sec. 319. Colleton County, South Carolina

This section allows construction carried out by non-Federal interests before the date of enactment of this Act for the project for hurricane and storm damage risk reduction, Colleton County, South Carolina to be eligible for in-kind credit.

Sec. 320. Arkansas River corridor, Oklahoma

This section amends section 3132 of the WRDA 2007 (121 Stat. 1141) to increase the authorization level and authorize the Corps to carry out additional feasibility studies for certain components of the Arkansas River Corridor Master Plan.

Sec. 321. Abandoned and inactive noncoal mine restoration

This section amends section 560 of WRDA 1999 (33 U.S.C. 2336) to allow assistance carried out on land taken into trust on behalf of, and for the benefit of, an Indian Tribe be eligible under this authority at an adjusted cost-share. This section also increases the authorization of appropriations for the program.

Sec. 322. Asian carp prevention and control pilot program

This section amends section 509(a)(2) of WRDA 2020 (33 U.S.C. 610 note) to extend the Asian Carp Prevention and Control Pilot Program to the Tombigbee River Watershed.

Sec. 323. Forms of assistance

This section amends section 592(b) of WRDA 1999 (113 Stat. 379) to authorize the Corps to clarify eligible forms of environmental infrastructure assistance for non-Federal interests in Mississippi.

07.28.2022

Grassley, Ernst Laud Senate Passage Of Water Resources Bill Containing Several Iowa Priorities

Iowa senators secured key provisions in this year's Water Resources Development Act

WASHINGTON – Today, the U.S. Senate passed the *Water Resources Development Act* (WRDA), a biannual package that authorizes the U.S. Army Corps of Engineers to carry out water resource projects. Sens. Chuck Grassley (R-Iowa) and Joni Ernst (R-Iowa), a member of the Senate Environment and Public Works (EPW) Committee, [cemented several Iowa priorities](#) into this package – including key measures to update Cedar Rapids' flood system and a levee in the Des Moines area.

"Senator Ernst and I worked hard to ensure Iowa would benefit from this year's *Water Resources Development Act*, and I'm glad that our priorities are included in the package that passed the Senate today. This includes authorizations that will help with additional flood control needs in both Cedar Rapids and Des Moines," **Grassley said.**

"This important bipartisan bill will benefit Iowa communities while protecting taxpayer dollars. I appreciate Senator Grassley's continued partnership in securing key priorities for our state and am glad to see it one step closer to becoming law," **Ernst said.**

The key provisions Grassley and Ernst included in the WRDA package are:

Updating Cedar Rapids' Flood System

This request authorizes modifications to the flood risk management project consistent with the City of Cedar Rapids, Iowa, Cedar River Flood Control System Master Plan to enhance flood protections for Cedar Rapids.

Allowing Improvements to Go Through for a Des Moines Area Levee

This request makes a jurisdictional fix for a levee in the Des Moines area — the Southeast Des Moines (SEDM) levee — so that it can finally get the improvements it needs.

Studying Harmful Algal Blooms in the Upper Mississippi River

This request extends the scope of a study on harmful algal blooms – or HABs – so that the Upper Mississippi River and its tributaries are included in the study. HABs occur when colonies of algae grow out of control and produce toxic or harmful effects on people, fish and birds.



ATTACHMENT E

Navigation Report

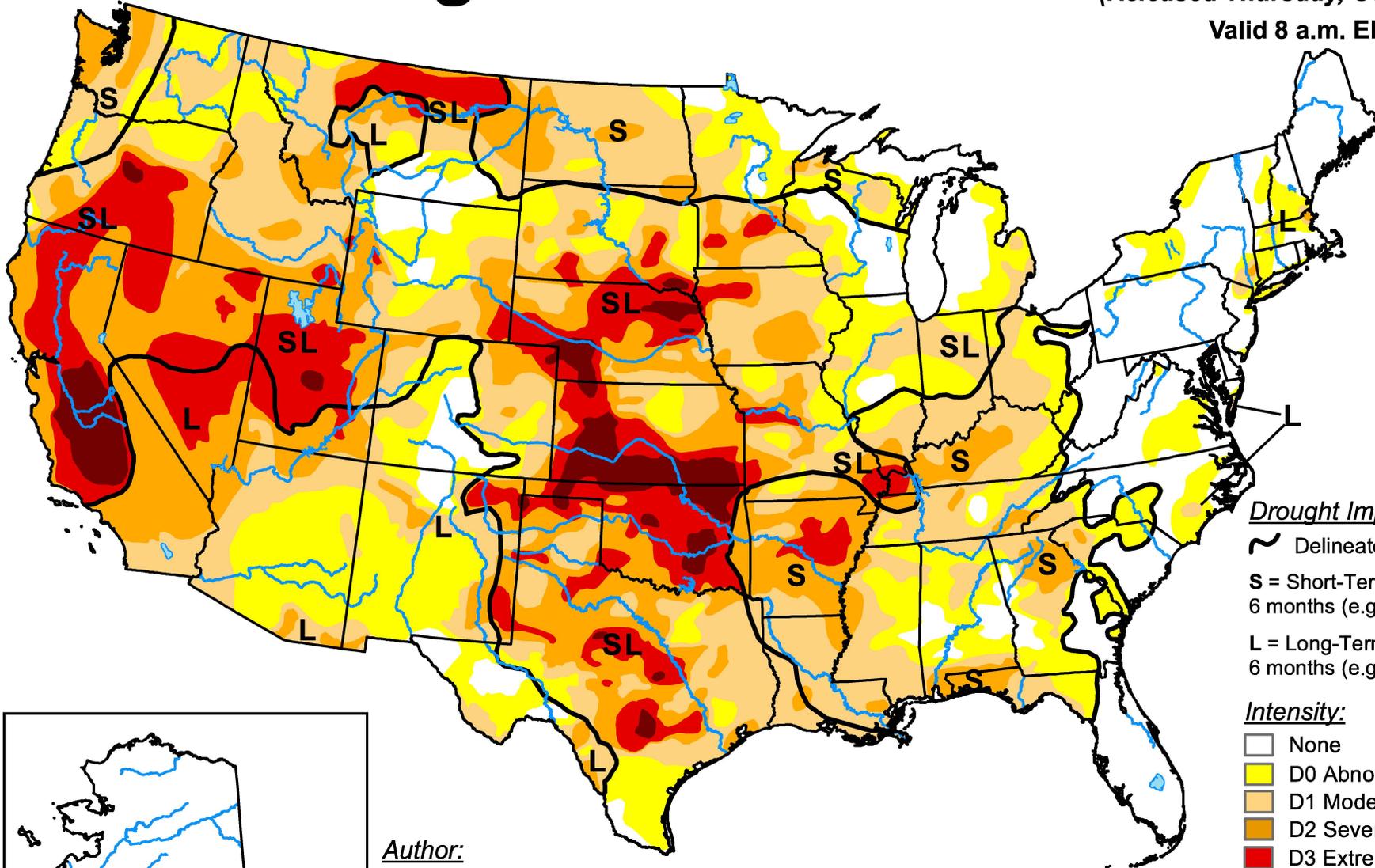
- **U.S. Drought Monitor (10/25/2022)** *(E-1)*
- **USDA Grain Transportation Report (10/27/2022)** *(E-2 to E-8)*
- **NIDIS Midwest and Missouri River Basin Drought Status Update (10/25/2022)** *(E-9 to E-28)*
- **Mississippi River Navigation Channel Condition Status in St. Louis District (10/26/2022)** *(E-29)*
- **News Coverage (sample):**
 - **CBS news (video only):**
<https://www.cbsnews.com/video/drought-disrupts-mississippi-river-shipping-corridor/>
 - **AP News** *(E-30 to E-35):*
<https://apnews.com/article/science-business-droughts-mississippi-river-22db8e44d7f1f96b7e0ed32c9c77f621>
 - **Progressive Farmer** *(E-36 to E-38):*
<https://www.dtnpf.com/agriculture/web/ag/news/article/2022/10/26/grain-deliveries-halted-mississippi>

U.S. Drought Monitor

October 25, 2022

(Released Thursday, Oct. 27, 2022)

Valid 8 a.m. EDT

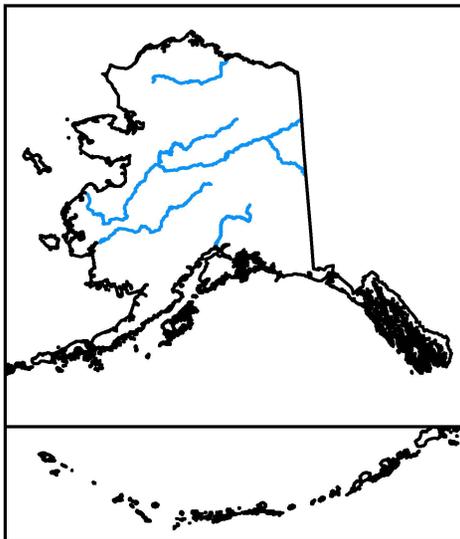


Drought Impact Types:

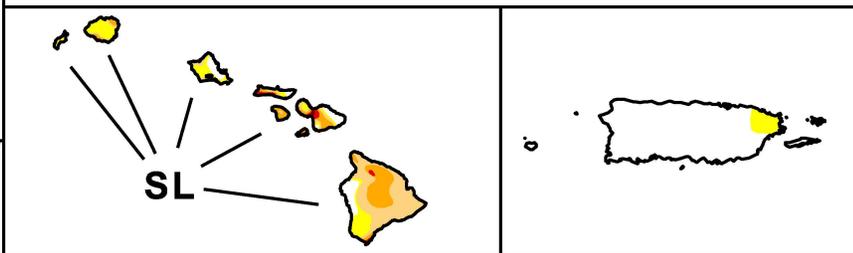
- ~ Delineates dominant impacts
- S = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought



Author:
Adam Hartman
NOAA/NWS/NCEP/CPC



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



droughtmonitor.unl.edu



Grain Transportation Report

A weekly publication of the Agricultural Marketing Service
www.ams.usda.gov/GTR

Contact Us

October 27, 2022

WEEKLY HIGHLIGHTS

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The next
release is
November 3, 2022

Barge Rates on the Rise Again

For the week of October 25, the St. Louis barge spot rate ([GTR table 9](#)) increased almost 22 percent from last week to \$88.46 per ton. However, this rate is lower than the all-time peak of \$105.85 per ton for the week of October 11. Because of low water levels on the Mississippi River System (MRS), barge companies have little capacity in the spot market as they struggle to meet current commitments. Future rates are also higher than normal: the current low barge availability, combined with new export sales of soybeans ([GTR table 14](#)), have spurred demand for barges in November, December, and early next year. The St. Louis 1-month-rate (for November) reached \$58.61 per ton, 384 percent higher than last year and 439 percent higher than the 5-year average. The St. Louis 3-month-rate (for January) reached \$33.99 per ton, 265 percent higher than last year and 270 percent higher than the 5-year average. In the near term, barge challenges and draft restrictions are likely to continue. However, by mid-November, the slightly above-normal rain forecast may begin to provide relief and help stabilize some portions of the MRS.

USDA To Discontinue Dataset on Rail Deliveries to Port

After the November 10 *GTR*, USDA will discontinue publication of its rail deliveries to port (rail-to-port) data ([GTR table 3](#) and [GTR fig. 2](#)). Railroads, grain elevators, and ports have voluntarily provided the data weekly for over 40 years. However, over time, a number of reporting entities have stopped providing data, and others have indicated a desire to cease reporting in the near future. Thus, USDA will no longer be able to provide these data. This week's [GTR feature article](#) discusses two data sources that closely approximate the discontinued data: grain inspections from USDA's Federal Grain Inspection Service (available [in the GTR](#) and on [USDA's AgTransport](#)) and grain shuttle turn data from the Surface Transportation Board (available on [AgTransport](#)).

White House Launches Initiatives To Combat Fuel Prices

For the week ending October 24, the U.S average diesel fuel price continued to rise for the third week in a row. At \$5.341 per gallon, the price was up 2 cents from the previous week and up \$1.628 from the same week a year ago ([GTR fig. 13](#)). To neutralize rising fuel prices, the White House announced [three key initiatives](#). First, the Department of Energy (DOE) will release [15 million barrels of oil](#) from the Strategic Petroleum Reserve (SPR) for December delivery. This action fulfills the President's intention in March of releasing up to 180 million barrels of SPR crude oil for sale. As further movement against high prices, the Administration intends to repurchase crude oil for the SPR when prices are at or below \$67-\$72 per barrel. The repurchase should increase certainty around future crude oil demand and spur production today. Finally, the President is calling on companies to pass on lower energy costs to consumers immediately.

FMCSA Ends Hours-of-Service Waiver for Feed and Fuel

The Federal Motor Carrier Safety Administration (FMCSA) [has canceled](#) its waiver on hours-of-service (HOS) requirements for trucks transporting feed, fuel, propane, and ethanol. After the waiver was first issued in 2020 to help address the national COVID-19 emergency, FMCSA extended the waiver more than 10 times, sometimes modifying it. Based on comments received during the most recent extension period through October 15, FMCSA decided to let the waiver expire.

Snapshots by Sector

Export Sales

For the week ending October 13, [unshipped balances](#) of wheat, corn, and soybeans for marketing year 2022/23 totaled 39.43 million metric tons (mmt), down 24 percent from the same time last year and up 1 percent from last week. Net [corn export sales](#) for marketing year 2022/23 were 0.408 mmt, up significantly from last week. Net [soybean export sales](#) were 2.336 mmt, up significantly from last week. Net weekly [wheat export sales](#) were 0.163 mmt, down 23 percent from last week.

Rail

U.S. Class I railroads originated 25,843 [grain carloads](#) during the week ending October 15. This was a 10-percent increase from the previous week, 3 percent more than last year, and 8 percent more than the 3-year average.

Average November shuttle [secondary railcar bids/offers](#) (per car) were \$1,589 above tariff for the week ending October 20. This was \$111 less than last week and \$1,304 more than this week last year.

Barge

For the week ending October 22, [barged grain movements](#) totaled 525,722 tons. This was 18 percent fewer than the previous week and 9 percent fewer than the same period last year.

For the week ending October 22, 365 grain barges [moved down river](#)—49 fewer barges than last week. There were 851 grain barges [unloaded](#) in the New Orleans region, 19 percent more than last week.

Ocean

For the week ending October 20, 28 [oceangoing grain vessels](#) were loaded in the Gulf—33 percent fewer than the same period last year. Within the next 10 days (starting October 21), 37 vessels were expected to be loaded—28 percent fewer than the same period last year.

As of October 20, the rate for shipping a metric ton (mt) of grain from the U.S. Gulf to Japan was \$63.25. This was 1 percent less than the previous week. The rate from the Pacific Northwest to Japan was \$37.00 per mt, unchanged from the previous week.

Feature Article/Calendar

Using Inspections Data and Service Metrics To Analyze Grain Rail Exports

Railroads, grain elevators, and ports have voluntarily provided data used to publish the rail-to-port information (*GTR* table 3 and fig. 2) in the weekly *Grain Transportation Report (GTR)*. Recently, a number of these reporting entities have stopped providing the data or signaled they would cease reporting in the near future. Therefore, after the November 10 *GTR* issue, these data will no longer be provided.

While recognizing there are differences between datasets, this article spotlights the value of alternatives to the rail-to-port data: USDA’s Federal Grain Inspection Service’s (FGIS) grain inspections data (*GTR* table 16) and the Surface Transportation Board’s (STB) rail service metrics ([AgTransport.usda.gov](https://www.agtransport.usda.gov)). As provided either in the *GTR* or in *AgTransport*, both of these sources enable valuable understanding of the weekly volumes and performance of grain rail export markets.

FGIS Inspections Data on Rail Export Volumes

Timeliness. One valuable aspect of weekly data is their *timely* export information. In contrast to other export data (e.g., Census) that can be delayed by a month or more, FGIS inspections data are released weekly on the Monday before the *GTR*’s Thursday release. Beginning November 14, a copy of the FGIS inspections data will be published on our open data site, [AgTransport](https://www.agtransport.usda.gov), as soon as possible (i.e., on Mondays), before regular publication each Thursday in the *GTR*. The Monday release should further enhance stakeholder access to a more timely grain export dataset.

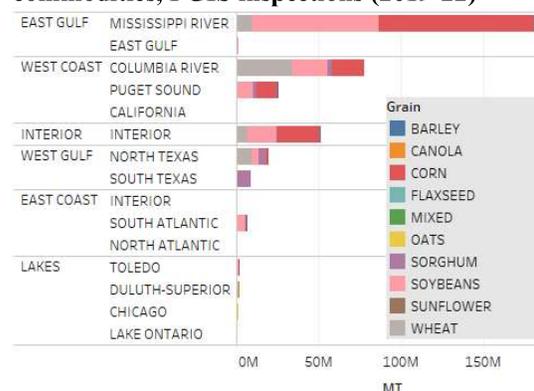
Coverage and granularity. The FGIS inspections dataset provides historical coverage on grain exports by commodity and region since 1983, allowing stakeholders to perform insightful analysis over several decades. The inspections data cover all grain export regions of the United States. The data also provide export volumes at a fairly granular geographic level. For example, in the Pacific Northwest (PNW), exports out of the Columbia River can be distinguished from exports from Puget Sound. Figure 1 shows an example of the broader regions and subregions captured in the inspections data over the past 3 years. The example also highlights the richness of export data at the commodity level.

Representativeness. The FGIS inspections data are not official trade data and do not necessarily include all grain volumes that are exported. For instance, only shippers exporting more than 15,000 metric tons of grain per year from a single facility are mandated to weigh their shipments and have FGIS certify their quality. Shipments to Mexico and Canada by rail or truck are also not required to be inspected. Nonetheless, because the certified grade can improve sales domestically and abroad, many exporters voluntarily use FGIS inspections services. Indeed, FGIS inspections data are a close proxy for official trade numbers from the U.S. Census Bureau (Census)—between 2017 and 2021, inspections of corn, soybeans, and wheat represented 96 percent of Census exports.

Although the inspections data do not indicate the mode of transport, rail is the primary mode for delivering grain to a number of export regions. That is, although total inspections are hard to disentangle from barge and truck movements, the inspections data allow narrowing the focus to specific regions. Some of these regions capture very rail-specific information.

For example, PNW and the Texas Gulf are both served primarily by rail. Several insights can be gleaned from comparing monthly tonnages in the public carload waybill sample (waybill); monthly Census exports available from USDA’s Foreign Agricultural Service (FAS); and monthly tonnages of FGIS inspections, all between 2015 and 2020. The comparisons provide a sense of how much rail accounts for shipments to the region, as well as how

Figure 1: Top regions, subregions, and commodities, FGIS inspections (2019-22)



Source: USDA, Agricultural Marketing Service analysis of inspections data from the Federal Grain Inspection Service.

accurately inspections data reflect rail and other modes.¹ In PNW, on average, FGIS inspections and rail carloads from the waybill data were 99 percent and 96 percent of the FAS export numbers, respectively. Although a small share of the rail volumes were likely domestic deliveries to the PNW region, the large majority were rail deliveries to ports for export. Similarly, in the Texas Gulf, average monthly inspections and rail carloads were 101 percent and 99 percent of the FAS export numbers, respectively.² That is, the inspections data in these regions were tied tightly to rail deliveries. In contrast, inspections in the Mississippi Gulf would not likely correlate with rail deliveries, because barge deliveries dominate grain exports out of that region.

Destination information. The FGIS inspections data identify the destination countries of the port exports. Combined with the rail-centric regional selections (as in the preceding examples) and leveraging the inspections data’s commodity-level information, the destination data can focalize the factors driving rail demand. For instance, in PNW and the Texas Gulf, widely varying market shares among the top five destinations imply key differences in the factors driving the demand for rail to these ports (table 1).

The destination variable in the inspections data also means cross-border rail shipments to Mexico can be identified. Inspections data reflecting cross-border shipments can be obtained by drilling down to shipments destined for Mexico that originated in the “Interior” port region.³ A data field for the “carrier type” can be used to identify cross-border shipments by rail. A similar analysis to that of PNW and Texas Gulf above, comparing Census and FGIS data, shows that FGIS inspections capture 92 percent of the cross-border exports to Mexico in the Census data, on average.

Table 1: Shares of top five destination countries for PNW and Texas Gulf grain inspection (2018-22)

PNW		Texas Gulf	
CHINA	36.92%	NIGERIA	21.67%
JAPAN	22.48%	MEXICO	12.64%
KOREA REP	12.62%	EGYPT	6.19%
PHILIPPINES	8.21%	COLOMBIA	5.73%
TAIWAN	6.22%	CHINA	5.56%
TOTAL	86.44%	TOTAL	51.78%

Source: USDA, Agricultural Marketing Service analysis of inspections data from the Federal Grain Inspections Service.

STB Metrics on Rail Performance of Grain Movements

Beginning in March 2017, STB expanded and made permanent the collection of a wide variety of [rail service metrics](#), including train speeds by commodity, terminal dwell times by location, origin dwell times by commodity, and carloads by commodity. On [AgTransport](#), USDA publishes these data, along with [visualizations](#) built from the data. STB’s monthly data on grain shuttle train performance offer regional insight into grain movements.

More specifically, three Class I railroads—BNSF Railway (BNSF), Canadian Pacific Railway, and Union Pacific Railroad (UP)—report their average train round trips (or “turns”) and planned trips (turns) per month for grain shuttles. Each railroad provides these numbers for its system and for key regions. For instance, BNSF provides average and planned turns for California, the Gulf, Mexico, PNW, and West Texas. UP does so for Arkansas/Texas, California/Arizona, the Gulf, Mexico, and PNW.

The grain shuttle turn data include only a subset of railroads—those that operate grain unit trains in shuttle service—but they show monthly railroad-specific information and corridors, such as California. Rail disruptions have been widespread in 2022, and the data offer a regional glimpse into service. For example, grain shuttle turns for BNSF and UP to California averaged 2.1 per month in April 2022, down from 2.6 in 2021 and 2.8 in 2020—a 25-percent drop in capacity in 2022 compared to 2020.

Conclusion

The FGIS grain inspections data provide a wide perspective on national grain exports at a detailed level for specific commodities, ports, and destination countries involved in U.S. grain rail transportation. Together, the FGIS inspections data and STB rail service metrics provide valuable insights into grain markets, with coverage of both national and regional grain rail transportation demand and performance. For access to the full dataset of FGIS inspections data contained in the *GTR* as well as other related data, please visit [AgTransport.usda.gov](#).

