

WATER[®]

Promoting Beneficial Use of Water & Land Related Resources

December 2019

Inside This Issue:

• President's Message	2
• Upcoming Events	3
• Comittee Corner	4-5
• In the News	6-12
• Your MOARC Board	13
• MO River Matters	14-16
• KS River Basin Factoids	17
• Agency Updates	18
• Future Newsletter	18



Points of Interest:

- **MO Flood Advisory Working Group**
- **Legislative Policy Update**
- **KC Levees Celebration**
- **Fall DC Trip**
- **MOARC Annual Social**
- **Introductions to MOARC Board**
- **Navigation & Shipping Report**
- **Missouri River Recovery Program**
- **Water Management Update**

Building on Success

“**Building on Success**” is **MOARC’s** theme for 2020. MOARC has had great success over its nearly seven decade past and continues to build on the organization’s successes in 2020 and beyond. Building on the successes of the past has set the stage for the future as MOARC con-

tinues as a leading advocate for water resource and land-related water resource projects and policies within the Kansas and Missouri River basins working in partnership with stakeholders and federal agencies to meet the needs of the region. Advocacy for stronger civil works budgets over the last two budget years has led to funding to complete construction of several key flood projects in Kansas and Missouri. Flood control

tion of flood risk management and funding needs within the region. Recent successes that have led to projects funded to completion include:

- Topeka levees, KS
- Manhattan levees, KS
- St. Joseph levees, KS and MO
- Swope Park Industrial Area, MO
- Dodson Industrial Park, MO
- Kansas City’s Levees, KS and MO (fully federal funded)



tinues as a leading advocate for water resource and land-related water resource projects and policies within the Kansas and Missouri River basins working in partnership with stakeholders and federal agencies to meet the needs of the region. Advocacy for stronger civil works budgets over the last two budget years has led to funding to complete construction of several key flood projects in Kansas and Missouri. Flood control



President's Message



It's good to exhale and relax as we close out 2019! While it was a year of great challenges with a record 2nd most volume of water ever flowing down the Missouri River; it was a year of great successes with the implementation of KC Levees and many other projects so important to our region.

Achieving the successes of 2019 came from hard work of our team. I'd like to extend a big thank you to our board of directors for their overall leadership, thought and support and making MOARC so effective. From the continuous efforts of Glenda Johnson, to Steve Dailey as a sounding board, to Karin Jacoby as an idea generator; and to Dave Combs who brings perspectives from his relationships in the region and across the country for WaterDrops, and WATER® newsletter articles. Thank you and I look forward to working with each of you and our board of directors in the coming year. We have a great path ahead!

MOARC is about partnerships and we appreciate what 2019 brought us. I would like to highlight a few agencies and people that provide us key partnership and support:

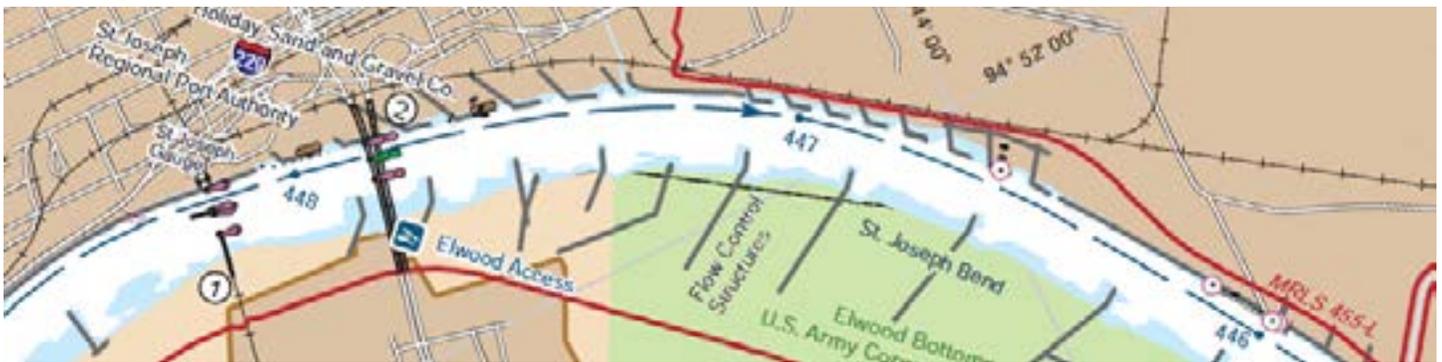
- **Kansas City, Missouri Water Services**
Terry Leeds, Matt Bond and Tom Kimes.
- **Unified Government of Wyandotte County and Kansas City, KS**
Melissa Sieben and Jeff Fisher
- **Kansas City Industrial Council**
Boyd Nolen and the KCIC board of directors.