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¹ The [carload waybill sample](#) is published annually by STB. Agricultural export volumes were pulled from [FAS’s Global Agricultural Trade System platform](#).

² For a number of reasons, the inspections data may be higher or lower than the Census data in a particular month. Reasons include differences in how the dates of the inspection and shipment are recorded, as well as the fact that the weekly inspections data do not match cleanly to monthly data.

³ Interior shipments include inspections conducted somewhere other than at an ocean port. Interior shipments typically include land-based shipments to Mexico and Canada, as well as container shipments abroad.

Grain Transportation Indicators

Table 1
Grain transport cost indicators¹

For the week ending	Truck	Rail		Barge	Ocean	
		Non-Shuttle	Shuttle		Gulf	Pacific
10/26/22	358	332	323	1148	283	262
10/19/22	358	332	352	1077	285	262

¹Indicator: Base year 2000 = 100. Weekly updates include truck = diesel (\$/gallon); rail = near-month secondary rail market bid and monthly tariff rate with fuel surcharge (\$/car); barge = Illinois River barge rate (index = percent of tariff rate); ocean = routes to Japan (\$/metric ton); n/a = not available.

Source: USDA, Agricultural Marketing Service.

Table 2
Market Update: U.S. origins to export position price spreads (\$/bushel)

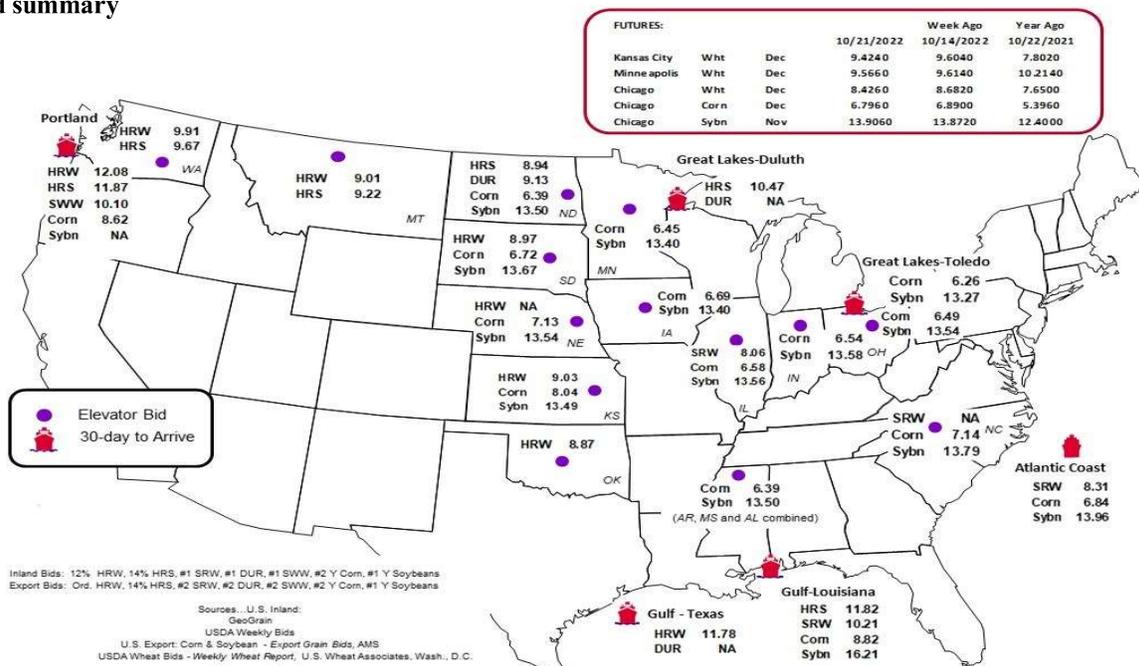
Commodity	Origin-destination	10/21/2022	10/14/2022
Corn	IL-Gulf	-2.24	-2.25
Corn	NE-Gulf	-1.69	-1.82
Soybean	IA-Gulf	-2.81	-2.82
HRW	KS-Gulf	-2.75	-2.88
HRS	ND-Portland	-2.93	-3.46

Note: nq = no quote; n/a = not available; HRW = hard red winter wheat; HRS = hard red spring wheat.

Source: USDA, Agricultural Marketing Service.

The **grain bid summary** illustrates the market relationships for commodities. Positive and negative adjustments in differential between terminal and futures markets, and the relationship to inland market points, are indicators of changes in fundamental market supply and demand. The map may be used to monitor market and time differentials.

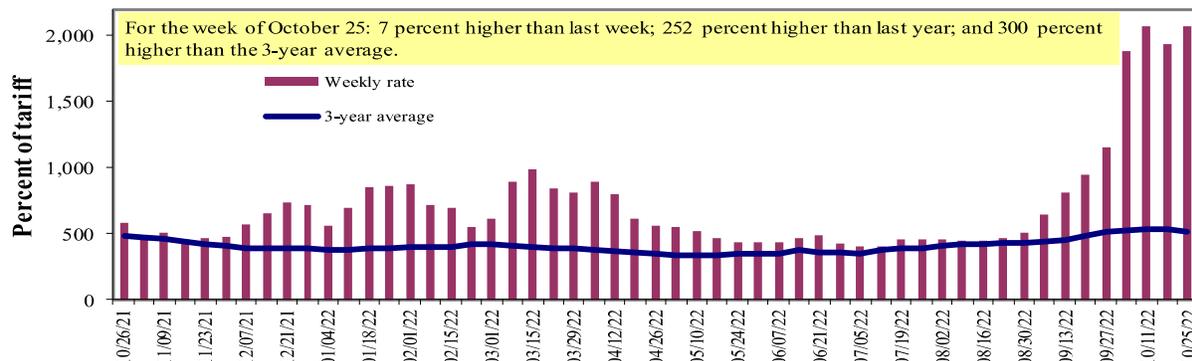
Figure 1
Grain bid summary



Barge Transportation

Figure 8

Illinois River barge freight rate^{1,2}



¹Rate = percent of 1976 tariff benchmark index (1976 = 100 percent); ²4-week moving average of the 3-year average.

*Source: USDA, Agricultural Marketing Service.

Table 9

Weekly barge freight rates: Southbound only

		Twin Cities	Mid-Mississippi	Lower Illinois River	St. Louis	Cincinnati	Lower Ohio	Cairo-Memphis
Rate¹	10/25/2022	1683	2033	2067	2217	2478	2478	1878
	10/18/2022	1369	1850	1938	1819	2119	2119	1978
\$/ton	10/25/2022	104.18	108.16	95.91	88.46	116.22	100.11	58.97
	10/18/2022	84.74	98.42	89.92	72.58	99.38	85.61	62.11
Current week % change from the same week:								
	Last year	206	232	252	286	274	274	227
	3-year avg. ²	223	277	300	359	388	388	299
Rate¹	November	1386	1622	1550	1469	1572	1572	1400
	January	-	-	1027	852	881	881	783

¹Rate = percent of 1976 tariff benchmark index (1976 = 100 percent); ²4-week moving average; ton = 2,000 pounds; "-" data not available.

Source: USDA, Agricultural Marketing Service.

Figure 9 Benchmark tariff rates

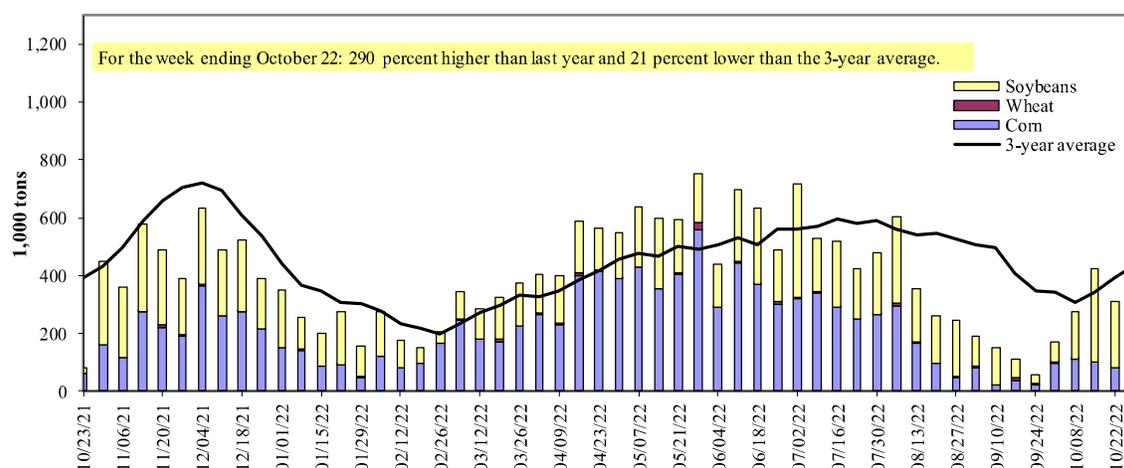
Calculating barge rate per ton:
(Rate * 1976 tariff benchmark rate per ton)/100

Select applicable index from market quotes are included in tables on this page. The 1976 benchmark rates per ton are provided in map.



Map Credit: USDA, Agricultural Marketing Service

Figure 10

Barge movements on the Mississippi River¹ (Locks 27 - Granite City, IL)

¹ The 3-year average is a 4-week moving average.

Note: The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Table 10

Barge grain movements (1,000 tons)

For the week ending 10/22/2022	Corn	Wheat	Soybeans	Other	Total
Mississippi River					
Rock Island, IL (L15)	0	0	110	0	110
Winfield, MO (L25)	50	0	184	0	234
Alton, IL (L26)	53	0	173	0	226
Granite City, IL (L27)	80	0	232	3	315
Illinois River (La Grange)	22	0	84	0	106
Ohio River (Olmsted)	53	0	133	0	185
Arkansas River (L1)	0	1	24	0	25
Weekly total - 2022	133	1	388	3	526
Weekly total - 2021	282	10	275	10	577
2022 YTD ¹	14,021	1,499	10,240	209	25,969
2021 YTD ¹	20,186	1,480	7,264	240	29,169
2022 as % of 2021 YTD	69	101	141	87	89
Last 4 weeks as % of 2021 ²	60	48	115	127	86
Total 2021	23,516	1,634	11,325	297	36,772

¹ Weekly total, YTD (year-to-date), and calendar year total include MI/27, OH/Olmsted, and AR/1; Other refers to oats, barley, sorghum, and rye.

Total may not add exactly due to rounding.

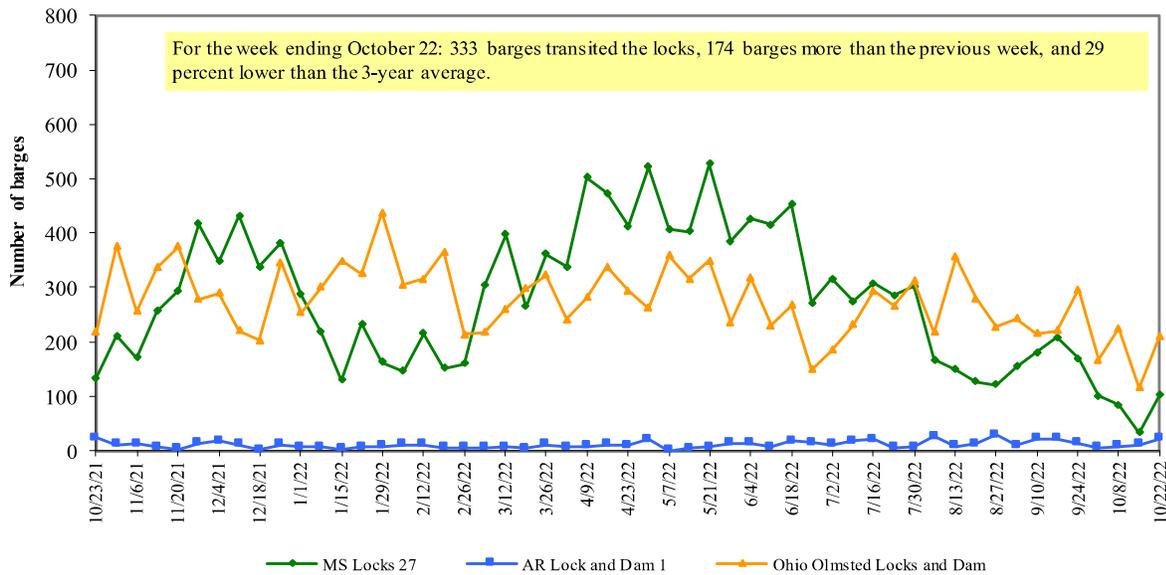
² As a percent of same period in 2021.

Note: L (as in "L15") refers to a lock, locks, or locks and dam facility. The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Figure 11

Upbound empty barges transiting Mississippi River Locks 27, Arkansas River Lock and Dam 1, and Ohio River Olmsted Locks and Dam

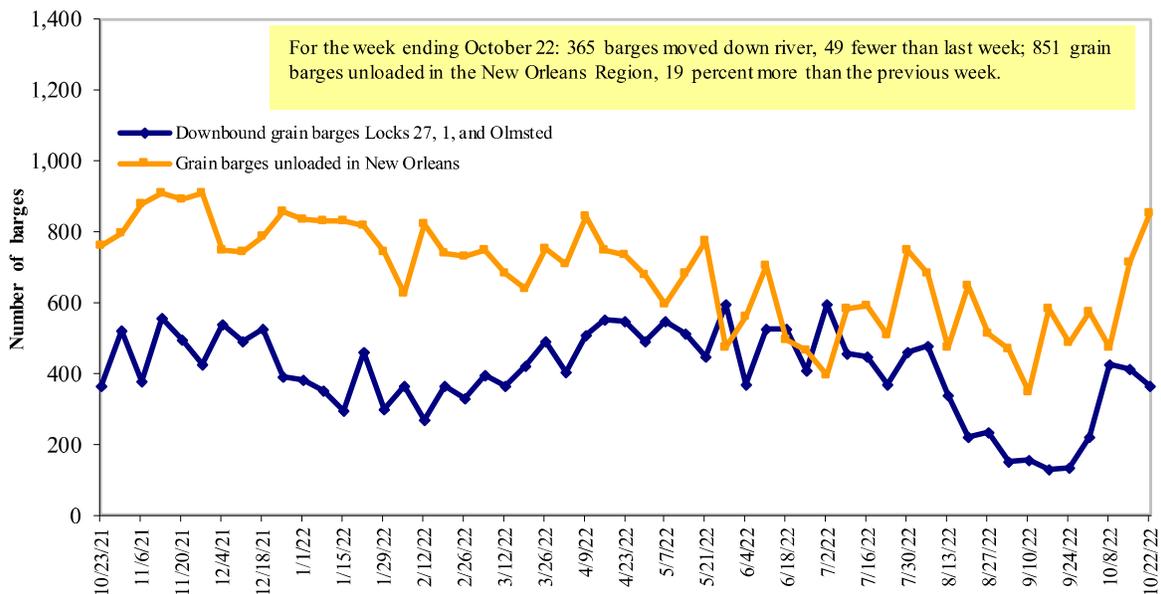


Note: The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers.

Figure 12

Grain barges for export in New Orleans region



Note: Olmsted = Olmsted Locks and Dam. The U.S. Army Corps of Engineers has recently migrated its lock and vessel database and has noted the latest data may be revised in coming weeks.

Source: U.S. Army Corps of Engineers and USDA, Agricultural Marketing Service.



Drought.gov

National Integrated Drought Information System

Drought Status Update for the Midwest and Missouri River Basin

Date Issued: October 25, 2022

DEWS Regions: Midwest, Missouri River Basin

States: Colorado, Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Montana, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin, Wyoming

Update Status: NIDIS and its partners will issue future Midwest and Missouri River Basin drought status updates as conditions evolve.

Drought Has Recently Expanded and Intensified and Is Expected to Persist.

This drought status update is based on information provided during the October 20, 2022 North Central U.S. Climate and Drought Outlook Webinar. [View the webinar](#) for more details.

Key Points

- Drought has **rapidly intensified and expanded across the north central U.S.** over the last month. Currently, **60% of the region** is in moderate to exceptional drought (D1–D4) according to the U.S. Drought Monitor, with **30% in severe drought or worse (D2–D4)**. Exceptional drought (D4) is affecting 30% of Kansas and 12% of Nebraska, as well as small portions of Colorado, Missouri, and South Dakota.
- While the recent rapid intensification of drought has been most prominent across the Midwest, **drought has been persistent and more severe across the Missouri River Basin/Great Plains**. Some areas within the Missouri River Basin are entering their second or third year of drought.
- Impacts from the drought have also recently intensified. Most notably, below-normal streamflow is a major issue, including **record low levels on the Mississippi, Missouri, and Ohio rivers. River navigation and transportation of goods has been greatly inhibited and restricted**. Industry sources estimate that the current volume of goods on the waterway is effectively 45% lower than usual since ships and barges cannot carry as much in low water.
- Other major impacts include extremely **dry soils** for winter crops and a lack of fall soil moisture recharge, **very poor pasture and rangeland** conditions, **fires**, and **limited surface and groundwater** for municipal and individual water supply and livestock.
- While there is a chance for some precipitation relief in late October into early November, the current drought situation **will require multiple rounds of significant precipitation** in order to see significant recovery.
- Fall is a very important season for replenishing soil moisture in order to secure moisture that is needed

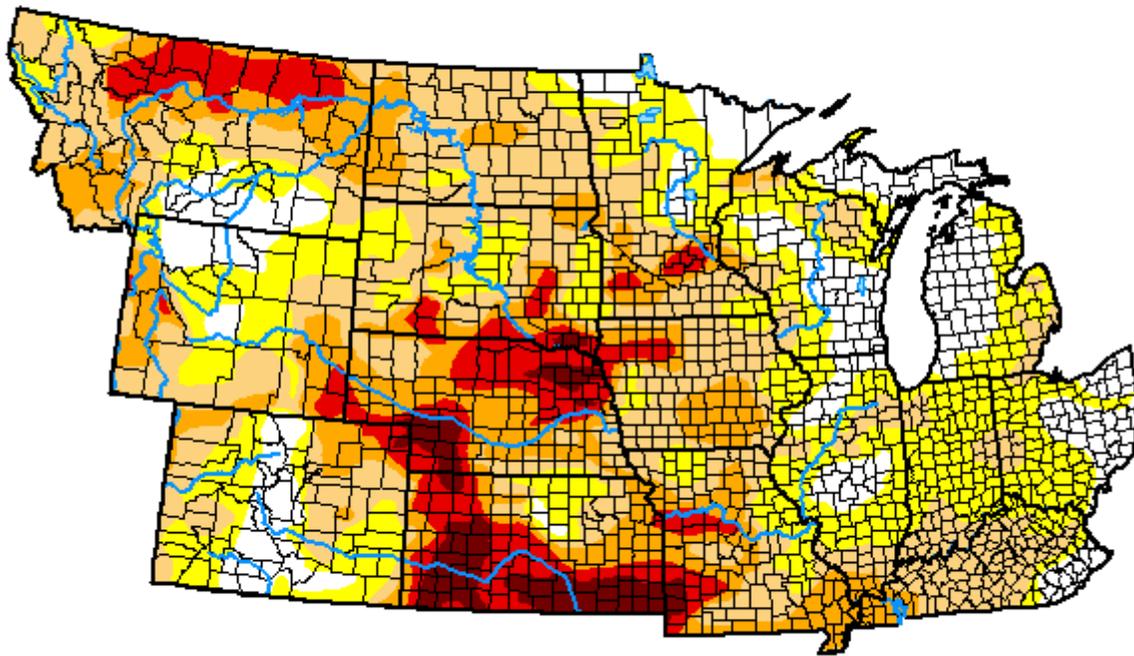
for the upcoming growing season. **If fall moisture is not replenished, the risk for drought continuing is increased for the next growing season**, as improvements to soil moisture are limited over the winter, particularly in northern areas where soils are mostly frozen.

- A potential issue this winter could be that dry soils and cold temperatures lead to **deeper frost depths**, which could cause issues with **buried infrastructure and pipelines** (e.g., water main breaks and the potential for frozen water lines).

Report Your Drought Impacts

U.S. Drought Monitor Conditions: North Central U.S. | October 18, 2022

[U.S. Drought Monitor](#)



Current [U.S. Drought Monitor](https://www.drought.gov/data-maps-tools/us-drought-monitor) (<https://www.drought.gov/data-maps-tools/us-drought-monitor>) map for the north central U.S. with data valid for October 18, 2022. The U.S. Drought Monitor (USDM) is updated each Thursday to show the location and intensity of drought across the country. Drought categories show experts' assessments of conditions related to dryness and drought including observations of how much water is available in streams, lakes, and soils compared to usual for the same time of year.

U.S. Drought Monitor Categories

-  D0 - Abnormally Dry
-  D1 - Moderate Drought
-  D2 - Severe Drought
-  D3 - Extreme Drought
-  D4 - Exceptional Drought

Source(s): [NDMC](https://www.drought.gov/about/partners/national-drought-mitigation-center-ndmc) (<https://www.drought.gov/about/partners/national-drought-mitigation-center-ndmc>), [NOAA](https://www.drought.gov/about/partners/national-oceanic-and-atmospheric-administration-noaa) (<https://www.drought.gov/about/partners/national-oceanic-and-atmospheric-administration-noaa>), [USDA](https://www.drought.gov/about/partners/us-department-agriculture-usda) (<https://www.drought.gov/about/partners/us-department-agriculture-usda>)

Last Updated - 10/18/22

60%

of the north central U.S. is in drought (D1–D4)

26%

more of the region is in drought than 3 months ago

86%

of the north central U.S. is abnormally dry (D0) or worse

Current Conditions and Impacts

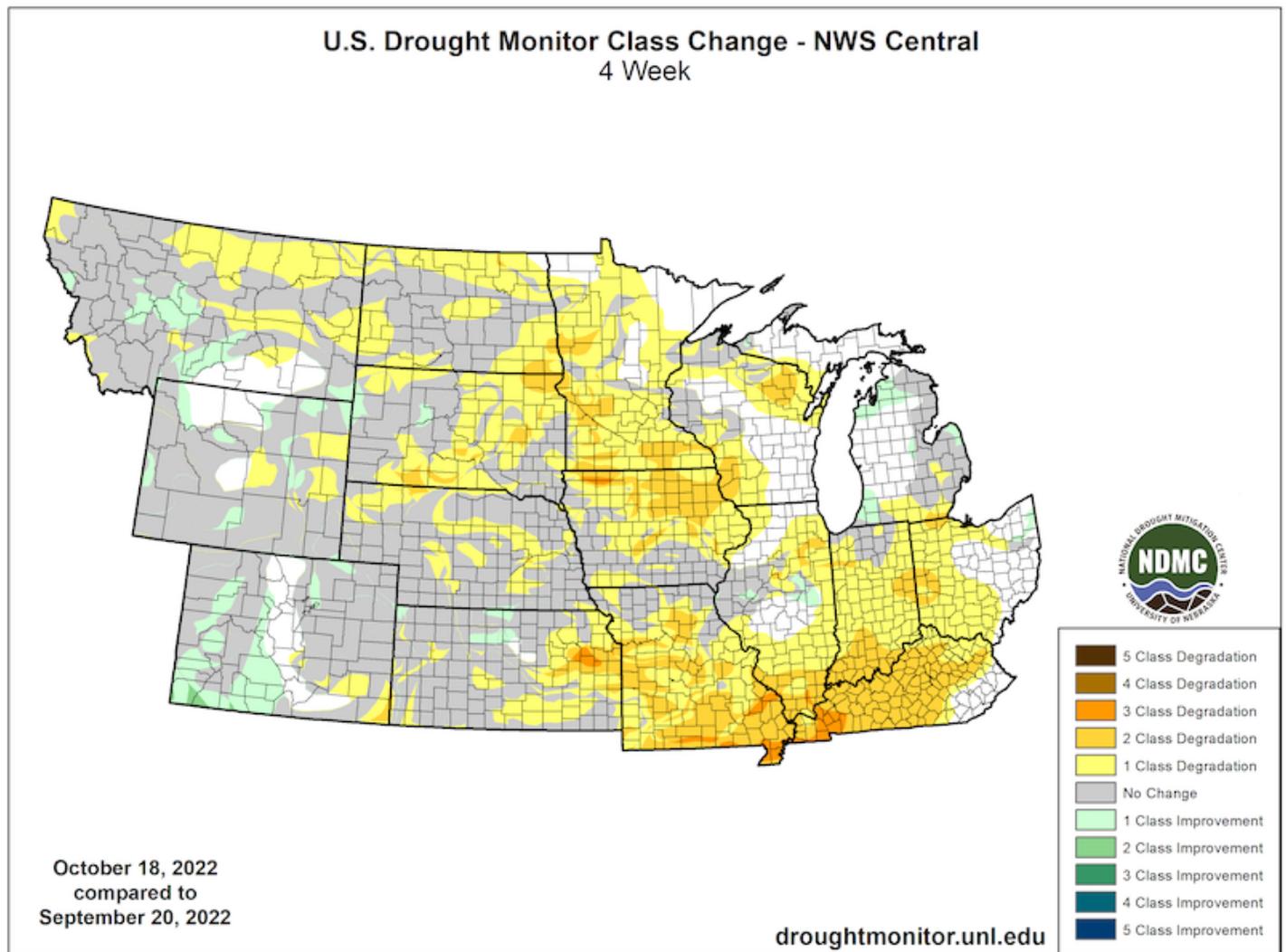
Current Conditions

- Drought has rapidly intensified and expanded across the north central U.S. over the last month. Currently, 60% of the region is in moderate to exceptional drought (D1–D4) according to the U.S. Drought Monitor, with 30% in severe drought or worse (D2–D4). 86% of the region is considered abnormally dry (D0).
- Over the last four weeks, many areas, particularly across the Midwest, have worsened by at least one drought category on the U.S. Drought Monitor and in some areas by two to three categories (Figure 1). Drought has intensified most rapidly across southern Missouri, Kentucky, southern Illinois, southern Indiana, and northern Iowa.
- While the recent rapid intensification of drought has been most prominent across the Midwest, severe drought has persisted for up to two years across portions of the Missouri River Basin/Great Plains. The worst level of drought, exceptional drought (D4), is most extensive across Kansas and Nebraska (30% and 12% respectively), but is also impacting small portions of Colorado, Missouri, and South Dakota.

Impacts from the drought have accelerated recently (see Impacts section below), some due to the underlying long-term dryness.

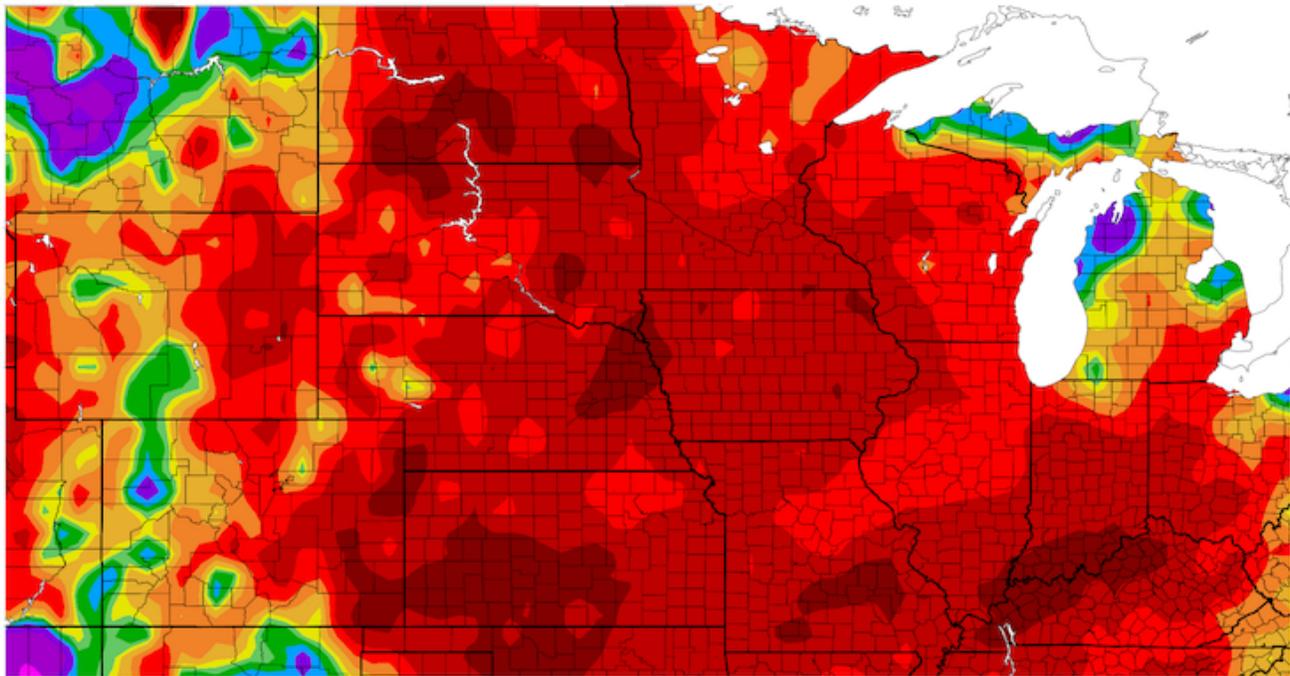
- The rapid intensification of drought has primarily been driven by a lack of precipitation over the last 30 days, with a majority of the north central U.S. only receiving 5%–50% of normal precipitation. Portions of the Plains and the Ohio River Basin have received less than 5% of normal precipitation (Figure 2). Only a few areas have received above-normal precipitation, including portions of Colorado, Montana, and Wyoming, as well as portions of Michigan.
- Temperatures over the last 30 days have been near to below normal across much of the north central U.S. (Figure 3). Some areas in the far east have been 4 to 6 degrees below normal. Moving further west, much of the western Missouri River Basin has had above-normal temperatures.

Figure 1. 4-Week Change Map for the U.S. Drought Monitor



4-week change map for the U.S. Drought Monitor, showing where drought has improved (green to blue), is unchanged (gray), or worsened (yellow to brown) since September 20, 2022. Source: National Drought Mitigation Center (<https://droughtmonitor.unl.edu/Maps/ChangeMaps.aspx>).

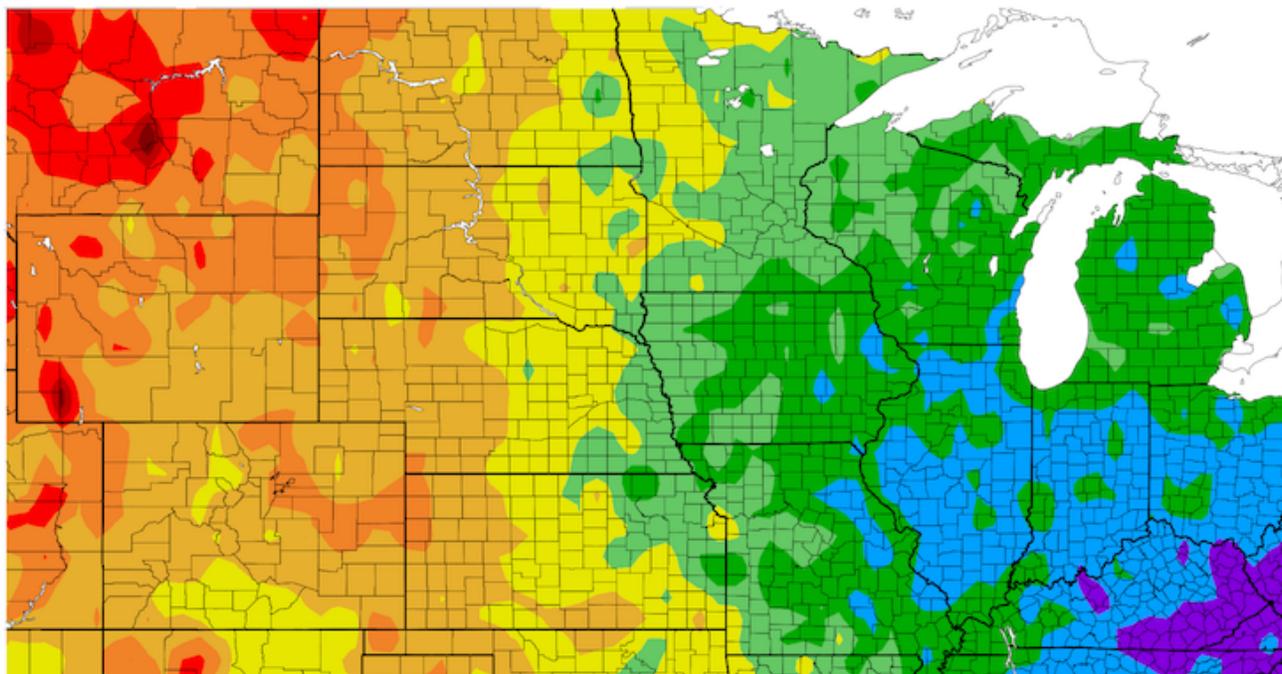
Figure 2. 30-Day Percent of Normal Precipitation (September 24–October 23, 2022)



Generated 10/24/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

Percent of normal precipitation across the north central U.S. for September 24–October 23, 2022, compared to the 1991–2020 historical average for the same time period. The orange to deep red color indicates areas that were below normal for the time period, whereas green to purple areas were above normal. Source: [High Plains Regional Climate Center ACIS Climate Maps \(https://hprcc.unl.edu/maps.php?maps=ACISClimateMaps\)](https://hprcc.unl.edu/maps.php?maps=ACISClimateMaps).

Figure 3. 30-Day Departure from Normal Temperature (°F) (September 24–October 23, 2022)

Generated 10/24/2022 at HPRCC using provisional data.

NOAA Regional Climate Centers

The departure from normal temperature (°F) across the north central U.S. from September 24–October 23, 2022, compared to the 1991–2020 historical average for the same time period. The orange to red colors indicate areas that were above normal for the time period, yellow and light green are near normal, and darker green to purple are below normal. Source: [High Plains Regional Climate Center ACIS Climate Maps](https://hprcc.unl.edu/maps.php?maps=ACISClimateMaps) (<https://hprcc.unl.edu/maps.php?maps=ACISClimateMaps>).

Drought Impacts

- Below-normal streamflow is one of the most critical impacts the drought is currently having on the region (Figure 4), including record low levels on major U.S. riverway systems for navigation—the Mississippi, Missouri, and Ohio rivers (Figure 5). Low water records from significant droughts in the past (1988, 2000, and 2012) have recently been broken.
- River levels are typically lower in the fall, but this year they are even lower than normal, which is causing significant issues as fall harvest is well underway and over 60% of all grain shipped in the U.S. moves through New Orleans, LA off the Mississippi River. When river levels are below normal, ships and barges are not able to transport as much due to the risk of grounding or dragging on the bottom of the river. Industry sources estimate that the current volume of goods on the waterway is effectively 45% lower than usual since ships and barges cannot carry as much in low water.
- The newly-established river cruise industry on the Mississippi River is having to make adjustments to their cruises based on the low water levels. Cruises have had to be rerouted to different cities/ports, companies are having to offer free cancellations or future cruise credits, and in some cases, the cruises have been canceled.
- As drought conditions continue to impact the Missouri River Basin, total system storage is much below average. As a result, the U.S. Army Corps of Engineers are adjusting the release of water at Gavins Point

to meet the current service level.

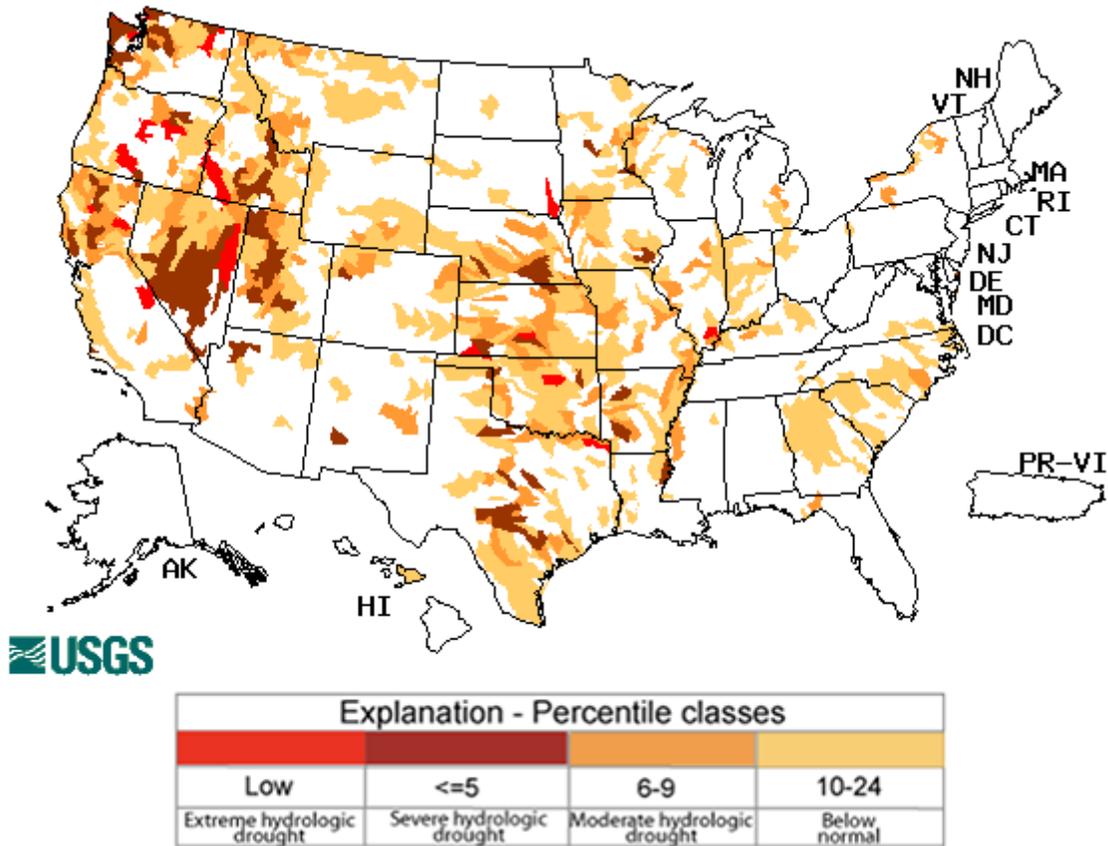
- While there aren't too many reports of municipal water supply issues, some communities are making adjustments to their water supply source as a result of limited water. Cairo, Illinois has temporarily switched from Mississippi River water to their alternative groundwater source. There are also reports of wells drying in areas like Iowa and Nebraska.
- Surface water is limited in many areas as well, including stock ponds across pastures and rangeland, in addition to low lake levels, which are impacting fish and wildlife. Lake Minnetonka near Minneapolis-St. Paul, Minnesota is at its lowest in 30 years. Minnehaha Falls, a well-known landmark in the Twin Cities, is dry.
- As expected, soil moisture values reflect the extremely dry conditions across the north central U.S., particularly in the Midwest states (Figure 6). Fall is a very important season for replenishing soil moisture for the next growing season. If fall moisture is not replenished, the risk for drought continuing is increased for the next growing season, as improvements to soil moisture are limited over the winter, particularly to the north where soils are mostly frozen. Southern and eastern portions of the region might be able to see more recovery over winter with warmer soils.
- The dry conditions this fall have aided harvest, as farmers have had many days in a row suitable for field work. However, the drying has happened almost too quickly in some areas and has led to issues like shattering of soybeans and increased fire risk and occurrence.
- Winter wheat is being planted in very dry soils across states like Kansas and Indiana, which is limiting the emergence of the crop. While winter wheat does not need much moisture to establish itself in order to survive the winter, it does need some moisture, and areas that have planted winter wheat currently need rain.
- Across the Great Plains, pasture and rangeland is reported to be in poor to very poor condition. 82% is rated as poor to very poor in Nebraska, 79% in Kansas, 68% in Missouri, and 63% in South Dakota (Figure 7).
- Fire risk has been and continues to be high this fall. There have been many fires resulting from harvest activities (e.g., combine fires) and dry vegetation. Burn bans are in effect across many counties in several states.

Report your drought impacts through the Condition Monitoring Observer Reports (CMOR):

Submit Local Drought Impacts

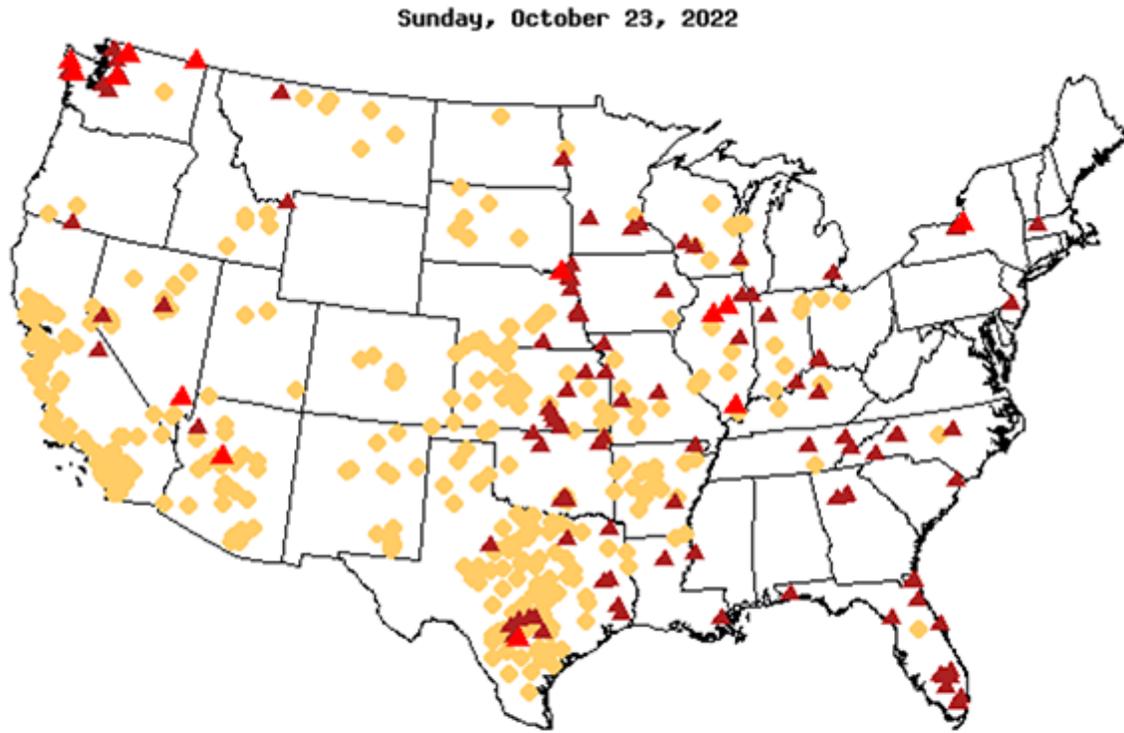
(<https://droughtimpacts.unl.edu/Tools/ConditionMonitoringObservations.aspx>)

Figure 4. USGS 28-Day Average Streamflow for October 23, 2022 (Compared to Historical Record)



28-day average streamflow below normal compared to the historical conditions for October 23, 2022. Areas in red are in extreme hydrological drought, dark red is in severe hydrologic drought, orange is moderate hydrologic drought, and yellow is below normal. Source: [USGS WaterWatch \(https://waterwatch.usgs.gov/index.php?id=pa28d_dry&sid=w__map|m__pa28d_dwc&r=us\)](https://waterwatch.usgs.gov/index.php?id=pa28d_dry&sid=w__map|m__pa28d_dwc&r=us).