Your continued efforts help us to grow our region into an even better place. Thank you.

So much was accomplished in 2019. As shared in our lead article "Building on Success", MOARC is committed to growing and supporting issues the impact our membership. Please join us to find where you can contribute and make a difference in our region.

Hope you have had the Happiest of Holidays and enjoy a prosperous 2020!

Tom Poer PE., PMP, ENV. SP, FSAME
MOARC President
Vice President, HNTB Corporation
(816) 527-2357 tpoer@hntb.com



FROM PAGE 1 BUILDING ON SUCCESS

In addition, the Kansas River Basin Flood Risk and Sediment Management study, a study important to the future of flood risk and water resources to the State of Kansas (and of interest to other states in the region), was approved as a five year watershed project. These successes and the relationships that success has been built upon will lead our organization to more opportunities and greater successes in the near future. Besides these project successes, 2019 was a great year for MOARC as our organization has been active in its advocacy role by or through the following:

- Leading Spring and Fall Trips to Washington DC to make Congressional and Federal Agency visits in partnership with KCIC
- Providing legislative policy information and support to congressional offices
- Participating as a member of the Missouri Governor's Flood Recovery Advisory Working Group
- Providing information on critical water issues impacting our membership
- Improved communications through regular publication of WATERdrops and the WA-

TER(R) Newsletter

- Worked with local government to establish meetings for KC Levees Stakeholders
- Working with Congressional offices and the Assistant Secretary of the Army for Civil Works to reconfirm Kansas City's Levees as an on-going construction project
- Recognized by the Economic Development Corporation Cornerstone Award, with KCIC, for Special Recognition for leading the Kansas City Levees Coalition with KCIC
- Hosted the Bi-State Celebration for the full federal funding to completion of the Kansas City Levees
- Continued to strengthen relationships with congressional offices, the Corps of Engineers, and other water related non-profits
- Executive Director elected to the Board of the National Waterways Conference to represent MOARC
- Revising MOARC organization committees, membership levels and dues schedule to meet current interests and future needs for the membership

As you can see, 2019 has been a busy and highly successful year. The recognition by the Economic Development Council and by the State of Missouri as an important organization in developing recommendations for future flood prevention and recovery was great honor. Continuing to be a player in the national water resource scene through participation on the Board of the National Waterways Conference is again a great opportunity for MOARC to represent the interests of the region.

These recognitions and the continued success in the variety of flood risk management projects moving forward across the Kansas and Missouri River basins are notable successes in MOARC advocacy within 2019 and set the stage for us to build on this success!

MOARC is hosting several upcoming events for membership in our continued commitment to informing and educating our membership on issues and activities potentially affecting the region. See moarc.org for updates and additional details. Upcoming events over the next quarter:

MOARC/KCIC Spring Washington DC Visit

March 10-13, 2019, Washington DC

MOARC and KCIC members will conduct the 2020 Spring Washington DC visit to advocate for projects and programs affecting our region on March 10-13, 2020. Members will be in Washington, DC to meet with Congressional and Federal water resource agency offices regarding water resource needs project and policy needs to protect lives and infrastructure and provide future economic and social development in Kansas and Missouri. The Spring visit is an opportunity for the combined interests and concerns of MOARC and KCIC to be presented as part of the developing 2021 civil works budget. The 3-day visit will include 16 congressional offices, Senate and House Appropriations and Authorizations committees, the Office of Management and Budget (OMB), the US Army Corps of Engineers. (Corps), the Office of the Assistant Secretary of the Army for Civil Works (ASA-CW, and the Federal Emergency Management Administration (FEMA). By sharing the local and regional impacts of Federal decision-making we help inform decision-makers of the issues and help guide decisions on water and related land resources. The Spring visit is planned to be in conjunction with the National Waterways Conference Legislative Summit 9-11 March. If you are interested in learning more about the Spring MOARC/KCIC visit, providing input to the visit, or in joining us on the trip let us know. Contact our president, Tom Poer at tpoer@hntb.com for more information.