Figure 5. Map of Record Low 7-Day Streamflow – Valid on October 23, 2022

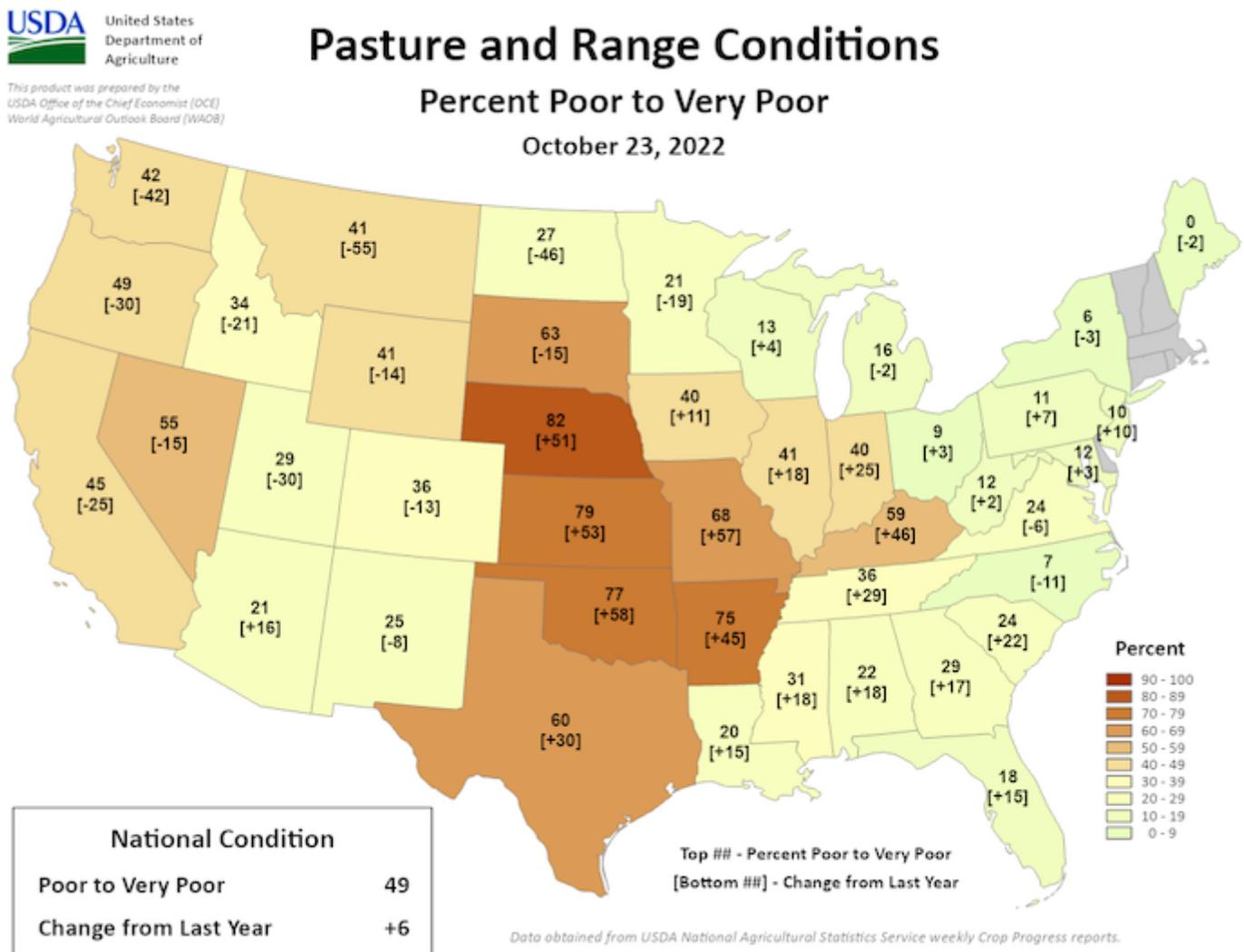


Explanation

- ▲ Record low flow with more than 30 years data
- ▲ Record low flow with less than 30 years data
- Zero flow sites

Record low 7-day average streamflow as of October 23, 2022. Red triangles show stations that have hit their record low with more than 30 years of data, dark red triangles show stations that have hit record low with less than 30 years of data. Yellow circles show sites that have zero flow. Source: [USGS WaterWatch \(https://waterwatch.usgs.gov/index.php?id=wwdrought_us\)](https://waterwatch.usgs.gov/index.php?id=wwdrought_us).

Figure 7. Pasture and Range Conditions (Rated Poor to Very Poor) – As of October 23, 2022



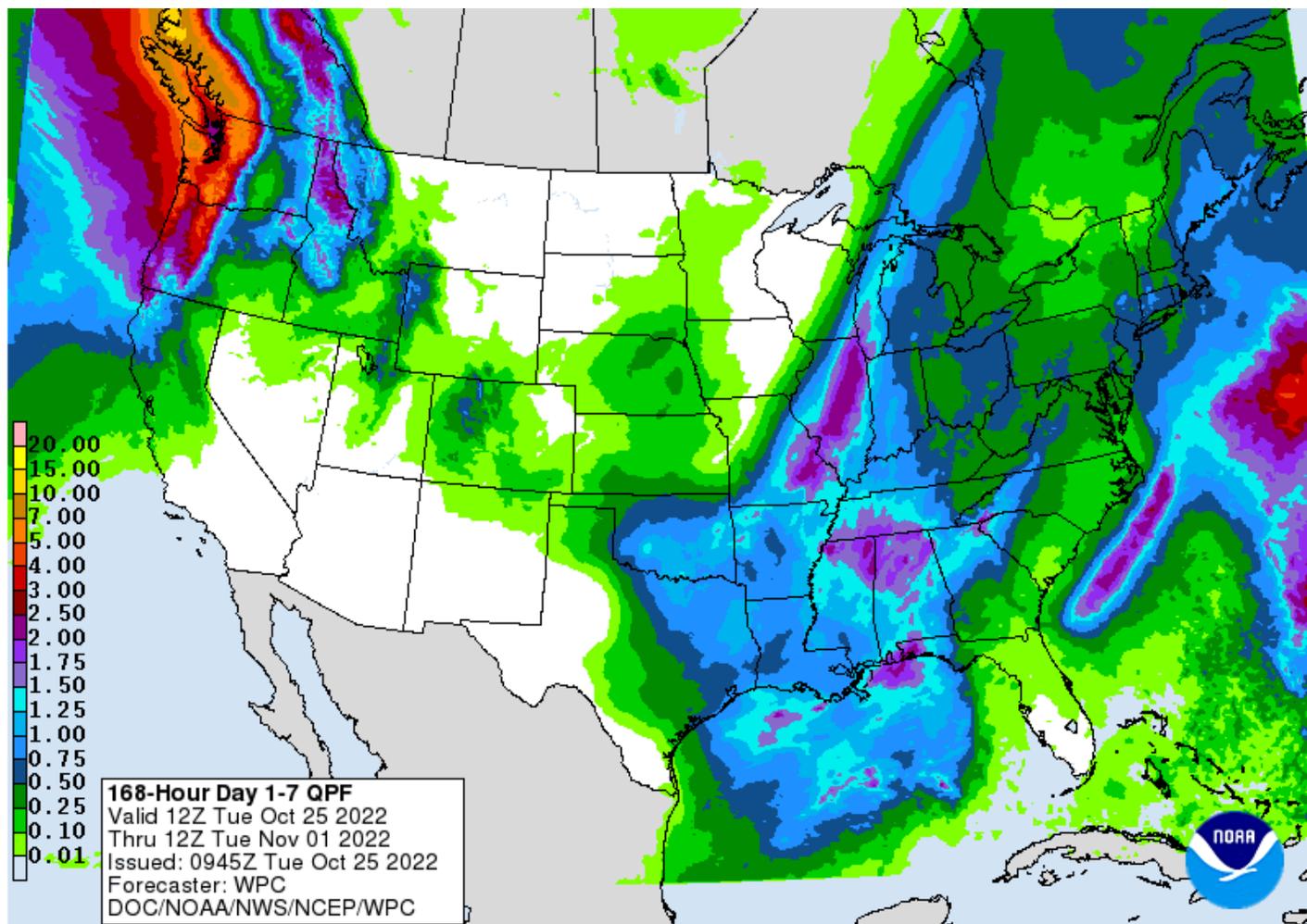
Pasture and range conditions rated as in poor to very poor condition across the United States for the week ending October 23, 2022. The number on top represents the current condition, with the change from last year in the brackets below. Source: USDA.

Outlook and Potential Impacts

- Based on the precipitation forecast for the next week (October 25–November 1), it is possible that portions of the Midwest, including Missouri, might see some precipitation (Figure 8).
- This possibility for some short-term relief continues through November 7, where the 8–14 day outlook shows the possibility for above-normal precipitation across much of the Midwest and into the Missouri River Basin (Figure 9). Short-term precipitation relief will be beneficial for some river level recovery from record lows for navigation, and cover crops and winter wheat to establish growth before the winter.
- However, when looking at the entire month of November, much of the southern portion of the central U.S. (Iowa, Kansas, Nebraska, Missouri, Illinois) has greater chances for below-normal precipitation. Areas to the north have equal chances for above-, near-, or below-normal precipitation for November (Figure 10).
- Above-normal temperatures are more likely in November across the Central Plains into Missouri and South Dakota, while other areas have equal chances for above-, near-, or below-normal November temperatures (Figure 11).

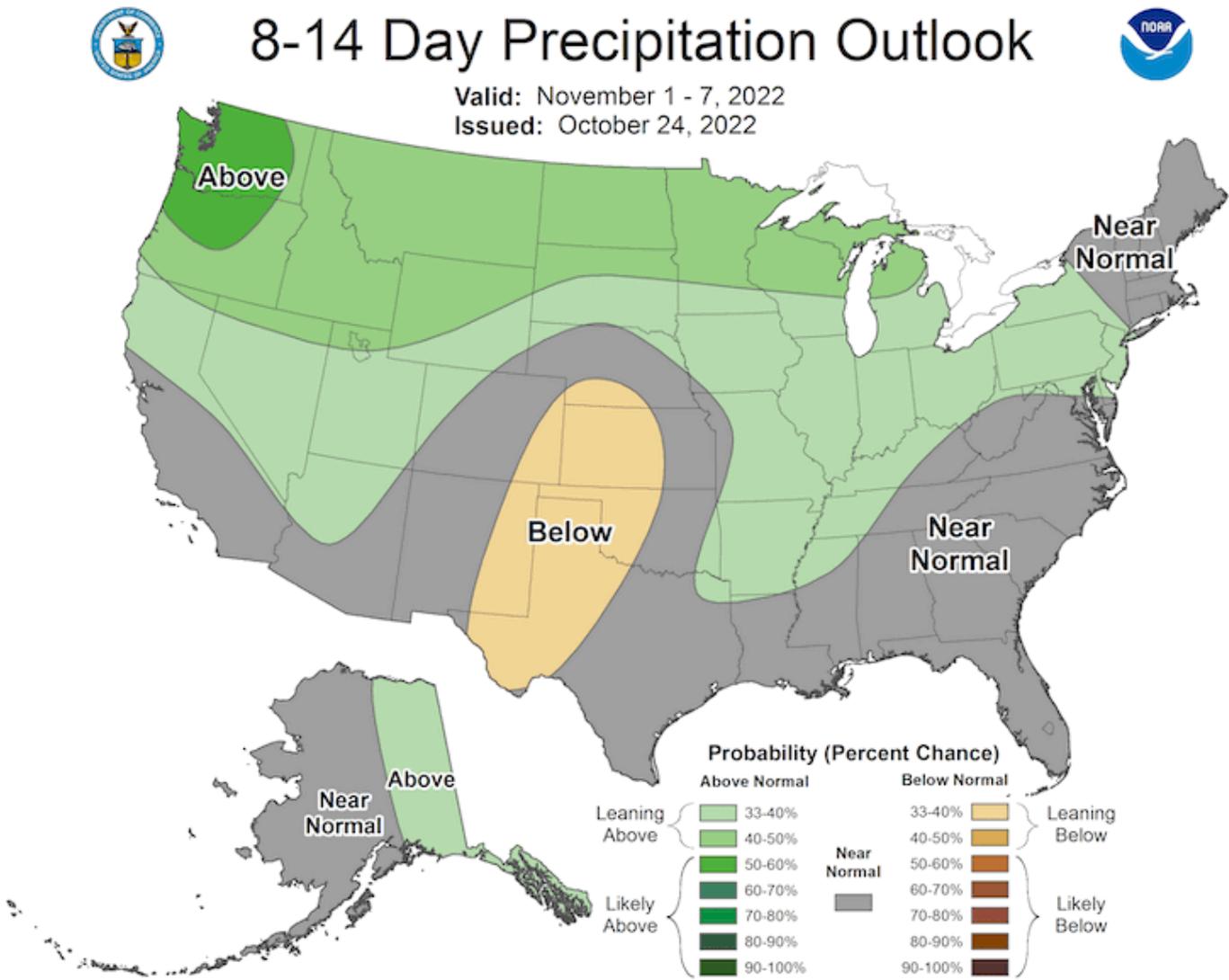
- The potential for above-normal temperatures and below-normal precipitation has elevated the risk for wildland fire across portions of the Plains, Iowa, and Missouri (Figure 12). Fire will continue to be a risk for the dry areas of the north central U.S. throughout the fall.
- Without substantial precipitation in November, it is unlikely that river levels will return to normal for this time of year in the near future, leading to continued issues with navigation along major navigational rivers like the Mississippi River.
- NOAA recently issued the winter outlook for December 2022 to February 2023. In the north central U.S., there is a greater chance for below-normal precipitation to continue across extreme southern portions of the region (Kansas), equal chances for above-, near-, or below-normal precipitation across much of the region, with the possibility for above-normal precipitation across the Great Lakes region (Figure 13).
- While winter could bring some more precipitation to the region, it is unlikely there will be substantial improvements to drought as this is a difficult time of the year to establish soil moisture due to frozen grounds, particularly in the north.
- Another potential issue this winter could be that dry soils and cold temperatures lead to deeper frost depths, which could cause issues with buried infrastructure and pipelines (e.g., water main breaks and the potential for frozen water lines).

Figure 8. Quantitative Precipitation Forecast for the next 7 days (October 25–November 1, 2022)



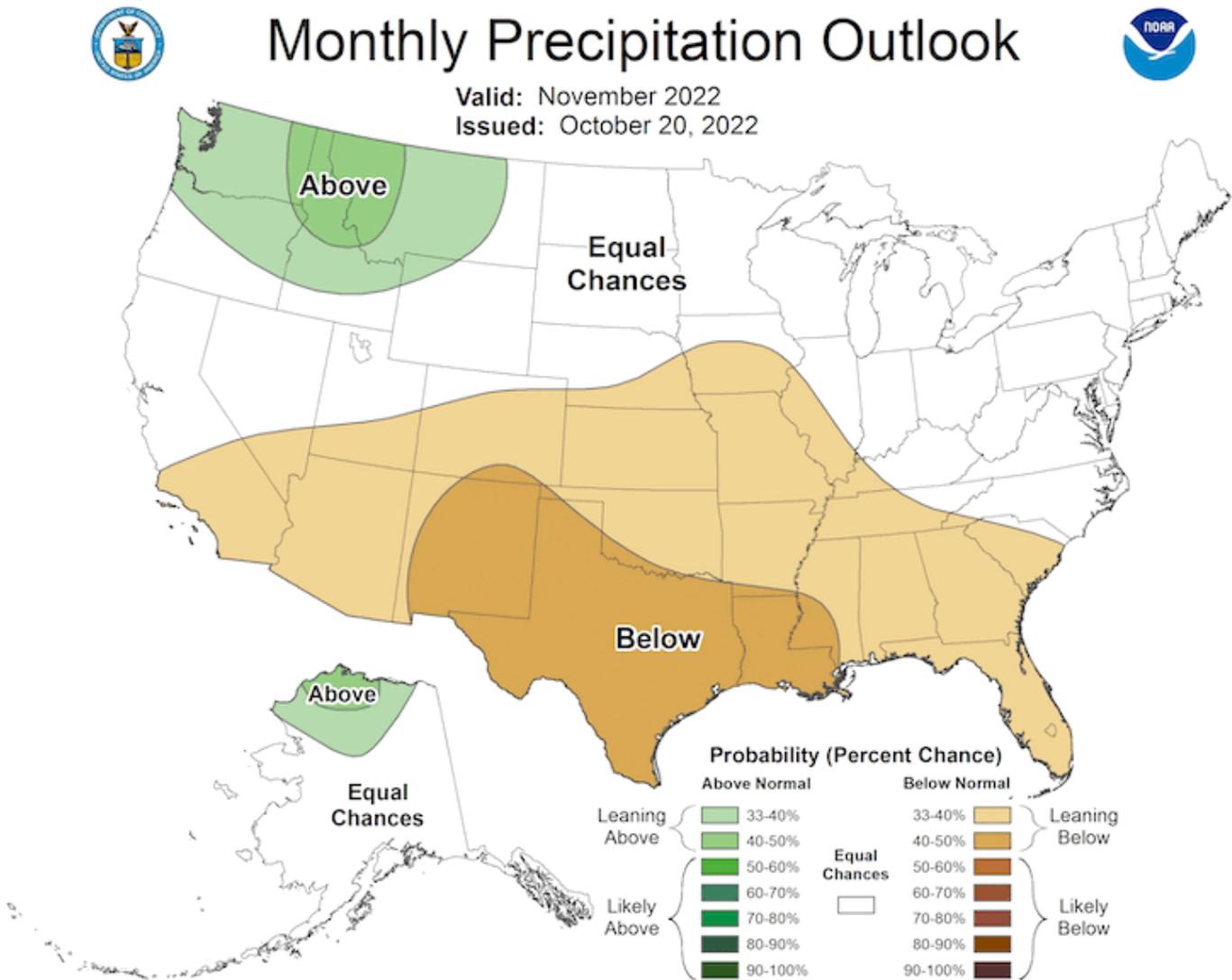
7-Day Quantitative Precipitation Forecast, which shows the possibility for total precipitation accumulation (inches) from October 25–November 1, 2022. Source: NOAA National Weather Service's [Weather Prediction Center \(https://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml\)](https://www.wpc.ncep.noaa.gov/qpf/qpf2.shtml).

Figure 9. 8–14 Day Precipitation Outlook (Valid November 1–7, 2022)



8–14 day precipitation outlook for November 1–7, 2022. The green shades represent areas with a greater chance for above-normal precipitation, gray areas represent near-normal precipitation, and brown shades represent areas with a greater chance for below-normal precipitation. Source: NOAA's Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

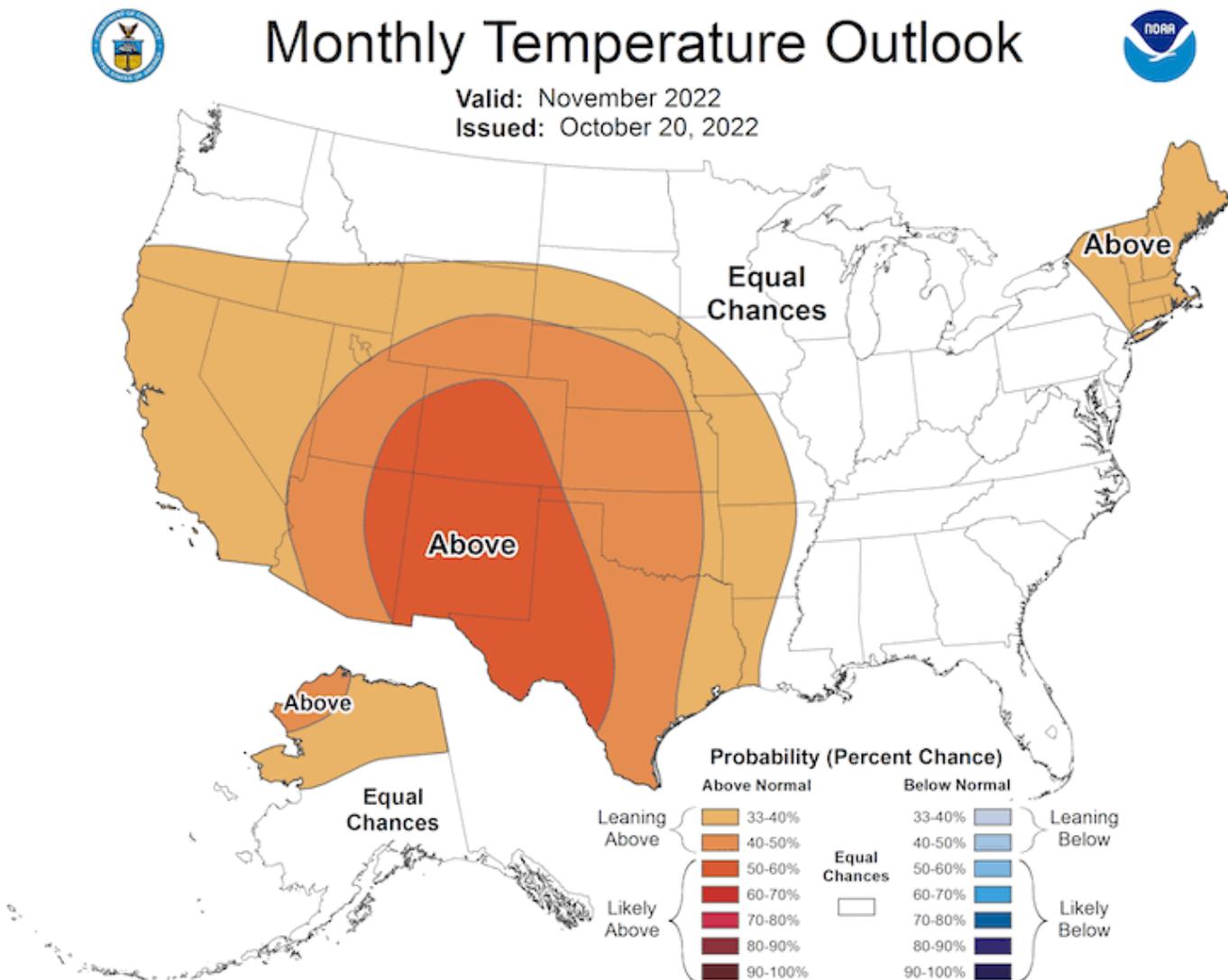
Figure 10. Monthly Precipitation Outlook for November 2022



Monthly precipitation outlook for November 2022. The green shades represent areas with a greater chance for above-normal precipitation; white areas represent equal chances for either above-, near-, or below-normal precipitation; and brown shades represent areas with a greater chance for below-normal precipitation.

Source: NOAA Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

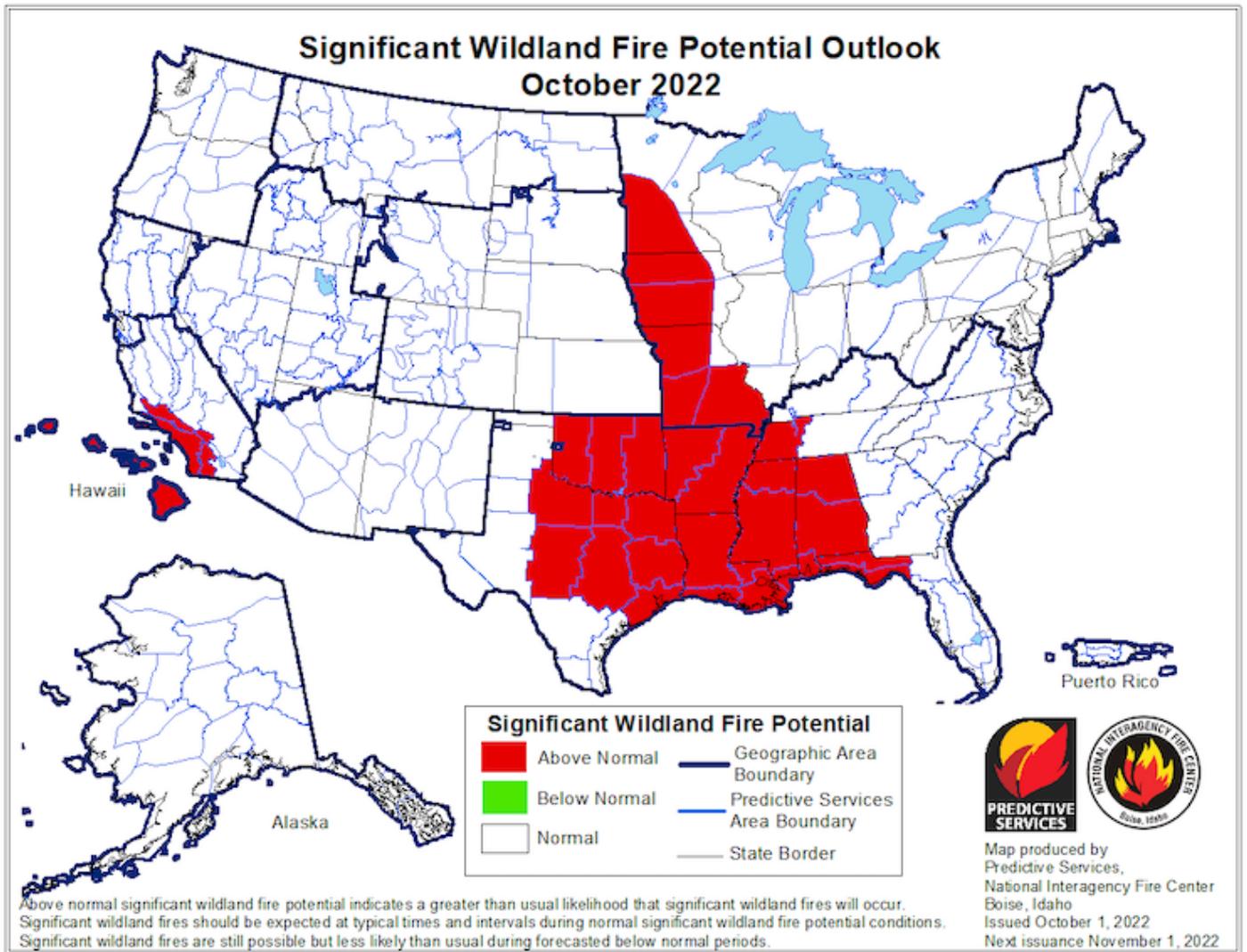
Figure 11. Monthly Temperature Outlook for November 2022



Monthly temperature outlook for November 2022. The red shades represent areas with a greater chance for above-normal temperatures; white areas represent equal chances for either above-, near-, or below-normal temperatures; and blue shades represent areas with a greater chance for below-normal temperatures.

Source: NOAA Climate Prediction Center (<https://www.cpc.ncep.noaa.gov/>).

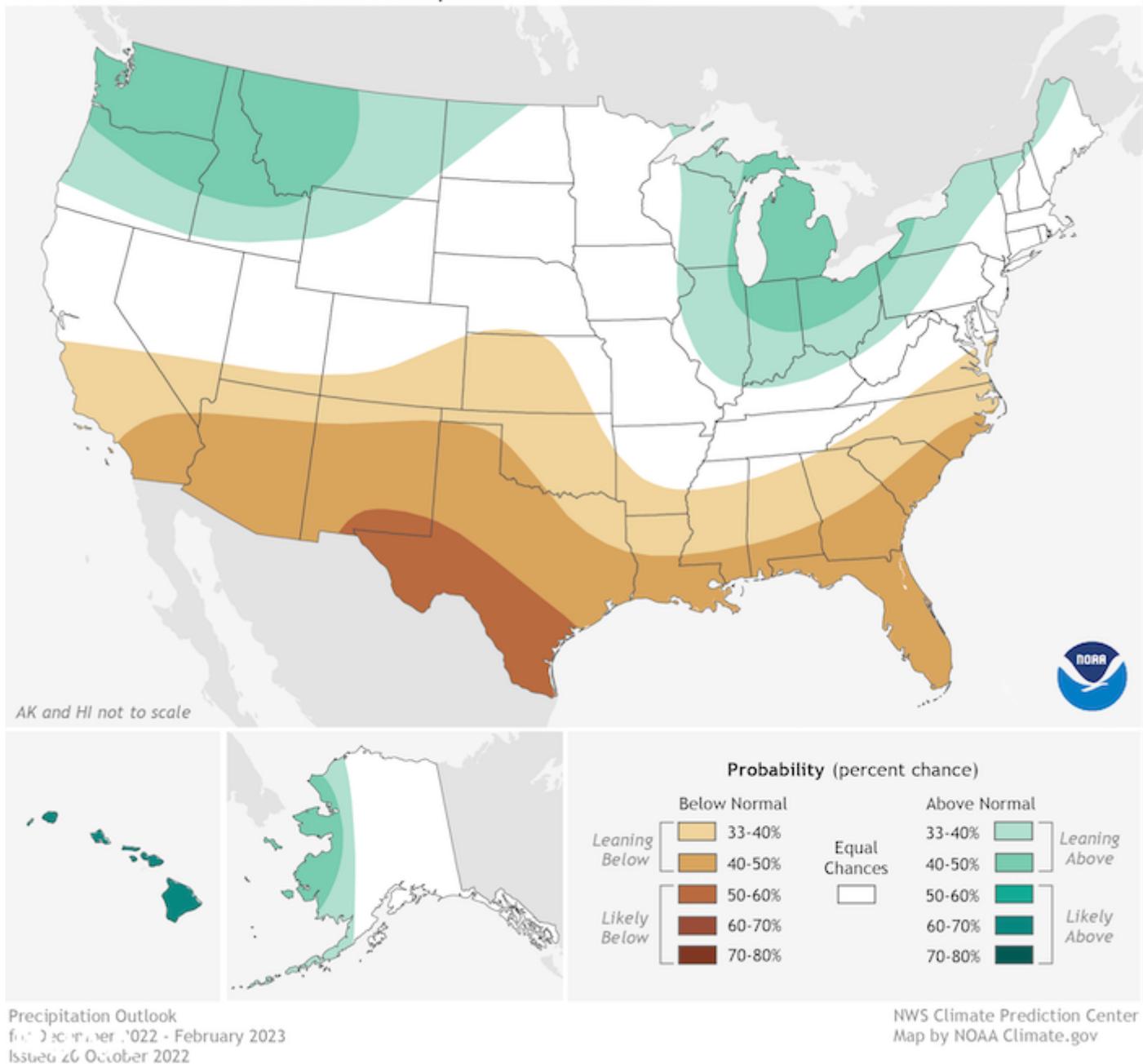
Figure 12. Significant Wildland Fire Potential Outlook for October 2022



The Significant Wildland Fire Potential Outlook for October 2022. Above-normal significant wildfire potential (red) indicates a greater than usual likelihood that significant wildland fires will occur. These assessments are designed to inform decision makers for proactive wildland fire management, thus better protecting lives and property, reducing firefighting costs and improving firefighting efficiency. Source: Predictive Services, National Interagency Fire Center (<https://www.predictiveservices.nifc.gov/outlooks/outlooks.htm>).

Figure 13. Winter Precipitation Outlook (December 2022–February 2023)

Winter 2022-23: U.S. Precipitation Outlook



The winter precipitation outlook for December 2022–February 2023 from NOAA’s Climate Prediction Center. The green shades represent areas with a greater chance for above-normal precipitation, white areas represent equal chances for either above-, near-, or below-normal precipitation, and brown shades represent areas with a greater chance for below-normal precipitation. Source: NOAA's Climate Prediction Center, via [Climate.gov](https://www.climate.gov/media/14861) (<https://www.climate.gov/media/14861>).

For More Information

- NIDIS and its partners will issue future updates as conditions evolve.
- A special thank you to the state climate offices in the Midwest and Missouri River Basin for providing local information on drought conditions and impacts included in the webinar and on this report.

- This drought status update is based on information provided during the October 20, 2022 North Central U.S. Climate and Drought Outlook webinar. [View the webinar \(https://www.youtube.com/watch?v=k4ECS1vlrew\)](https://www.youtube.com/watch?v=k4ECS1vlrew) for more details
- The next [North Central U.S. Climate and Drought Summary & Outlook Webinar \(https://register.gotowebinar.com/register/7528179497868100876\)](https://register.gotowebinar.com/register/7528179497868100876) will take place on November 17, 2022, and will offer updated information about conditions, impacts, and outlooks.
- More local information is available from the following resources:
 - [Your state climatologist \(https://stateclimate.org/state_programs/\)](https://stateclimate.org/state_programs/)
 - [Your local National Weather Service office \(https://www.weather.gov/srh/nwsoffices\)](https://www.weather.gov/srh/nwsoffices)
- To report or view local drought impact information:
 - Report your drought impacts through [Condition Monitoring Observer Reports \(CMOR\) \(https://droughtimpacts.unl.edu/Tools/ConditionMonitoringObservations.aspx\)](https://droughtimpacts.unl.edu/Tools/ConditionMonitoringObservations.aspx)
 - View [CoCoRaHS Condition Monitoring \(https://www.cocorahs.org/Maps/conditionmonitoring/\)](https://www.cocorahs.org/Maps/conditionmonitoring/) reports.

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Special Thanks

This drought status update is issued in partnership between the National Oceanic and Atmospheric Administration (NOAA) and the U.S. Department of Agriculture (USDA) to communicate a potential area of concern for drought expansion and/or development within the Midwest U.S. based on recent conditions and the upcoming forecast. NIDIS and its partners will issue future drought status updates as conditions evolve.



National Oceanic and Atmospheric Administration (NOAA)



National Weather Service (NWS)



Climate Prediction Center



National Centers for Environmental Information (NCEI)



National Drought Mitigation Center (NDMC)



MRCC
Midwestern Regional Climate Center

Midwestern Regional Climate Center



**High Plains Regional
Climate Center**



Midwest Climate Hub



**Northern Plains Climate
Hub**



**South Dakota State
University**

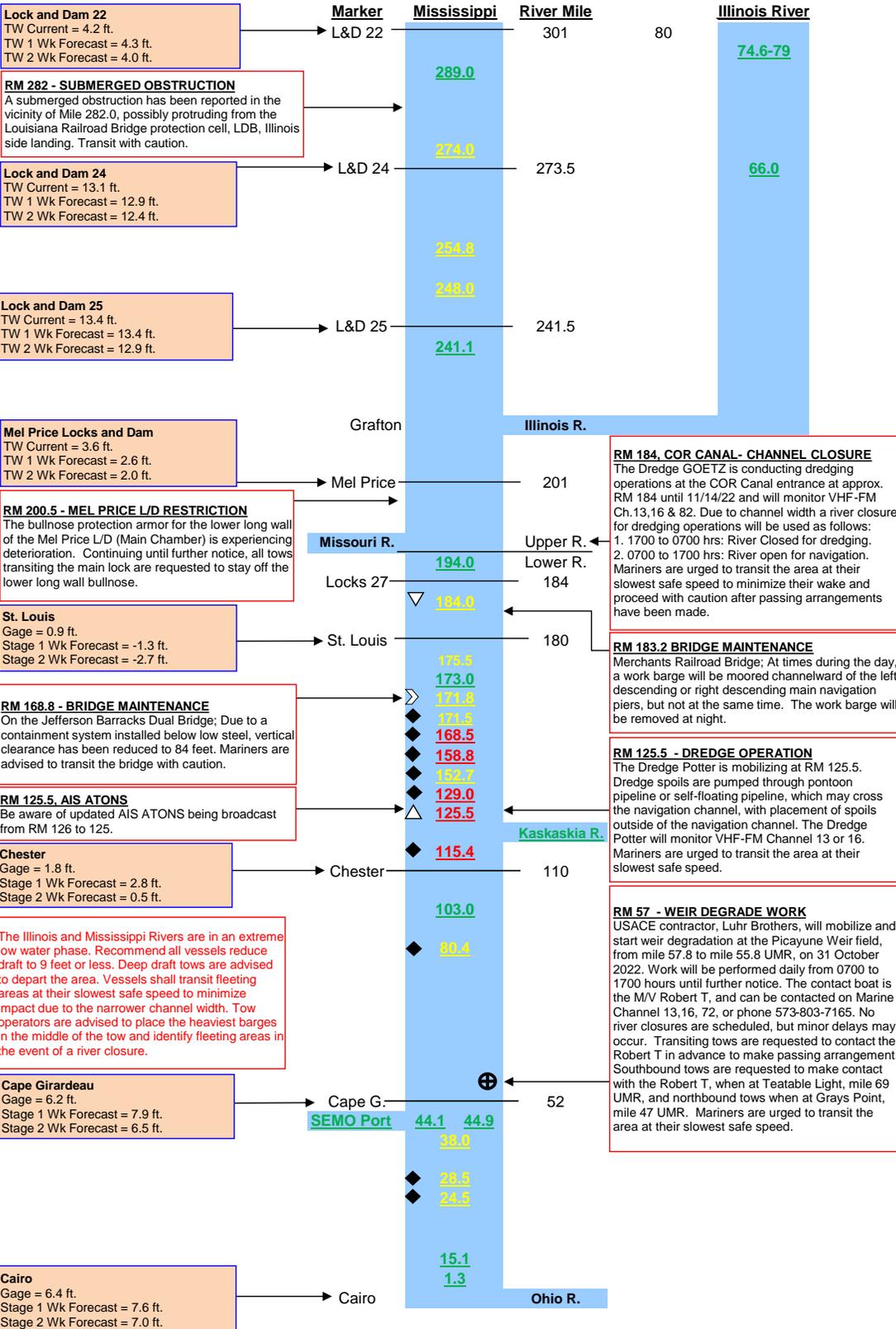


**American Association of
State Climatologists**



US Army Corps of Engineers
St. Louis District

St. Louis District Navigation Channel Condition Status Report - October 26, 2022



Dredge Status:

Dredge Potter: Mobilizing to RM 125.5 on 10/27/22.

Dredge Goetz: Mobilized to lower COR entrance, RM 184.0.

MVR Mech. Dredge: Completing RM 241 on 10/26/22. Mobilizing back to MVR once done.

MVS Mech. Dredge: Mobilizing to RM 171.8 on 10/26/22.

Dredge Jadwin: Departed St. Louis District.

Channel Marker Status:

Be aware that there may be other buoys off station/missing than the ones mentioned in this report. Mariners should use caution.

For ATON or Buoy issues please contact SUMRWaterways@uscg.mil or 319-520-8556.

Pathfinder: Assisting the MVS Mechanical Dredge.

Additional Risks / Concerns

Controlling Depth
St. Louis-Herculaneum (RM 185-152)
Mile 158.8, Waters Point LWRP 8.4, 9-ft at St. Louis gage of -2.6

Herculaneum-Grand Tower (RM 152- 80)
Mile 126, Ste Genevieve Ferry LWRP 9.8, 9-ft at Chester gage of -1.2

Grand Tower-Cairo (RM 80 - 0)
Mile 28.5, Buffalo Island, LWRP 9.8
9-ft at Cape Girardeau gage of 4.55
(Green buoy on 9-ft LWRP)

Navigation Notices

Local Notice to Mariners

Weather

Highs from the upper 50s to low 70s, lows from the mid 30s to low 50s. Chance of rain Sunday to the north and Saturday through Monday to the south.

Hannibal, MO
St. Louis, MO
Cape Girardeau, MO
Cairo, IL

Web Information

For additional River Training Structure information, see the links below:

Current Construction

Recently Completed Construction

For open Regulatory Public Notices, See the link below:

Regulatory Public Notices

For the most recent channel patrol and pre or post dredge surveys, see the links below:

Channel Patrol Surveys

Dredge Surveys

Electronic Navigation charts for the Upper Mississippi River are available online for download or to order at the below link:

Electronic Charts

More Status Reports

Click for older status reports

Key:		Probable Dredge Areas				
		River Mile	Problematic On:	Dredge ETA	Dredge Complete	Dredge
◆	Current Construction Location	125.5	21 days	27-Oct	2-Nov	Potter
☆	Anticipated Dredging Locations	129.0	+ 28 days	3-Nov	4-Nov	Potter
☆	Groundings	115.4	+ 28 days	5-Nov	7-Nov	Potter
△	Dredge Potter	131.7	+ 28 days	8-Nov	10-Nov	Potter
▽	Dredge Goetz	158.8	+ 28 days	11-Nov	17-Nov	Potter
○	Mechanical	168.5	+ 28 days	18-Nov	25-Nov	Potter
○	Dredge Bill Holman	171.8	+ 28 days	27-Oct	2-Nov	MVS Mech.
○	Dredge Jadwin	184.0	21 days	on site	14-Nov	Goetz

Very Likely to be Problematic at Low Water

Could be Problematic at Low Water

Problem Resolved/Not Problematic

Please email comments or suggestions to dawn.lamm@usace.army.mil



ALONG THE MISSISSIPPI RIVER (AP) — Adam Thomas starts harvesting soybeans on his Illinois farm when the dew burns off in the morning. This year, dry weather accelerated the work, allowing him to start early. His problem was getting the soybeans to market.

About 60% of the Midwest and northern Great Plain states are in a drought. Nearly the entire stretch of the Mississippi River — from Minnesota to the river’s mouth in Louisiana — has experienced below average rainfall over the past two months. As a result, water levels on the river have dropped to near-record lows, disrupting ship and barge traffic that is critical for moving recently harvested agricultural goods such as soybeans and corn downriver for export.

Although scientists say climate change is raising temperatures and making droughts more common and intense, a weather expert says this latest drought affecting the central United States is more likely a short-term weather phenomenon.

The lack of rain has seriously affected commerce. The river moves more than half of all U.S. grain exports but the drought has reduced the flow of goods by about 45%, according to industry estimates cited by the federal government. Prices for rail shipments, an alternative for sending goods by barge, are also up.

“It just means lower income, basically,” said Mike Doherty, a senior economist with the Illinois Farm Bureau.

Thomas farms at the confluence of the Ohio and Mississippi rivers and doesn’t own enough grain storage to wait out the high costs of shipping.

“I’ve had to take a price discount,” he said.



A man walking along the Mississippi River in Baton Rouge, La., stops to look at a shipwreck revealed by the low water level, Oct. 17, 2022. (AP Photo/Sara Cline)

Climate change is generally driving wetter conditions in the Upper Mississippi River region but in recent months, lower water levels have revealed parts that are usually inaccessible. Thousands of visitors last weekend walked across typically submerged riverbed to Tower Rock, a protruding formation about 100 miles (161 kilometers) southeast of St. Louis. It's the first time since 2012 that tourists could make the trek and stay dry. On the border of Tennessee and Missouri where the river is a half-mile wide, four-wheeler tracks snake across vast stretches of exposed riverbed.

In a badly needed break from the dry weather earlier this week, the region finally received some rain.

“It is kind of taking the edge off the pain of the low water, but it is not going to completely alleviate it,” said Kai Roth of the Lower Mississippi River Forecast Center, adding that the river needs several rounds of “good, soaking rain.”

Barges are at risk of hitting bottom and getting stuck in the mud. Earlier this month, the U.S. Coast Guard said there had been at least eight such “groundings.” Some barges touch the bottom but don't get stuck. Others need salvage companies to help them out. Barges are cautioned to lighten their loads to prevent them from sinking too deep in the water, but that means they can carry fewer goods.

To ensure that vessels can travel safely, federal officials regularly meet, consider the depth of the river and talk to the shipping industry to determine local closures and traffic restrictions. When a stretch is temporarily closed, hundreds of barges may line up to wait.

“It’s very dynamic: Things are changing constantly,” said Eric Carrero, the Coast Guard’s director of western rivers and waterways. “Every day, when we are doing our surveys, we’re finding areas that are shallow and they need to dredge.”

After a closed-down section is dredged, officials mark a safe channel and barges can once again pass through.



A man sits along Woldenberg Park by the Mississippi River in New Orleans on Oct. 19, 2022. (Chris Granger/The Times-Picayune/The New Orleans Advocate via AP)



Ducks fly past the Carrollton Gauge which is used by the U.S. Army Corp of Engineers to monitor water levels on the Mississippi River, Oct. 20, 2022, in New Orleans. (Chris Granger/The Times-Picayune/The New Orleans Advocate via AP)

In some places, storage at barge terminals is filling up, preventing more goods from coming in, according to Mike Steenhoek, executive director of the Soy Transportation Coalition. He said the influx of grain into a compromised river transportation system is like “attaching a garden hose to a fire hydrant.” High costs for farmers have led some to wait to ship their goods, he added.

For tourists, much of the river is still accessible. Cruise ships are built to withstand the river’s extremes: Big engines fight fast currents in the spring and shallow drafts keep the boats moving in a drought, said Charles Robertson, president and CEO of American Cruise Lines, which operates five cruise ships that can carry 150 to 190 passengers each.

Nighttime operations are limited, however, to help ships avoid new obstacles that the drought has exposed. And some landing areas aren’t accessible because of low water — the river is dried out along the edges. In Vicksburg, Mississippi, a cruise ship couldn’t get to a ramp that typically loads passengers, so the city, with help from townspeople, laid gravel and plywood to create a makeshift walkway. For some, it adds to the adventure.

“They’re experiencing the headlines that most of the rest of the country is reading,” Robertson said.



Exposed ground is seen in a dried up river bed where the normally wide Mississippi River would flow, Oct. 20, 2022, near Portageville, Mo. (AP Photo/Jeff Roberson)

Drought is a prolonged problem in California, which just recorded its driest three-year stretch on record, a situation that has stressed water supplies and increased wildfire risk. Climate change is raising temperatures and making droughts more common and worse.

“The drier areas are going to continue to get drier and the wetter areas are going to continue to get wetter,” said Jen Brady, a data analyst at Climate Central, a nonprofit group of scientists and researchers that reports on climate change.