MOARC Quarterly Educational Events

April through November 2020 TBD

The Education and Finance Committee will be hosting a series of educational events with MOARC technical committee chairmen to provide membership with information or educational workshops through 2020. Planned educational events will be developed around the interests of each of the three technical committees and Legislative Policy committee. Although schedules and specific components of each workshop theme are under development, the intent is to develop speakers and workshops the technical committee objectives. Educational events are tentatively planned as follows:

- **Legislative Policy Workshop** – April 2020
- **Water, Power & Permitting** – June 2020
- **Flood Control & Risk Management** – September 2020
- **Navigation, Shipping & Trade** – November 2020

Missouri River Navigator's Meeting

TENTATIVE: February 11 & 12, 2020, Kansas City National Weather Service Training Center, Kansas City, MO

The annual Missouri River Navigator's Meeting is tentatively scheduled for February, 2020. The annual meeting, hosted by the Corps of Engineers, provides a venue of federal agencies and the navigation and Port industries to address issues and opportunities for navigation and shipping on the Missouri River. As in the past, the meeting will consist of presentations and discussions on river and navigation conditions over the past year as well as projections of weather and river conditions for the upcoming navigation season.

The Corps' Water Management Division and the National Weather Service will present the expected conditions that will support the 2020 navigation season and Corps' navigation support. Navigators and Port industries will report on the 2019 navigation year and shipping and transport projections for the 2020. The Corps and US Coast Guard will also report on work that was conducted in 2019 and expected navigation operations and maintenance activities in the coming year.

For date confirmation and additional information see <https://www.nwd.usace.army.mil/Missions/Civil-Works/Navigation/Missouri-River-Navigators-Meeting/>



National Waterways Conference

March 9-11 2020, Washington DC

Save the Date! The National Waterways Conference (NWC) is hosting its annual Legislative Summit March 9-11, 2019 in Washington DC. The NWC invites all who are interested in current water resource development and the future direction of the nation's water resource programs to attend the conference's Legislative Summit. As in years past the Legislative Summit will feature high-ranking Congressional and Executive branch officials and industry leaders about policy and program expectations for 2020.



As a member and supporting organization of the National Waterways Conference MOARC encourages you register today to attend the 2019 NWC Legislative Summit. For information, see: <https://waterways.org/2020-legislative-summit/>

Committee Corner

Legislative Policy Committee



Water Supply Rulemaking Update

Water supply rules under modification and renewal by the Corps of Engineers through rulemaking expected to be finalized in August 2019 has again been deferred to 2020 to gather and consider comments from Native American tribes across the nation. The Secretary of the Army for Civil Works directed the Corps to review the water supply rules due to inconsistencies in water supply agreements, application of definitions, and methods for calculating water supply costs across the nation. Application of water supply rules and methodology in water supply cost estimating the Missouri River basin brought these inconsistencies to light. Through rulemaking the Corps proposed to update and clarify its policies governing the use of its reservoir projects for domestic, municipal and industrial water supply pursuant to Section 6 of the Flood Control Act of 1944 and the Water Supply Act of 1958 (WSA). The Corps has previously accepted public comment and has considered revisions based on comments since November 2017 and continues to seek input from the Tribal nations. The Corps has not provided a time frame for completion of the rulemaking.