Brad Pugh, a meteorologist with the National Oceanic and Atmospheric Administration, said however, that the current drought in the Midwest is likely “driven by short-term weather patterns” and he wouldn’t link it to climate change.

In the Midwest, climate change is increasing the intensity of some rainstorms. Flood severity on the upper Mississippi River is growing faster than any other area of the country, according to NOAA.

Some worry that fertilizer and manure have accumulated on farms and could quickly wash off in a hard rain, reducing oxygen levels in rivers and streams and threatening aquatic life.



No Help for Mississippi From Mighty Mo

Grain Deliveries Halted at Some Mississippi River Elevators; No Help Coming from Missouri River Flows

10/26/2022 | 3:55 PM CDT



By [Chris Clayton](#), DTN Ag Policy Editor

Connect with Chris:

[@ChrisClaytonDTN](#)



The Missouri River flowing near Lexington, Missouri, on Wednesday. While the Mississippi River needs a boost in water flows, the Missouri River basin is in the middle of drought conditions as well. The Corps will reduce water flows on the Missouri River in mid-November as well. (DTN photo by Chris Clayton)

SMITHVILLE, Mo. (DTN) -- As Mississippi River levels continue to hinder grain shipping, at least some Cargill grain terminals on the river now have stopped taking corn and soybeans.

Cargill's facilities in Hickman, Kentucky, and Keithsburg, Illinois, both posted on their websites that they have stopped taking deliveries this week. Hickman's website noted, "We are full on corn and YSB (yellow soybeans). Will not be taking until river levels change. Hickman Harbor was closed due to low water. We are filling our remaining space. Customers can expect slower unload times and we apologize for any disruptions this causes our producers."

Mike Steenhoek, executive director of the Soy Transportation Coalition, sent a river update on Wednesday, stating that the conditions of the inland waterway system remain "very concerning."

"The metaphor I routinely use -- 'Attaching a garden hose to a fire hydrant' -- continues to be very applicable," Steenhoek stated. "Farmers are continuing to harvest an overall strong crop, but the inland waterway system -- especially the lower Mississippi River -- does not currently possess the normal capacity to accommodate it."

Steenhoek said the low river conditions are a challenge for the soybean industry given how the September through February period accounts for 80% of U.S. soybean exports. More than half of the soybeans produced in the country are exported as well.

Steenhoek added, "Barge transportation is essential for connecting U.S. soybean farmers with international customers."

NO HELP FROM MIGHTY MO

Meanwhile, U.S. Army Corps of Engineers officials in the Missouri River Basin have been holding fall public meetings this week across the basin. The overall theme is that dry conditions persist everywhere in the Missouri River Basin as well.

Water releases from the lowest dam on the Missouri River, Gavins Point, South Dakota, also will be reduced starting around Nov. 19. Gavins Point had been averaging about 30,000 cubic feet per second (cfs), but the Corps is starting to dial back releases from the South Dakota dam and will bring it down to the minimum level of 12,000 cfs. The Corps will start stepping down water releases of about 3,000 cfs per day until early December.

Asked if the Corps could instead boost water releases out of Gavins Point, John Remus, chief of the Missouri River Basin for the Corps Water Management Division, said there have been conversations about it, but the Corps is not authorized to release water to support navigation on the lower Mississippi River.

"We are not authorized on the Missouri River system to make releases for the sole purpose of supporting the Mississippi River for anything, whether it is navigation or flood control," Remus told DTN at a meeting Wednesday in Smithville, Missouri.

In his tenure with the Corps, Remus said, there have been at least three times the issue of water releases from the Missouri have been raised to help the Mississippi. Each time, attorneys have said the authorizing legislation and court cases prohibit Corps officials in the Missouri River basin from adjusting water releases to support the Mississippi.

"We are only authorized for benefits on the Missouri River," he said.

Remus added, however, that the Missouri River system right now also doesn't have the volume to add significant water level rises on the Mississippi River either.

"We can't release enough water to make a difference," Remus said. "The river (Mississippi) gets so big once it gets below the Ohio (River), so even if we had the authority, we don't have the ability to do that."

The Corps meeting reaffirmed reporting from DTN on the challenging river outlook going forward. In the Missouri River basin, the National Weather Service expects La Nina conditions to prevail for the third year in a row. Right now, about 75% of the Missouri River basin is in some level of drought condition that is "likely to persist, if not expand."

SMALLER BARGE LOADS

American Commercial Barge Lines highlights how depth restrictions of no greater than 9 feet have been instituted on the Lower Mississippi River -- a 24%-30% decrease. Barges are often loaded to 11 feet to 12 feet at this time of the year on the Mississippi River south of St. Louis.

"For every 1 foot of decreased water depth, 5,000 fewer bushels of soybeans are loaded into each barge," Steenhoek said.

So, a 2-foot to 3-foot reduction will result in 10,000 to 15,000 fewer bushels. Barges on the Lower Mississippi River are often loaded with 57,000 bushels (Upper Mississippi River barges will be loaded with 50,000-52,000 bushels due to the minimum 9-foot navigation channel). The barge industry continues to maintain a maximum of 25 barges connected together along the Lower Mississippi River compared to 30, 35 or even 40 barges under normal conditions, Steenhoek added.

According to the U.S. Department of Agriculture's most recent "Grain Transportation Report," barge freight rates have fallen. For the week of Oct. 18, transporting a ton of soybeans -- loaded in St. Louis -- cost \$72.58 per ton. For the week of Oct. 11, it cost \$105.85. The \$72.58 cost is still 130% higher than the same week in 2021.

The USDA report offers an explanation that is consistent with testimonials Steenhoek said he has heard from farmers as well.

"Amid uncertainty about when barge traffic will normalize, some grain shippers have delayed deliveries until later in the year, which has softened demand for barges," Steenhoek said.

Some farmers -- especially many close to the river system -- have limited or no on-farm storage, Steenhoek noted. In many areas, the inland waterway system under normal conditions is such an attractive avenue for soybeans and grain that alternatives (processing or rail-loading facilities) have not developed since they would be at a competitive disadvantage to the normal efficiencies of barge transportation.

The Grain Transportation Report also noted that for the week ended Oct. 6, unshipped balances of wheat, corn and soybeans for marketing year 2022-23 totaled 39.07 million metric tons, down 23% from the same time last year.

ATTACHMENT F

Reports on the Upper Mississippi River Restoration (UMRR) Program Navigation and Ecosystem Sustainability Program (NESP)

- **NESP Projects Map (7/14/2022)** *(F-1)*
- **UMRR Draft 2022 Report to Congress Executive Summary
(10/2022)** *(F-2 to F-9)*
- **NESP L&D 22 Fish Passage Fact Sheet (10/2022)** *(F-10 to F-11)*



US Army Corps of Engineers®

NAVIGATION AND ECOSYSTEM SUSTAINABILITY PROGRAM (NESP)

ST. PAUL DISTRICT- ROCK ISLAND DISTRICT - ST. LOUIS DISTRICT

NAVIGATION AND ECOSYSTEMS PROJECTS



ACTIVE IMPLEMENTATION

- ★ Lock 25 New 1200' Lock
- ★ Lock and Dam 22 Fish Passage Improvement Project
- ① Pool 2 Wingdam Notching
- ② Lock 14 Mooring Cell
- ③ Starved Rock Breakwater
- ④ Moore's Towhead System Mitigation
- ⑤ Twin Island - Island Protection and Enhancement
- ⑥ Alton Pools Islands - Island Protection and Side Channel Restoration

ECOSYSTEM PROJECTS - APPROVED

- WLM - Reduce Water Level Fluctuations
- Systemic Forest Restoration
- Multi-Pool Forest Restoration
- ① North Sturgeon Lake
- ② Wacouta Bay
- ③ Johnson Island
- ④ Sabula Lakes
- ⑤ Andalusia Island Complex
- ⑥ Liverpool Flowing Side Channel
- ⑦ Pool 24 Island Restoration - Denmark and Drift Islands Complex
- ⑧ Pool 25 Side Channels - Clarksville/Carroll Island Complex, Haugens Island/Lower Pool 25 Complex
- ⑨ Middle Mississippi River Stone Dike Alterations Phase 1

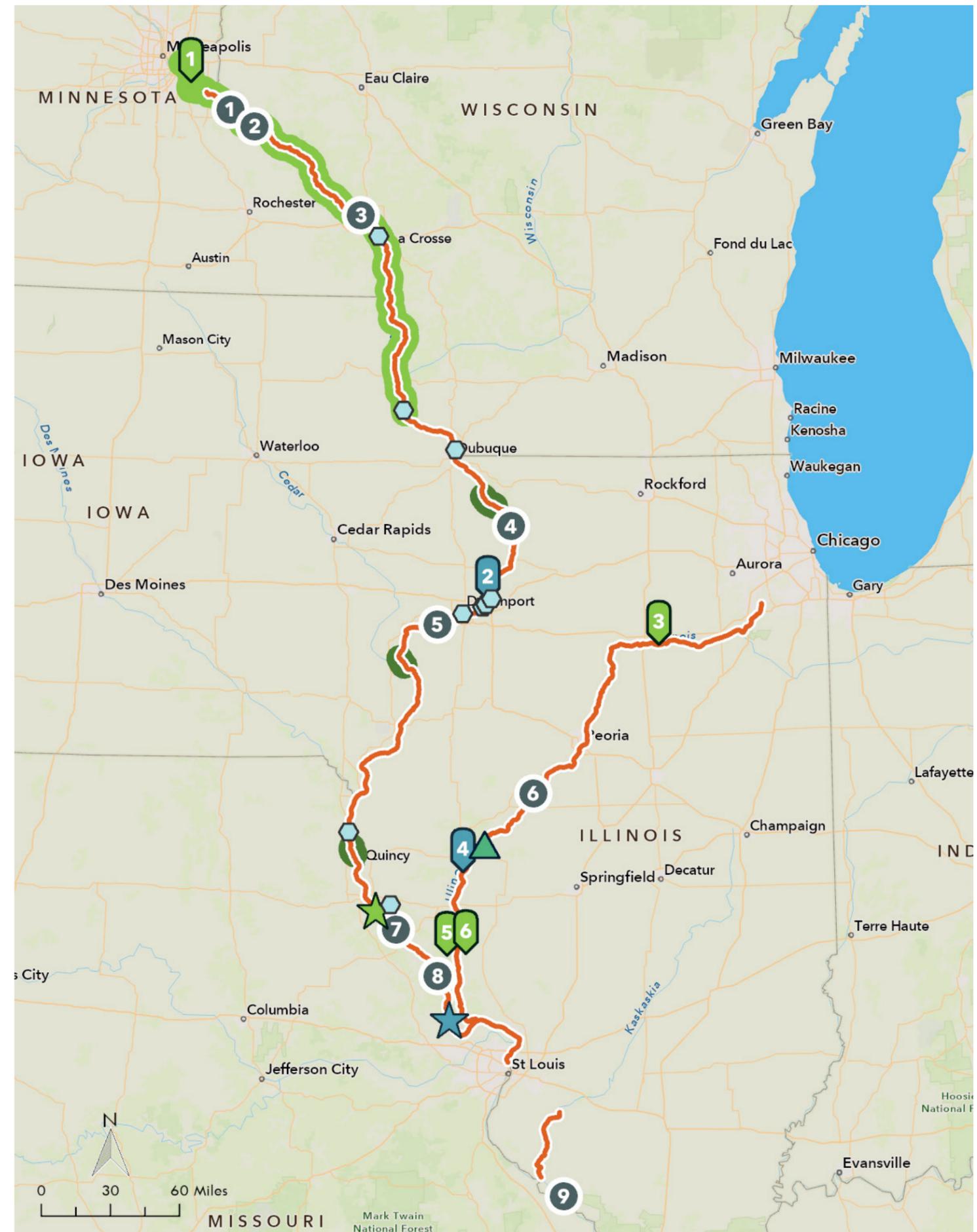
NAVIGATION PROJECTS

- ⬡ Mooring Facilities
- ▲ LaGrange New 1200' Lock Design
- Systemic Mitigation - throughout the Upper Mississippi River Basin

The Navigation and Ecosystem Sustainability Program (NESP) is a long-term, dual-purpose program that integrates navigation improvements and ecosystem restoration together to provide Upper Mississippi River System once in a generation-type positive impacts.

The primary goals of the program are to increase the capacity and improve the reliability of the inland navigation system while restoring, protecting, and enhancing the environment.

This map shows both projects that are actively being implemented and future ecosystem projects that have been approved. NESP includes an additional 5 - 1200' locks, systemic mitigation, and hundreds of ecosystem restoration projects.



PARTNERS



executive summary

2022 Upper Mississippi River Restoration Program Report to Congress

The 2022 Upper Mississippi River Restoration (UMRR) program Report to Congress provides an evaluation of the UMRR program's Habitat Rehabilitation and Enhancement Projects (HREPs) and Long Term Resource Monitoring (LTRM) elements (Executive Summary Figure 1) since the previous report to Congress in 2016. Additionally, this Report to Congress provides information about the Habitat Needs of the Upper Mississippi River System (UMRS) as well as conclusions and recommendations necessary to continue and improve implementation of the UMRR program. This fifth Report to Congress addresses the successes of the UMRR program leading, innovating, and partnering to successfully deliver habitat restoration, monitoring, and science to better understand the UMRS, and to achieve the program's vision of a healthier and more resilient Upper Mississippi River ecosystem that sustains the river's multiple uses.

The following goals have been achieved from 2017 - 2022:

Leading

- ▶ Implemented the UMRR program as outlined in the adopted Joint Charter and the goals and objectives of the 2015-2025 Strategic Plan
- ▶ Provided critical insight and understanding of the UMRS through monitoring, research, and modeling to inform management of the UMRS
- ▶ Promoted a common vision, sense of purpose, transparency, and accountability among the program partners

Innovating

- ▶ Assessed and detected changes in the fundamental health and resilience of the UMRS
- ▶ Defined ecological resilience and appropriate indicators to measure status and trends in the UMRS
- ▶ Renewed UMRR's Habitat Needs Assessment and identified the suite of habitat projects to improve UMRS ecological resilience
- ▶ Addressed key ecological needs at various spatial scales
- ▶ Formulated and constructed 7 habitat restoration projects benefiting approximately 15,400 acres of nationally significant aquatic, wetland, forest, island, side channel and backwater habitats.

Partnering

- ▶ Actively exchanged information with UMRS watershed, national, and international partners
- ▶ Evaluated and learned from constructed habitat restoration projects
- ▶ Applied adaptive management principles to address risk and uncertainty
- ▶ Collaborated with partners to further inform issues related to project partnership agreements



Executive Summary Figure 1
Upper Mississippi River
Ecosystem Floodplain Reaches,
Habitat Projects, and Long-Term
Monitoring Stations.

- ◆ LTRM monitoring stations
- ▲ in-progress habitat projects
- completed habitat projects

The 2022 UMRR Report to Congress has six parts

- ▶ **History and Background**
- ▶ **Chapter 1** – Strategic Partnership and Vision
- ▶ **Chapter 2** – Enhancing Habitat
- ▶ **Chapter 3**– Advancing River Science in Support of Restoration
- ▶ **Chapter 4**– Implementation Issues
- ▶ **Chapter 5** – Conclusions and Recommendations

These parts are summarized as follows:

HISTORY AND BACKGROUND The History and Background portion of the 2022 Report to Congress provides an overview of the national significance of the UMRS, the origins and evolution of the UMRR program, changes to the authorization, and benefits of the UMRR program.

In a Nation endowed with magnificent water resources, the UMRS stands as a premier example of multi-purpose river management in the United States (US). The UMRS is the commercially navigable portions of the Mississippi River north of Cairo, Illinois, and the Minnesota, Black, St. Croix, Illinois, and Kaskaskia Rivers. Past and present day, people have used the resources provided by the UMRS for shelter, travel, food, commerce, and culture. While transformed in many ways, the UMRS retains many essential river functions and processes. Within the context of a modified river system, the Upper Mississippi River Restoration (UMRR) program seeks to expand upon and restore habitat and increase the resilience of a nationally-significant ecosystem.

In 1986, Congress recognized the UMRS as a nationally significant ecosystem and commercial navigation system in the Water Resource Development Action (WRDA) of that same year. The UMRS provides a 1,200-mile commercially navigable river network with a total of twenty-nine locks and dams on the Mississippi River and an additional eight on the Illinois River. The river network links five states to the Great Lakes and the Gulf Coast and

supports a complex web of life in its mosaic of diverse and varied terrestrial and aquatic habitats. The UMRS is home to a diverse array of fish and wildlife that find habitat in its channels, backwaters, sloughs, wetlands, floodplain forests, and adjacent uplands. To preserve parts of the ecosystem and support the various fish and wildlife species, five National Wildlife and Fish Refuges (NWFRs) have been established covering over 300,000 acres of wooded islands, water, and wetlands along the UMRS. The Upper Mississippi River NWFR and adjacent State-owned wetlands are designated as a Wetland of International Importance, meeting the criteria established by the international Ramsar Convention on Wetlands. The Wetlands of International Importance in the UMRS meet these criteria because they contain representative, rare, and unique examples of natural or near-natural wetland types found within North America. Multiple Globally Important Bird Areas are also located on and along the UMRS due to the presence of globally threatened species.

To address the impacts of commercial and recreational navigation and rehabilitate degraded habitat, Congress authorized the UMRR program, initially known as the Environmental Management Program (EMP), in WRDA of 1986, making it the first large river ecosystem restoration, science, and monitoring program in the US. For the past 35 years, the UMRR program has successfully enhanced multiple uses of the river and leveraged partnership-led management for ecosystem science and restoration. Consistent funding and support from Congress and the Administration influence the ability of the UMRR program to deliver habitat restoration benefits and world class monitoring and science, contributing to the viability of the UMRS's diverse and significant fish and wildlife resources.

Congress has appropriated \$703.82M to the UMRR program since its inception in 1986 through FY 21. In the previous 5 fiscal years (FY 2017-2021), Congress appropriated \$165.85M to the UMRR program - nearly one-fourth of its historical funding. During this time, Congress had fully funded the UMRR program to level's matching the full authorized annual amount of \$33.17M (Figure 2). This increase in funding consistently for five federal fiscal years helped the UMRR program achieve successes that would not have been attainable had funding remained at the historical average before FY 2017. This includes advancing ecosystem habitat projects effectively and efficiently (see Chapter 2) and making



substantial scientific advancements in large riverine ecosystem science (see Chapter 3).

Financial investment in protecting and restoring the UMRS provides economic, ecological, and infrastructure benefits. The UMRS is a treasured ecosystem abundant with fish and wildlife and a multi-billion-dollar economic engine. It plays a major role in local, regional, state, and national economies, both directly and indirectly. The UMRR program supports jobs and economic growth throughout the UMRS region. For every \$10 million spent on habitat project construction, the UMRR program supports a total of 306 full-time equivalent jobs in manufacturing, agriculture, tourism, recreation, freight and passenger transportation, and energy sectors among others and \$26,426,000 in economic output in the Nation. The UMRS supports critical infrastructure and ecosystem services for local communities and the region, including energy and drinking water systems. The UMRR programs work towards a healthier more resilient ecosystem that supports these systems.

The UMRR program is a successful partnership among federal and state agencies, non-governmental organizations, and the public. This systemic program provides a well-balanced combination of habitat restoration activities, monitoring, and science, pioneering many new and innovative engineering and planning techniques for ecosystem restoration in large river systems. The science element of the UMRR program showcases state-of-the-art and standardized techniques to monitor and conduct research on the river, which have substantially improved the ecological understanding of the UMRS and informed the restoration of the UMRS and other large-floodplain rivers. The UMRR scientific monitoring, engineering design, and environmental modeling techniques have been shared throughout the US and in more than five countries. As of December 2021, the UMRR program partnership completed 59 habitat restoration projects improving approximately 112,000 acres of fish and wildlife habitats in Illinois, Iowa, Minnesota, Missouri, and Wisconsin (Executive Summary Figure 1). By December 2022, the UMRR program anticipates completion of 4 additional habitat restoration projects bringing the total of 121,000 acres restored.

CHAPTER 1 – Strategic Partnership and Vision. Chapter 1 highlights the successful partnership among federal and state agencies, non-governmental organizations, and the public that is a cornerstone of the UMRR program.

Through interagency consultative and coordination bodies, the UMRR program’s partnership considers and addresses a range of program policy and budget issues, defines program priorities and direction, and raises and resolves technical questions. HREPs are selected, planned, and designed in a collaborative manner among project planners, engineers, habitat managers, and scientists. LTRM is implemented in coordination with UMRR program partners from USGS and the five UMRS States.

The UMRR program’s 2015–2025 Strategic Plan articulates the partnership’s vision for the UMRS, charting a 10-year plan for program implementation. The strategic plan fosters UMRR program’s longstanding commitment to cooperative action among its implementing partners and to external engagement and collaboration among the many organizations and individuals working for a better UMRS. The UMRR program benefits from a deeply rooted history of interagency and interdisciplinary partnerships. Through 2025, the UMRR Coordinating Committee (UMRR CC) will prioritize its focus on the following three initiatives:

1. Implement adaptive management in more deliberative ways and track biological responses to restoration
2. Apply ecosystem resilience concepts to UMRR’s restoration and science
3. Refine communication to target the most pressing challenges for sustaining a healthy UMR ecosystem

In 2025, UMRR partnership will review the strategic plan and identify ways to further improve and continue the UMRR program’s success in the next 10-years of enhancing restoration and knowledge of the UMRS.

The UMRR program has undertaken creative and intentional efforts to integrate the UMRR’s primary elements: building HREPs and implementing LTRM and scientific research. Since 2016, several efforts have built bridges across those elements, resulting in seamless program delivery. With more stable and robust funding for the UMRR program, came the ability to strategically plan for science efforts to support restoration and management activities. These focused engagements bring together

the best scientific, engineering, and natural resource management expertise from across the partnership. This fosters a collaborative approach to research and analysis that effectively leverages the strengths of both the LTRM and HREP program elements. In 2018, UMRR completed its second Habitat Needs Assessment (HNA-II) to identify long-term habitat restoration goals, objectives at multiple scales and to identify areas and types of future restoration projects. In 2019, the UMRR program brought together expertise from across the partnership that plan, design, build, operate, maintain, and monitor HREP projects. This effort brought practitioners together to exchange lessons learned, collaborate on the future direction of HREPs, and initiate the identification, planning and sequencing of the next generation of HREPs. In 2020, UMRR partnership undertook a dialog to reassess the significance of the UMRS to better position the program in delivering value to the nation and help accomplish its vision of a healthier and more resilient UMR ecosystem that sustains the Mississippi River. Finally, in support of ongoing ecosystem restoration and management efforts, the broad partnership has made significant progress in completing and applying the resilience assessment of the UMRS.