PL 84-99 Program Revisions Update

The Corps of Engineers has been in the process of revamping its program used for repair of levee infrastructure damaged by flooding from one of Rehabilitation and Inspection Program (RIP) to one of risk-informed or risk based decision making. Revisions of the policies and guidelines of the PL

84-99 underway for nearly a year and expected out in 2019 have been put on pause again by the Corps. We have no information of when changes in the program will be released for public review but MOARC continues to advise the Corps through its visits to the Corps headquarters that changes, and reviews should occur through the intent and provisions of the Administrative Procedure Act (APA)

For more information or to get involved, contact the Legislative Policy Committee Chair Matt Bond at: matt.bond@kcmo.org

PL 84-99
USACE Emergency Management

Water Resources Development Act (WRDA 2020)

The Water Resources Development Act of 2020 (WRDA 2020) continues to quietly move forward in both the House Transportation and Infrastructure and Senate Environment and Public Works committees. Each of the committees have been developing draft authorization bills based submissions through the Corps 2019 Section 7001 Report to Congress on the Future of Water Resource Development and requests by congressional members. MOARC submitted authorization language for the Osage River Basin study to address flood impacts from fluctuating releases from Bagnell Dam and ecosystem restoration opportunities in the basin to provide land conservation. At the present time, no additional authorization language is needed within the region. Leadership in both the House and Senate have expressed support and optimism regarding the development of a WRDA bill in 2020. The committees will continue to work to move draft bills forward but plan to incorporate the input of the Corps 2020 Section 7001 report to congress scheduled for com-

pletion in February 2020. The final draft bills will continue to move through the House and Senate and then through conference before final votes by the House and Senate in late 2020. MOARC will continue to track progress of the WRDA bill and provide assistance to committees upon request.

WRDA
2020

Swope Park Industrial Areas Groundbreaking

Kansas City Water Services hosted a groundbreaking ceremony in the Swope Park Industrial Area Friday, November 1, 2019 to recognize the final phase of construction of levees to reduce flood risk from the Blue River. The industrial park is composed of niche manufacturing industries and serves as an economically vital business park in Kansas City, MO. The industrial park has been



Remarks provided by COL Hannan

subjected to periodic flooding due to the highly fluctuating water elevations of the Blue River. Torrential rainstorm in August of 2017 led to high-water evacuations from the industrial park after the Blue River overflowed its banks. People watched on TV as rescue crews put workers in boats and waded them out of the area. The project has been a high priority for Industrial Association and Kansas City Water Services and has been a priority for MOARC in advocating for federal funding for over a decade. The project was fully funded by the Corps of Engineers in 2017.

Over the summer the Corps of Engineers awarded an \$18M contract for construction of levees, floodwalls, and an interior drainage system. Speaking at the groundbreaking ceremony were Charlie Livers of the Swope Park Industrial Business Association, Kansas City Councilpersons Ryana Parks Shaw and Lee Barnes, represent-



Turning dirt at Swope Park Industrial Area!

ing the 5th Council District; and Col. Bill Hannan, commander of the Kansas City District. The groundbreaking ceremony celebrated the kickoff of the final phase of the construction. Construction and completion of the risk reduction project is scheduled to be completed by 2023.

Kansas River Reservoir Flood & Sediment Study – Public Input Sought

The Kansas River Basin watershed study was kicked off in 2019. After many years of interest by the State of Kansas and recent advocacy by MOARC, the US Army Corps of Engineers (Corps) approved a new start watershed study for the Kansas River basin. The funding of a watershed study has long been a priority for Kansas to address opportunities for additional flood protection and sediment management in the Kansas River reservoirs and ecosystem restoration along the river as well as its tributaries.



The study is the only watershed study the Corps has approved and funded recent years and represents a coup for the region in getting it through

the approval process of the Corps, the Office of the Assistant Secretary of the Army for Civil Works and the Office of Management and Budget. The Kansas City District; Kansas Water Office; and Kansas Department of Wildlife, Parks and Tourism are in the early stages of a five-year watershed study to develop a long-term plan for the basin's water resources and infrastructure. The study is an opportunity to review existing and possible future conditions in the basin, lake and river basin management, and to investigate ways to extend the useful life of the 18 federal reservoirs in the basin by increasing resiliency and maintaining capacity. Study topics include drought and water supply, sediment management and reservoir sustainability, ecosystem restoration and management, flood risk management and recreation. The Corps is expected to finalize the watershed report in the fall of 2023.

Four public scoping meetings were held in the Kansas River Basin to provide input on the Kansas River Reservoirs Flood and Sediment Study, a joint-federal and state watershed study effort. The Corps and State heard specific

ideas, concerns, and opinions from across the Kansas River Basin as part of the public input process. These and future outreach meetings are important to ensure that the values of the public are incorporated into the watershed study. The public meetings were held from 2-12 December at the following locations:

- December 02, 2019 – Manhattan, KS
- December 05, 2019 – Ellsworth, KS
- December 10, 2019 – Junction City, KS
- December 12, 2019 – Perry, KS

The Corps provided a brief overview of the study and provided opportunities for the public to meet one-on-one with study personnel and State of Kansas representatives as sponsors of the watershed study. To submit comments online, or to find more information on the study, visit the study website - <https://kwo.ks.gov/projects/kansas-watershed-study>. MOARC encourages its members to provide input to the study during this public input period and in the future as MOARC monitors the progress in outputs of the watershed study.

MOARC Education Foundation

MOARC has revised its non-profit 501(c)(3) MOARC Defense Fund into an educational foundation to provide education opportunities and greater outreach on water resource issues. The non-profit, incorporated in late 2018, is in the process of developing its 3-year strategic plan and funding goals for 2019. Providing educational opportunities for MOARC



Education Foundation

membership, schools and student grants to address water resource issues within the Kansas and Missouri basins are long-term goals of the foundation and the purpose for revising and developing the 501(c)(3). The Foundation will be reaching out to MOARC membership, its advocacy partners, and the interested public in the first quarter of 2020 to kick off its funding drive.



In the News

MOARC/KCIC Fall DC Visit

Once again MOARC and KCIC in partnership conducted their annual fall visit to Congress and the Federal agencies to address water resource budgets and policy needs/issues on 1-3 October 2019. We continued to thank the congressional offices and the Corps of Engineers for the robust budgets and funding to complete construction on our many regional flood control projects. Additionally, we advised congressional offices, congressional committees, and agencies on the status of on-going projects and additional water resource needs within the Kansas and Missouri River basins.

Representatives from MOARC and KCIC along with representatives from the local governments of Kansas City, Kansas and Kansas City, Missouri and regional businesses met with 15 congressional offices, the House and Senate Appropriations Committees, the Senate Authorization Committee, the Corps of Engineers (Corps), the Office of the Assistant Secretary of the Army for Civil Works (ASA-CW), and the Office of Management and Budget (OMB). The fall visit fielded a large and diverse contingent of 15 stakeholders to meet with congressional offices. The objectives of the visit were to:

- Thank offices for 2019 project funding, funding to construction of many regional projects
- Request congress passing the 2020 Civil Works budget and development of a Corps of Engineers 2020 Work Plan,
- advocate for funding of ongoing projects,
- advocate for a robust 2021 Civil Works budget to address multiple new start projects,
- advocate for Affordable Water programs for cities and continued funding of the State Revolving Fund to support water infrastructure development, and
- advocate for revisions and reauthorization of the National Flood Insurance Program.

One key message taken to congressional offices, committees and water resource agencies was regarding continuation of strong water resource development budgets to protect infrastructure and support regional economic development. Water resource development and its activities are a significant economic driver within a region. MOARC and KCIC continued to emphasize this message to the congressional staffs during the visit and in follow up conference calls.

Funding needs to initiate design work for Upper Turkey Creek as well the study phase of the Kansas River Basin was presented as funding priorities for fiscal year 2020. Additionally, we identified several flood risk management and ecosystem restoration projects that have been requested by regional interests. The 2019

flooding along the Missouri River has created renewed interest in opportunities to reduce flood risks within the lower Missouri River basin with MOARC and KCIC identifying the potential new start project as a priority for the region. Other new start water resource needs presented to the congressional offices and the Corps were the Little Blue River basin, a flood control project proposed to address frequent flooding of communities within the basin, and the Osage River basin to address flood damages and ecosystem restoration along the lower Osage River basin.

Policy issues addressed included the issue of local input and engagement in the development of Corps water resource regulations and programs under the Clean Water Act. The local governments reiterated their concerns and needs for water affordability for local communities seeing water rates increasing significantly due to compliance orders to address Combined Sewer Overflow (CSO) issues, the need for rate payer assistance to assist in affordability of water, and the need for reauthorization of the National Flood Insurance Program (NFIP).