Through leadership, partnership, and innovation, the UMRR program continues to substantially improve knowledge of the UMRS. To advance restoration goals and objectives, the UMRR program works in collaboration with other programs and partners within the watershed and beyond to maximize the value of river restoration knowledge to the region and nation. This collaboration includes partnering with the USGS Next Generation Water Observation System (NGWOS), utilizing LTRM expertise and methods to monitor unique conditions present during the 2020 consolidated lock closures on the Illinois River, and the beneficial use of dredged material from navigation channel maintenance activities to enhance habitat at the Mcgregg Lake HREP.

CHAPTER 2- Enhancing Habitat. Chapter 2 is focused on the UMRR HREP element and the achievements in improving the ecological health and resilience of UMRS habitats.

Habitat restoration projects designed and funded under the HREP element aim to restore habitats and processes that have been degraded as a result of UMRS alterations (including river channelization or modifications,

locks and dams construction, flood risk management projects, and floodplain development). As of December 2021, the UMRR program partnership has completed 59 habitat restoration projects improving approximately 112,000 acres of fish and wildlife habitats in Illinois, Iowa, Minnesota, Missouri, and Wisconsin. By December 2022, the UMRR program anticipates completion of four additional habitat restoration projects bringing the total of 121,000 acres restored. Currently, the UMRR program has 12 HREPs in planning or design and seven under construction. Upon construction completion of these UMRR HREPs, the UMRR program will enhance nearly 77,000 additional acres.

Understanding how the ecosystem responds to various restoration techniques and approaches used in HREP projects has always been a top priority for UMRR. Since 2016, the UMRR program evaluated the effectiveness of 36 completed UMRR HREPs by comparing pre and post project monitoring information with other research and knowledge of the ecological condition. This effort improved the UMRR program's knowledge about the river system, restoration designs, construction techniques, and enhanced monitoring capabilities to detect direct and indirect physical, chemical, and biological responses to UMRR HREPs.

CHAPTER 3 – Advancing River Science in Support of Restoration. The accomplishments of the large-scale scientific research and monitoring effort of the LTRM element is the basis of Chapter 3.

Since its inception, the LTRM element has been at the forefront of collecting, providing public access to, and using scientifically based information to better understand how this large floodplain river system functions and to improve river management and restoration. The UMRR LTRM element fills a critical need for the standardized collection, integration, analysis, and reporting of scientific information to UMRS resource managers and decision makers. Since the last Report to Congress, two key publications have significantly advanced the science and understanding of the Upper Mississippi River System. In 2018, the UMRR program completed the Second Habitat Needs Assessment (HNA-II). Using HNA-II data, the UMRR program establishes a technically sound, objective, and consensus-based framework integrating best available data with partner agency management perspectives for restoration and management actions

in the UMRS. The 2022 Ecological Status and Trends Report summarized analyses of two and a half decades of long-term monitoring, allowing UMRR staff and partners an incomparable ability to detect long-term trends, understand variation over time, and observe complex patterns in the river ecosystem. These data provide critical information on ecosystem dynamics relevant to the management and restoration of the river system.

CHAPTER 4 – Implementation Issues. Chapter 4 covers the issues could potentially affect UMRR program implementation efficiency.

From 2021 to 2022, the UMRR CC facilitated development and dialog about those issues with the goal of UMRR program partner consensus on recommendations to guide future implementation of the program. Topics for ongoing dialog among the partnership include: project partnership agreements (PPA), floodplain regulations, engaging nontraditional sponsors, water level management, land acquisition, watershed input and climate change, external communications, and federal easement lands. Specifically related to the PPA issue, the CC is hearing from many non-federal sponsors (states, counties, municipalities, and non-profit entities) that some of the statutory requirements make it challenging for them to execute.

CHAPTER 5 – Conclusions and Recommendations. The 2022 Report to Congress concludes with a summary of the UMRR program's leadership, innovation, and partnership efforts of the past six years and identifies recommendations for future UMRR program implementation.

The UMRR program effectively uses federal appropriations by advancing its authorized purposes and improving the ecological condition and knowledge of the UMRS. An assessment of future capabilities indicates that the UMRR program has the capability to effectively use appropriations levels at the fully authorized annual amount of \$55 million. The UMRR program has routinely executed more than 98 percent of its appropriated funds, including when funding levels were near or at its previously full annual authorized amount of \$33.17 million. A consistent flow of funding allows the UMRR program to manage risk and uncertainty to achieve a high level of planning and construction capability and execute an aggressive schedule.

DRAFT

Financial investment in protecting and restoring the UMRS provides economic, ecological, and infrastructure benefits. The UMRS is a treasured ecosystem abundant with fish and wildlife and a multi-billion-dollar economic engine. It plays a major role in local, regional, state, and national economies, both directly and indirectly. The UMRR program supports jobs and economic growth throughout the UMRS region.

There are four recommendations in this Report's concluding chapter but no recommendations for Congress for modifications to policy or legislation to improve implementation. Briefly, the four recommendations conclude that the UMRR program should:

(1) continue to work collaboratively to continue to implement action to achieve the goals and objectives of the 2015-2025 UMRR Program Strategic Plan to help drive the UMRS toward a healthier and more resilient state, (2) continue to take a proactive approach to ensure an adequate flow of projects in the planning, design, and construction phases, (3) remain fully functional and continue to serve ecosystem restoration and resource monitoring needs on the UMRS at its full authorized level of funding (\$55 million), and (4) work to further inform issues related to execution of project partnership agreements.



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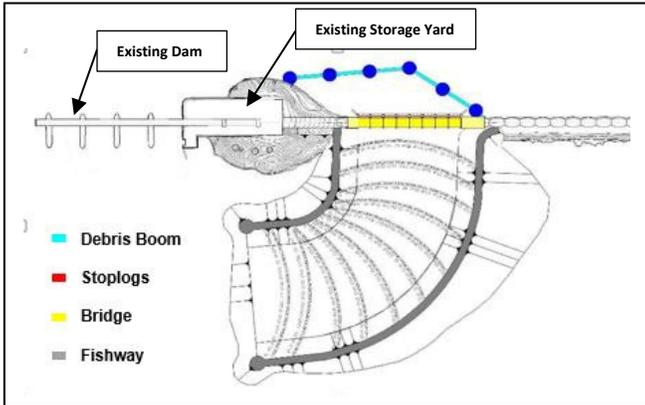


US Army Corps
of Engineers®
Rock Island District

Fact Sheet

NESP Fish Passage – L&D 22

Upper Mississippi River – Illinois Waterway System Navigation and Ecosystem Sustainability Program (NESP) – Fish Passage - Lock and Dam 22



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Location

Upper Mississippi River, River Mile (RM) 301.2 near Saverton, Missouri, between Ralls County, Missouri, and Pike County, Illinois

Description

NESP is a long-term program of ecosystem restoration and navigation improvements for the Upper Mississippi River System (UMRS). Fish passage at Lock and Dam 22 is an ecosystem restoration project.

The UMRS transports more than 60 percent of America’s corn and soybeans, is home to 25 percent of North America’s fish species, and is a globally important flyway for 40 percent of North America’s migratory waterfowl and shorebirds. The UMRS ecosystem consists of 2.7 million

acres of bottomland forest, islands, backwaters, side channels and wetlands, all of which support more than 300 bird species, 57 mammal species, 45 amphibian and reptile species, 150 fish species, and nearly 50 mussel species. The diversity and abundance of native aquatic plants and animals are being impacted by degradation, loss of habitat and the arrival of several exotic species.

Lock and Dam 22 is one of five fish passage locations on the Mississippi River authorized by the program and the first to be funded for construction. Lock 22 fish passage received \$97.1M to fund design and initiate construction of the project. The project scope includes construction of a 200’-wide rock ramp fishway, an ice/debris barrier, bridge, and stoplogs. The project area is located in Congressional District 9 in Missouri and District 17 in Illinois.

The objective of this project is to restore longitudinal connectivity for a wide range of migratory warmwater fish species through the construction of a fish passage structure. If successful, this project will increase access to upstream habitats and improve the size and distribution of native migratory fish populations. Because the Lock and Dam 22 fish passage project is among the first of this kind on the UMR, another goal is to learn from this project through monitoring, evaluation, and apply this knowledge to future fish passage projects. The three components of monitoring and evaluation are 1) to gain information needed for project planning and design (pre-project monitoring), 2) to determine if the project objectives are met (project performance monitoring) and 3) to apply lessons learned to subsequent fish passage projects (adaptive management).

Congressional Support

NESP has strong Bipartisan support with 52 members of Congress recently pledging their support that NESP be included in the USACE Infrastructure Investment and Jobs Act projects.

Key Takeaways

- The contract to complete project design was awarded in FY22. The construction contract is expected to be awarded in FY24.

- Pre-project fish monitoring activities have begun in coordination with USGS, USFWS, and the respective state DNRs. These monitoring activities will inform the design to ensure it is most effective for passing fish.

Status

In FY22 NESP – Lock and Dam 22 Fish Passage received \$97.1M from the Bi-Partisan Infrastructure Law to complete design and initiate construction.

The LD22 Fish Passage Project Implementation Report was approved by the Chief of Engineers on June 1, 2022. The design is currently at 35% complete.

Additional Information

Congressional Interest

Senators: Charles Grassley (IA), Joni Ernst (IA), Richard Durbin (IL), Tammy Duckworth (IL), Tina Smith (MN), Amy Klobuchar (MN), Roy Blunt (MO), Joshua Hawley (MO), Tammy Baldwin (WI), Ron Johnson (WI)

Representatives: IA-2 (Mariannette Miller-Meeks), IA-3 (Cynthia Axne), IA-4 (Randy Feenstra), IL-11 (Bill Foster), IL-13 (Rodney Davis), IL-16 (Adam Kinzinger), IL-17 (Cheri Bustos), IL-18 (Darin LaHood), IL-3 (Marie Newman), MN-1 (Jim Hagedorn), MO-6 (Sam Graves), WI-3 (Ron Kind)

Authority

GI - General Investigations - Title VIII of WRDA 2007

ATTACHMENT G

USACE Brandon Road Interagency Project Newsletter
(11/2/2022)
(G-1 to G-2)



US Army Corps
of Engineers®
Rock Island District

BRANDON ROAD INTERBASIN PROJECT



QUARTERLY UPDATE

November 2022

The PROJECT

The Brandon Road Interbasin Project is a complex ecosystem protection effort designed to prevent upstream movement of invasive carp and other aquatic nuisance species into the Great Lakes from the Illinois Waterway.

Brandon Road Lock and Dam near Joliet, Illinois, has been identified as the critical pinch point where layered technologies could be used to prevent movement of invasive carp populations into the Great Lakes.

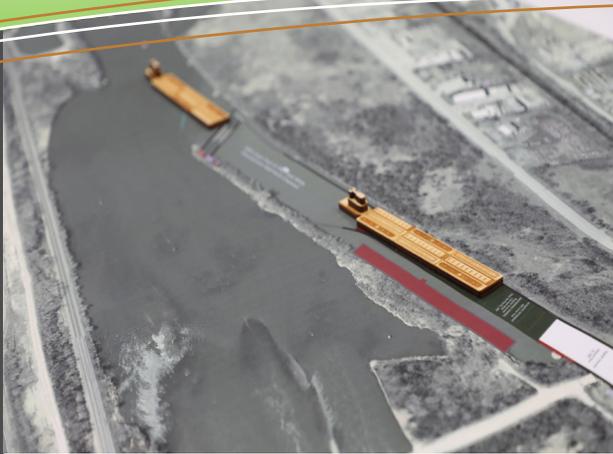
The PLAN

The recommended plan involves a layered system of structural and non-structural control measures.

Structural measures could include technologies such as a flushing lock, an engineered channel with electric barrier, underwater acoustic deterrent, and air bubble curtain.

Non-structural measures, implemented in conjunction with other federal agencies, could include public education and outreach, monitoring, integrated pest management, manual or mechanical removal, and research and development.

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In this issue

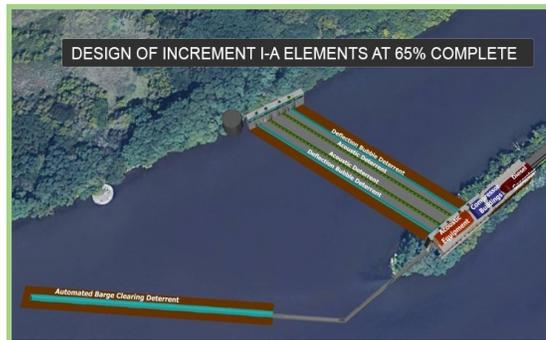
Project Status Update

New Deterrent Technology Tested

Thousands of Fish Help Test New Design

Project Status Update

Over the past several months, the Brandon Road Interbasin Project team has continued making progress on pre-construction engineering and design of Increment I-A. Plans and specifications for Increment I-A, which includes downstream bubbler and acoustic deterrents, an automated barge clearing deterrent, upstream boat launch, and facilities to support the deterrents, are now 65 percent complete.



In late August, an automated barge clearing (ABC) deterrent was installed at Peoria Lock and Dam on the Illinois Waterway for testing. A team of specialists from USACE, U.S. Geological Survey, and U.S. Fish and Wildlife Service designed, constructed, and tested the ABC deterrent to remove live fish from the box-rake junction area of an operating barge. In September, a technical report for the electrical deterrent, developed by the USACE Engineer Research and Development Center's Cold Regions Research and Engineering Laboratory, was also submitted to the project team for a 95 percent review.

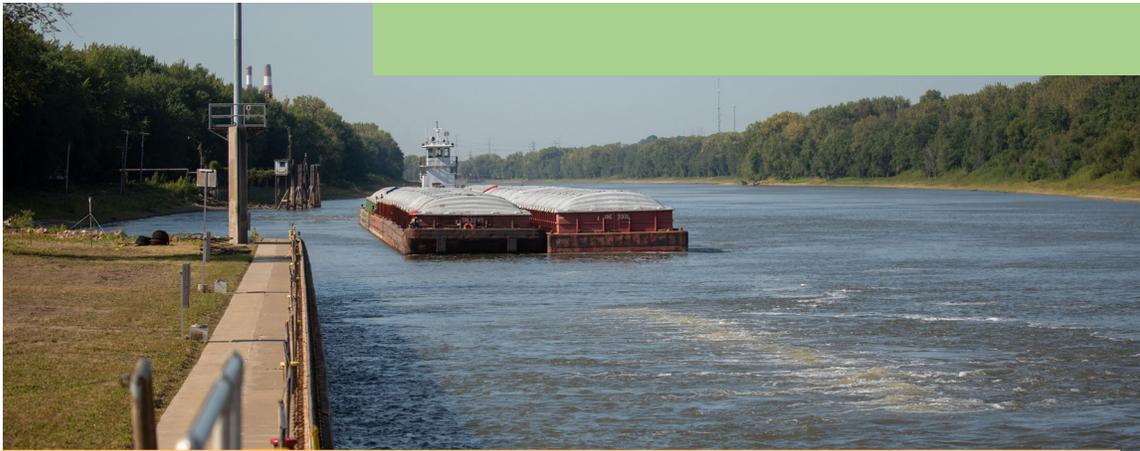
In October, the team hosted new leadership from the U.S. Coast Guard's Marine Safety Unit Chicago at the Brandon Road Lock and Dam to get them acquainted

with the project and the Coast Guard's integral role in helping to determine the safety factors and operational parameters for the project. A cost schedule risk analysis meeting was also conducted to develop a new certified total project cost summary, scheduled to be completed in December. Work continues to negotiate a Project Partnership Agreement (PPA) with the state of Illinois. A fully signed PPA provides necessary access to \$226.8 million federal funds allocated under the 2022 Bipartisan Infrastructure Law needed to award future fabrication and construction contracts.

U.S. Coast Guard Leadership Visits Brandon Road Lock and Dam



Cmdr. Timothy Tilghman and other leadership from the U.S. Coast Guard, Marine Safety Unit Chicago, recently visited Brandon Road Lock and Dam in Joliet, Illinois, to get acquainted with operations of the lock and dam facility and learn more about the Brandon Road Interbasin Project.



New Deterrent Technology Tested at Peoria Lock and Dam

An interagency group of specialists from USACE, U.S. Geological Survey and U.S. Fish and Wildlife Service, supported by Great Lakes Restoration Initiative (GLRI) funding, were recently successful in designing, constructing and testing a full-sized prototype of an automated barge clearing (ABC) deterrent at Peoria Lock and Dam in Peoria, Illinois. The new prototype involves a series of airlines and nozzles installed on the bottom of the river that blow a steady stream of air up through the water creating circular flow patterns designed to clear fish from the box to rake junction spaces within passing barges.

“We are trying to protect the Great Lakes from harmful invasive species using this new

experimental technology,” said Mark Cornish, Environmental Technical Lead for the Brandon Road Interbasin Project. “This testing is important because we plan to use the new technology in the leading edge of deterrents being installed as part of Brandon Road Interbasin Project. We need to ensure it is safe to use around commercial and recreational vessels and that it performs as expected in removing small fish from the box to rake junction areas of the barge.”

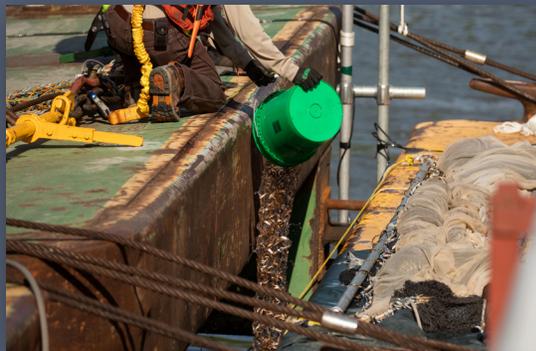
Colin Moratz, biologist, USACE Rock Island District added, “Previous studies have demonstrated that small fish could be entrained between barges in a tow when they were configured with a box to rake coupling and

transported long distances, at least 12 miles. This deterrent technology could provide a means to reduce the threat of small invasive carp reaching the Great Lakes by breaking the currents that carry fish between barges and forcing the fish out of the protected junction.”

Cornish also noted that, “Technologies such as the ABC deterrent are necessary if we are going to protect the Great Lakes from aquatic invasive species while keeping our waterway open for low-cost transportation that helps enhance the U.S. economy.” Although results from the testing are still being evaluated, the team was pleased with the overall performance of the deterrent and its ability to clear small fish from between barges.

Thousands of Fish Help Test New Design

During automated barge clearing (ABC) deterrent testing at Peoria Lock and Dam, representatives from the U.S. Fish and Wildlife Service manually placed thousands of tiny fish between barges to measure the effectiveness of the prototype system. Roughly 100 test runs were conducted over 18 testing days and color-coded fish were used to differentiate between various runs. Data collected from these tests will be used to evaluate the actual performance of this innovative deterrent while also exploring safety and operational considerations.



Completed EVENTS

 **AUGUST 2022**

Quarterly Update Webinar #4

 **OCTOBER 2022**

*USCG Visit Brandon Road
Cost Schedule Risk Analysis*

Upcoming EVENTS

 **NOVEMBER 2022**

Quarterly Update Webinar #5

 **DECEMBER 2022**

Facilitated Partnering Meeting #4

Stay CONNECTED

Looking for more information about the Brandon Road Interbasin Project? Click the website link below or scan the QR code with the camera app on your mobile device to learn more about the project's next steps, key leadership involved, and how to contact the project team.

<https://go.usa.gov/xF79Xa>



SCAN ME

ATTACHMENT H

Mississippi River Basin Fishery Commission Draft Legislation (11/1/2022)

(H-1 to H-15)

1 **117 CONGRESS 2ND SESSION**

2 **S.____**

3
4 **AN ACT**

5 To establish the Mississippi River Basin Fisheries Commission,
6 and for other purposes.
7

1 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS**

2 (a) SHORT TITLE. – This Act may be cited as the “Mississippi River Basin
3 Fisheries Commission Act”.

4 (b) TABLE OF CONTENTS. -The Table of Contents for this Act is as follows:

5 Sec. 1. Short title; table of contents

6 Sec. 2. Findings

7 Sec. 3. Purpose

8 Sec. 4. Definitions

9 Sec. 5. Effective Date.

10 Sec. 6. Commission Governance.

11 Sec. 7. Commission Duties.

12 Sec. 8. Department of the Interior.

13 Sec. 9. Federal Partners.

14 Sec. 10. Nonbinding Authority.

15 Sec. 11. Renunciation.

16 Sec. 12. Report to Congress

17 Sec. 13. Appropriations

18
19 **SECTION 2. FINDINGS AND PURPOSE**

20 (a) FINDINGS. - Congress finds the following:

21 (1) Management of the inland fishery resources of the Mississippi
22 River Basin are shared by 31 States, multiple Federal agencies, and two Canadian
23 provinces.

24 (2) The Mississippi River Basin is the fourth largest watershed in the
25 world, and the largest watershed in the nation, draining all or part of 31 states and
26 2 Canadian provinces. The watershed measures approximately 1.2 million square
27 miles and covers 41% of the continental United States.

28 (3) The Mississippi River and its tributaries comprise one of the
29 largest and most valuable ecosystems in the world.

30 (4) The Basin supports economically and culturally significant
31 subsistence, commercial, and recreational fisheries.

1 (5) States within the Mississippi River Basin have formed multiple
2 regional interstate partnerships, and one basin-wide partnership, to promote
3 cooperation and communication among the conservation agencies to manage the
4 interjurisdictional fishery resources of the basin. Twenty-eight Mississippi River
5 Basin state fishery agencies, the U.S. Fish and Wildlife Service (USFWS), the
6 [U.S. Bureau of Reclamation](#), the [U.S. Geological Survey](#) agency, the Tennessee
7 Valley Authority, the [Chippewa-Cree Tribe](#) and the [Chickasaw Nation](#) ratified the
8 Mississippi Interstate Cooperative Resource Agreement in 1990 and formed the
9 Mississippi Interstate Cooperative Resource Association (MICRA) in 1991 to
10 improve the management of interjurisdictional fishery resources in the basin.

11 (6) Recognizing the economic, ecologic, and cultural value of the
12 diverse interjurisdictional fishery resources in the Mississippi River Basin and the
13 complexity and severity of issues facing resource management agencies, Congress
14 acknowledges the need for the establishment of a Mississippi River Basin Fishery
15 Commission for Basin-wide, inter-agency collaboration in the establishment of
16 shared management objectives, and the collaborative planning, implementation,
17 and evaluation of management actions to provide for the long-term biologic and
18 economic sustainability of interjurisdictional fishery resources in the basin.

19 (7) As long-term sustainability of interjurisdictional fishery
20 resources is dependent on the control of aquatic invasive species within the Basin,
21 it is the further purpose of this Commission to provide for coordinated, inter-
22 agency, basin-wide management, control, and removal of invasive carps and other
23 prioritized aquatic invasive species within the Mississippi River Basin.

24 (8) By consent of Congress, and as directed by national law (i.e.,
25 Magnuson-Stevens Fishery Conservation and Management Act and the
26 Interjurisdictional Fisheries Act of 1986), sustainable marine fisheries within the
27 U.S. coastal waters of the Pacific, Atlantic, and Caribbean Oceans, and the Gulf

1 of Mexico, have been managed by multi-state commissions and fishery councils
2 for many decades.

3 (9) The interjurisdictional and international fishery resources of the
4 Great Lakes are cooperatively managed by the Great Lakes Fishery Commission
5 (GLFC), operating through the 1954 Convention on Great Lake Fisheries.

6 (10) The Mississippi River Basin Fishery Commission will improve
7 the management and utilization of sustainable interjurisdictional fisheries
8 resources in the Mississippi River Basin through the development of a multi-
9 agency program for the joint management and protection of such fisheries.

10 **SECTION 3. PURPOSE**

11 (a) PURPOSE.- The purpose of the Mississippi River Basin Fisheries
12 Commission is to effectuate the improved management and utilization of the
13 interjurisdictional fisheries resources of the Mississippi River Basin through the
14 creation of the Mississippi River Basin Fisheries Commission responsible for
15 cooperative fisheries management, aquatic invasive species management and
16 control, and associated research.

17 **SECTION 4. DEFINITIONS**

18 In this Act:

19 (1) AQUATIC INVASIVE SPECIES. – means a nonindigenous species that
20 threatens the diversity or abundance of native species or the ecological
21 stability of infested waters, or commercial, agricultural, aquacultural or
22 recreational activities dependent on such waters.

23 (2) DIRECTOR OF FISHERIES. – The term “director of fisheries” is used here
24 generally to describe the highest designated officer in charge of fisheries
25 management employed by each state wildlife agency in each member state
26 in the commission. Each state wildlife agency has a different title for their
27 primary fisheries manager, and in this act, the term “director of fisheries”

1 is used to describe that position regardless of actual formal title of the
2 officer in each state.

3 (3) FISHERY RESOURCE. – The term “fishery resource” means finfish,
4 mollusks, crustaceans, and any other form of marine animal or plant life,
5 other than marine mammals or birds.

6 (4) INTERJURISDICTIONAL FISHERY RESOURCE. – The term “interjurisdictional
7 fishery resource” means –

8 (a) A fishery resource for which a fishery occurs in waters under the
9 jurisdiction of one of more States;

10 (b) A fishery resource for which there exists an interstate fishery
11 management plan; or

12 (c) A fishery resource which migrates between the waters under the
13 jurisdiction of two or more States within the Mississippi River Basin.

14 (5) INVASIVE CARP. – Invasive carp are aquatic invasive finfish that originated
15 from Europe and Asia. The bighead carp, black carp, grass carp and silver
16 carp spread quickly once they are established in a body of water or
17 waterway, and cause serious damage to the native fish populations, as well
18 as economic and physical harm to humans.

19 (6) MISSISSIPPI RIVER BASIN STATE. – a State whose borders include waters
20 that drain into the Mississippi River Basin, including Alabama, Arkansas,
21 Colorado, Georgia, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana,
22 Maryland, Michigan, Minnesota, Mississippi, Missouri, Montana,
23 Nebraska, New Mexico, New York, North Carolina, North Dakota, Ohio,
24 Oklahoma, Pennsylvania, South Dakota, Tennessee, Texas, Virginia, West
25 Virginia, Wisconsin and Wyoming.

26 (7) COMMISSION. – The term “Commission” means the Mississippi River
27 Basin Fisheries Commission established under Section 4 of this Act.

1 (8) ELIGIBLE ENTITY. — The term “eligible entity” means entities eligible for
2 Commission membership, and includes —

3 (a) any political subdivision, agency or department of a Mississippi
4 River Basin State that regulates Mississippi River Basin fisheries;

5 (b) an Indian tribe (as defined in section 4 of the Indian Self-
6 Determination and Education Assistance Act ([25 U.S.C. 5304](#))) or an
7 entity controlled by an Indian tribe that manages Mississippi River Basin
8 fisheries;

9 (c) Federal entities including, but not limited to: the United States
10 Geological Survey, the United States Fish and Wildlife Service, the United
11 States Army Corps of Engineers and the Tennessee Valley Authority.

12 (9) MEMBER ENTITY. – The term “member entity” means entities eligible for
13 Commission membership as defined in definition (8) above of this Act, that
14 maintain active membership.

15 (10) SECRETARY. – The term “secretary” means the Secretary of the
16 Department of Interior.

17 **SECTION 5. EFFECTIVE DATE**

18 (a) The Mississippi River Basin Fishery Commission shall become effective
19 within 100 days of the passage of this Act.

20 (b) Subsequent to the formation of the Commission, any state or tribal
21 authority with fisheries management jurisdiction within the
22 interjurisdictional waters of the Mississippi River Basin, or Federal agency
23 or federally chartered entity that manages and regulates Mississippi River
24 Basin.

1 **SECTION 6. COMMISSION GOVERNANCE**

2 (a) Each member state’s director of fisheries or equivalent will serve as a
3 voting delegate to represent that member’s interests to the Commission
4 hereby constituted and designated as the Mississippi River Basin Fishery
5 Commission. Each federal entity, and tribe joining herein as defined above
6 shall appoint one voting delegate to the Commission hereby constituted
7 and designated as the Mississippi River Basin Fishery Commission.

8 (b) The Commission shall be a body corporate with the powers and duties set
9 forth herein. The member entities will establish a governance structure
10 following formation of the Commission.

11 (c) The Commission shall have the power to appoint a full-time Executive
12 Director and staff as needed to carry out the administrative duties of the
13 Commission. These positions will be advisory and operational in nature
14 only with no voting rights.

15 (d) The Commission shall elect from its number a Chair and a Vice Chair and
16 shall, at its pleasure, appoint, remove, or discharge such officers and
17 employees as may be required to carry the provisions of this agreement
18 into effect, and shall fix and determine their duties, qualifications, and
19 compensation.

20 (e) Said Commission shall adopt rules and regulations for the conduct of its
21 business.

22 (f) It may establish and maintain one or more offices for the transaction of its
23 business, which must be located within the Mississippi River Basin, and
24 the Commission may meet at any time or place but must meet at least once
25 a year.

1 (g) No recommendation or action shall be taken by the Commission regarding
2 its general affairs except by the affirmative vote of a majority of the whole
3 number of member entities.

4 (h) The Commission shall strive for unanimity in its decisions but will operate
5 by consensus in its decision making.

6 (i) The Federal Advisory Committee Act (5 U.S.C. App.) shall not apply to
7 the Commission.

8 **SECTION 7. COMMISSION DUTIES**

9 (A) INTERJURISDICTIONAL FISHERY MANAGEMENT.-

10 (1) The Commission shall oversee the six Mississippi River sub-
11 basin's management plans, implementation, and evaluation of the
12 effectiveness of management actions to provide for the long-term biologic and
13 economic sustainability of interjurisdictional fisheries in the Basin. The six
14 sub-basins of the Mississippi River Basin are the Arkansas-Red-White, the
15 Lower Mississippi, the Missouri, the Ohio, the Tennessee-Cumberland and
16 the Upper Mississippi.

17 (2) The Commission shall work to research and implement the best
18 scientific methods, best practices, and conditions to bring about the
19 conservation and sustainable management of interjurisdictional fisheries
20 throughout the Basin.

21 (3) **JOINT STRATEGIC PLAN.** – The Commission shall use the Joint
22 Strategic Plan for Management of Mississippi River Fisheries, which was
23 adopted and approved by 28 states in the Mississippi River Basin, and which
24 establishes a formal commitment to a set of strategic procedures for a
25 coordinated, inter-agency approach to cooperatively managing self-sustaining
26 interjurisdictional fishery resources in the basin, as the framework for the
27 Commission's management plan.

1 (4) The Commission shall develop and coordinate inter-agency and
2 inter-basin strategies to prevent the introduction of and control the abundance
3 and spread of invasive carps and other prioritized aquatic invasive species of
4 the Mississippi River Basin.

5 (5) The Commission shall draft and recommend to the appropriate
6 management agencies strategies and approaches for dealing with the
7 conservation of interjurisdictional fisheries and the management and control
8 of aquatic invasive species within the Mississippi River Basin.

9 (6) The Commission shall consult with and advise the pertinent
10 administrative agencies party to the Commission regarding problems
11 connected with the fisheries and recommend the adoption of such regulations
12 as it deems advisable.

13 (7) Not later than thirty years following the date of enactment of this
14 Act, the Commission, in consultation with the Secretary, shall reexamine and
15 evaluate the Joint Strategic Plan to determine which portions of the Plan have
16 been completed, which need updating, and add new objectives, if any, to the
17 plan, and shall issue a report to Congress on the status of interjurisdictional
18 fishery populations and the state of the ongoing work to eradicate, manage
19 and control aquatic invasive species in the Mississippi River Basin in
20 accordance with the Joint Strategic Plan.

21 **B) COMMISSION GRANT PROGRAM.-**

22 (1) Not later than 2 years after the date of enactment of this Act, the
23 Commission, in consultation with the Secretary of Interior, shall establish
24 both a competitive grant program to award grants to entities for eligible
25 projects and a non-competitive grant program to award grants to member
26 states.

1 (2) The Commission may provide grants to state fish and wildlife
2 agencies, private entities, federal agencies, nongovernmental organizations,
3 public and private universities, and partnerships between federal and non-
4 federal entities.

5 (3) Grant funding is limited to projects, research, personnel, work
6 and programs located wholly or partially located in a Mississippi River Basin
7 State.

8 (4) An entity desiring a competitive grant under the program shall
9 submit to the Commission an application at such time, in such manner and
10 containing such information as the Commission may require.

11 (5) The Commission shall determine the amount that each member
12 state shall be awarded annually under the non-competitive grant portion of the
13 Commission's funding.

14 (6) An entity eligible for grant funding that receives a grant award
15 under this section shall use the amount of the award for projects and work in
16 accordance with the goals and objectives of the Joint Strategic Plan and each
17 sub-basin's interjurisdictional fisheries management plan.

18 (7) Federal Cost Share. – Subject to paragraph (2) the non-Federal
19 share of the cost of carrying out an eligible project using funds from a grant
20 awarded under the program shall be 10 percent, including in-kind
21 contributions.

22 (a) Waiver. – The Commission shall establish waiver criteria
23 under which the Secretary may waive the cost-share requirement under
24 paragraph (1), in whole or in part, for grants awarded to eligible entities.

25 (8) Administrative Costs. – An eligible entity awarded a grant under
26 this section may use the grant funds for administrative costs relating to that
27 grant, not to exceed 5 percent.

1 C) REPORT REQUIREMENTS

- 2 1. Not later than 1 year after the disbursement of grant funding, the
3 Commission Chair shall submit to Congress a report on:
- 4 a. the entities awarded grants under this section;
 - 5 b. the amount each such entity received;
 - 6 c. how those entities used the grant award; and
 - 7 d. how such awards enhanced the management and sustainability of
8 the interjurisdictional fisheries of the Mississippi River Basin.

9 **SECTION 8. DEPARTMENT OF THE INTERIOR**

- 10 (a) The Commission shall be hosted and funded by the Department of Interior,
11 in accordance with annual appropriations from Congress.

12 **SECTION 10. NONBINDNG AUTHORITY**

- 13 (a) Nothing in this Act shall be construed to limit the powers of any signatory
14 state or to repeal or prevent the enactment of any legislation or the
15 enforcement of any requirement by any signatory state imposing additional
16 conditions and restrictions to conserve its fisheries.

17 **SECTION 11. RENUNCIATION**

- 18 (a) This agreement shall continue in force upon each member entity unless
19 renounced by it.
- 20 (b) Renunciation of this agreement must be preceded by sending six months'
21 notice in writing of intention to withdraw from the Commission to the
22 other member entities hereto.

23 **SECTION 12. REPORT TO CONGRESS**

- 24 (a) The Mississippi River Basin Fishery Commission constituted by the
25 agreement shall make a report to Congress by September 1st of each
26 calendar year following passage of this Act. Such report shall set forth the

1 activities of the Commission during the calendar year ending immediately
2 prior to the beginning of the last Congressional session.

3 **SECTION 13. APPROPRIATIONS**

4 (a) IN GENERAL. —There are authorized to be appropriated—

5 (1) \$1,000,000 to the Executive Director for the initial administrative steps
6 necessary to set up operations, house and administer the Commission;

7 (2) to the Commission, \$30,000,000 for each of fiscal years 2024 through
8 2028, to carry out Section 7, to remain available until expended;

9 (3) to the Commission, \$50,000,000 for each of the fiscal years 2028 through
10 2033, to carry out Section 7, to remain available until expended,

11 (4) to the Secretary of the Interior to carry out section 8, \$500,000 for each of
12 fiscal years 2023 through 2033, to remain available until expended.

MISSISSIPPI RIVER BASIN FISHERY COMMISSION

The Mississippi River Basin

- The Mississippi River and its tributaries comprise one of the largest and most valuable ecosystems in the world. The basin is the fourth largest watershed in the world and the largest in the nation. The watershed drains all or part of 31 states and 2 Canadian provinces. The basin covers more than 1.2 million square miles or approximately 41% of the continental U.S. and has nearly 1.5 million miles of waterways. There are at least 98 interjurisdictional rivers in the basin that flow between or through two or more governmental agencies.
- The basin supports vibrant and diverse sport and commercial fisheries. Economic output from recreational fishing in the basin in 2011 exceeded \$19 billion (USFWS unpublished data). Habitat degradation, invasive species, and the multiplicity of aquatic management authorities complicate and threaten the supply and utilization of these stocks. Fish species that move between management jurisdictions (i.e., interjurisdictional species) create complex resource management problems related to regulation development, licensing, enforcement, and establishment of management objectives. There are at least 90 fish species in the Mississippi River basin that can come under interjurisdictional management.

Current Fishery Management and in the Mississippi River Basin

- The Mississippi Interstate Cooperative Resource Association (MICRA) is a partnership of 28 state fish and game agencies with fishery management jurisdiction in the Mississippi River Basin (Basin), the US Fish & Wildlife Service, the US Geological Service, the Tennessee Valley Authority, and two tribal authorities, whose mission is to improve the conservation, management, development, and utilization of interjurisdictional fishery resources (both recreational and commercial) in the Basin through improved coordination and communication among the responsible management entities.
- Twenty-eight state agency fish and wildlife Directors signed the *Mississippi Interstate Cooperative Resource Agreement* in 1990 forming the interstate partnership, with the assistance of the American Fisheries Society and U.S. Fish and Wildlife Service, with the ultimate goal that it would eventually become a fishery commission.

Joint Strategic Plan

- To ensure cross-border collaboration, the responsible management agencies have drafted and signed '*A Joint Strategic Plan for Management of Mississippi River Basin Fisheries*', a non-binding agreement through which fishery agencies commit to cooperation, consensus, strategic planning, and ecosystem-based management.

- Twenty-six states have signed the Joint Strategic Plan for Management of Mississippi River Basin Fisheries, which serves as the framework for management of the basin and represents a formal commitment to a set of strategic procedures for a coordinated, inter-agency approach to cooperatively managing self-sustaining interjurisdictional fishery resources in the basin. The intent of the JSP is to be a foundational document for inter-agency management under the Commission, under which management plans with management goals and objectives are developed and implemented for each of the sub-basin management units within the basin.
- The Joint Strategic Plan allows agencies to leverage resources, avoid duplication of effort, develop shared objectives, and exchange valuable data.

A New Structured Model Is Needed

- MICRA has been an active and successful forum for interagency coordination and collaboration to address fisheries issues in the Basin, but lacks the resources to plan, implement, and evaluate cooperative inter-agency management actions to achieve shared fisheries management goals.
- MICRA and its member entities recognize the need, and the time has come to move beyond coordination and communication, to a cooperative and structured approach for inter-agency planning, implementation, and evaluation of management actions to achieve collaboratively established management objectives for shared interjurisdictional fishery resources in the basin
- Aquatic invasive species (AIS), particularly invasive carps (and quagga and zebra mussels), have become major issues impacting large river fishery resources in most basin states that are placing increasing strain on agency resources for coordinated management and control efforts.

The Mississippi River Basin Fishery Commission Would Provide:

- A formal structure for the responsible management agencies within the Mississippi River Basin that provides for increased interagency, interstate, and interbasin coordination and collaboration on invasive carp and aquatic invasive species management and control.
- Collaborative interagency planning, implementation and evaluation of fishery research and management to restore aquatic habitat, control AIS, conserve imperiled native aquatic species, and provide sustainable recreational and commercial fishing opportunities in the Basin.
- Increased support and commitment of each agency's Director and higher levels of government for cooperative management of inter-jurisdictional fishery resources in the Basin.
- A secure stable funding source via both a competitive and non-competitive grant program to support projects, work, personnel and research necessary to inform management activities and provide for

improved management of interjurisdictional fishery resources, including AIS control.

Great Lakes Fishery Commission Model

- Impetus for the formation of the Great Lakes Fishery Commission (GLFC) was the need to control the invasive Sea Lamprey that was impacting fishery resources in all five Great Lakes.
 - Additional needs included improved science to inform fishery management and stronger commitment of partners to cooperative management of interjurisdictional resources.
- The GLFC's sponsorship of sea lamprey control research has resulted in multiple methods of control and the development of an integrated management program.
- Through the GLFC, fishery management agencies in the Great Lakes have collaboratively developed shared management objectives, develop plans to meet those objectives, collect and disseminate data, and coordinate law enforcement for improved management of native species.
- The commitment of the responsible management agencies to the GLFC's *Joint Strategic Plan for Management of Great Lakes Fisheries* is considered fundamental to the organization's success over the past five decades.
- Great Lakes Fishery Commission's operational structure could be easily adapted to MICRA's existing sub-basin and committee structure.

What Would Change?

- Federal and state legislation officially recognizing MICRA as an interstate organization for cooperative fisheries management, including AIS/invasive carp, in the Basin.
- Increased support of federal and state governments, agency administrators, and staff.
- Increased commitment to interagency communication, coordination, and management.
- Increased funding to support management and research needs.
- The existing partnership agreement would not need to be significantly changed but would be reestablished in the form of the *Joint Strategic Plan for Management of Mississippi River Basin Fisheries*.
- The partnership terms are currently non-binding, and that would not need to change; the proposed Fishery Commission would not supersede any jurisdiction's authority.
- Decision making can remain consensus based, however a formal process for conflict resolution will be developed and agreed upon.
- Improved science informing management decisions through increased research and an increased commitment to data sharing and science-based decision making.

ATTACHMENT I

Additional Items

- **Future Meeting Schedule** *(I-1)*
- **Frequently Used Acronyms (4-29-2022)** *(I-2 to I-8)*

**QUARTERLY MEETINGS
FUTURE MEETING SCHEDULE**

FEBRUARY-MARCH 2023

<u>Remote Meeting</u>

February 28	UMRBA Quarterly Meeting
March 1	UMRR Coordinating Committee Quarterly Meeting

MAY 2023

<u>St. Paul, MN</u>

May 23	UMRBA Quarterly Meeting
May 24	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
BCOES	Bid-ability, Constructability, Operability, Environmental, Sustainability
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
CEICA	Cost Effectiveness Incremental Cost Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
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
CY	Cubic Yards
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
EPM	Environmental Pool Management
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
FMG	Forest Management Geodatabase
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
H&H	Hydrology and Hydraulics
HAB	Harmful Algal Bloom
HEC-EFM	Hydrologic Engineering Center Ecosystems Function Model
HEC-RAS	Hydrologic Engineering Center River Analysis System
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
HSI	Habitat Suitability Index
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
IGE	Independent Government Estimate
IIA	Implementation Issues Assessment
IIFO	Illinois-Iowa Field Office (formerly RIFO - Rock Island Field Office)
ILP	Integrated License Process
IMTS	Inland Marine Transportation System
IPR	In-Progress Review
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
IWS	Integrated Water Science
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
MCAT	Mussel Community Assessment Tool
MICRA	Mississippi Interstate Cooperative Resource Association
MDM	Major subordinate command Decision Milestone
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
NGWOS	Next Generation Water Observing System
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	Preconstruction Engineering and Design
PgMP	Program Management Plan

PILT	Payments In Lieu of Taxes
PIR	Project Implementation Report
PL	Public Law
PMP	Project Management Plan
PORT	Public Outreach Team
PPA	Project Partnership Agreement
PPT	Program Planning Team
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RCP	Regional Contingency Plan
RCPP	Regional Conservation Partnership Program
RDB	Right Descending Bank
RED	Regional Economic Development
RIFO	Rock Island Field Office (now IIFO - Illinois-Iowa Field Office)
RM	River Mile
RP	Responsible Party
RPEDN	Regional Planning and Environment Division North
RPT	Reach Planning Team
RRAT	River Resources Action Team
RRCT	River Resources Coordinating Team
RRF	River Resources Forum
RRT	Regional Response Team
RST	Regional Support Team
RTC	Report to Congress
S.	Senate
SAV	Submersed Aquatic Vegetation
SDWA	Safe Drinking Water Act
SEMA	State Emergency Management Agency
SET	System Ecological Team
SMART	Specific, Measurable, Attainable, Risk Informed, Timely
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
WLM	Water Level Management
WLMTF	Water Level Management Task Force
WQ	Water Quality
WQEC	Water Quality Executive Committee
WQTF	Water Quality Task Force
WQS	Water Quality Standard
WRDA	Water Resources Development Act
WRP	Wetlands Reserve Program
WRRDA	Water Resources Reform and Development Act