MOARC and KCIC continue to provide a unique perspective with representatives from the Kansas City metro city governments (KCMO and the Unified Government), regional businesses, and several area industrial councils traveling to meet with congressional offices and agencies. We continue to be complimented on the quality of materials we provide, the clear messages provided, and the diversity of



The MOARC/KCIC delegation advocating for sound water resource policy and projects.



The ASA (Civil Works) RD James meets with the MOARC/KCIC delegation

stakeholders that represent the Kansas and Missouri region. The on-going partnerships our organizations have with the Corps of Engineers, congressional offices, and local sponsors of projects have successfully secured funding in the past to complete critical flood control projects in the region and set the stage address opportunities in improved flood control, navigation, ecosystem restoration and water supply or the future. Objectives of the visit were met showing that advocacy works, and relationships create trust in addressing the needs of the region.



Caucusing at Old Ebbetts Grill following full day on the Hill

In the News

Kansas City's Levees Bi-State Celebration

As the song goes "Celebrate Good Times!" MOARC hosted a celebration of the Kansas City's Bi-State Levees Celebration on October 8th to acknowledge the kickoff of the final phase and those congressional members, community leaders, and the business communities who helped bring the Kansas City's Levees project on a path for completion. The final phase of design and construction has begun on the project with construction kicking off this fall. The improvements of the 7-levees system will provide a significant reduction of flood risk to the over \$25 billion in infrastructure behind the levee system and the over 90,000 jobs these industries and businesses provide to the Kansas City metropolitan area. Additionally, over 20,000 residents currently live within the flood plain footprint behind the levees and are subject to future flooding. The completion of the decades long project will provide greater protection to the national and regional businesses, road and rail transportation hubs and public the metropolitan area.

The celebration was a great success with nearly 200 people from across the Bi-State metropolitan area joining MOARC on the levees to kick off those key final project features of pump rehabilitation and future levee raises on the Argentine and Armourdale levees. We also celebrated receiving the full federal funding of \$453.8 million to complete these levee improvements. We were honored to provide a venue that included a long list of recognized speakers who provided a bit of history on the need for greater protection and comments on the economic significance of the project. Speakers included:

- Mayor Quinton Lucas of Kansas City, MO
- Mayor David Alvey of Unified Government of Wyandotte County and Kansas City, KS
- Representative Sharice Davids (KS-3)
- Representative Sam Graves (MO-6)
- Representative Emanuel Cleaver (MO-5)
- Senator Jerry Moran of Kansas
- COL William Hannan Jr, Corps of Engineers Kansas City District Commander
- Honorable R.D. James, Assistant Secretary of the Army for Civil Works.

The Celebration event provided an opportunity for the communities and businesses to come together, socialize and celebrate the funding and initiation of the final construction to complete the integrated flood protection system for the Bi-State metropolitan area. The event was a great success and MOARC appreciates the participation of our regional partners (KCIC and CPMR), the local government officials, representatives from the Corps of Engineers and the Congressional offices. Thank you to our Celebration committee of Dave Combs, Melissa Sieben, Glenda Johnson, Karin Jacoby and Tom Poer, as well as to John Kelly and the Unified Government of Wyandotte County and Kansas City, KS for providing logistical support to make the event so special.

Funding to completion of the levee project is a historic opportunity to complete the highly complex project integrating significant improvements across two states, two major cities, and seven levee drainage district systems; all worthy of the Bi-State Celebration. Thank you to our event supporters:



Orrick & Erskine, LLP





Bi-State Celebration



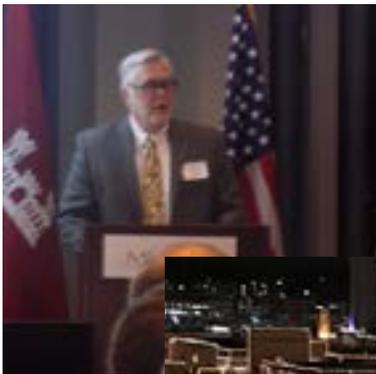
In the News

MOARC Annual Social and Membership Meeting

MOARC conducted its annual membership meeting on 3 December at Husch Blackwell offices in Kansas City. This annual gathering of members, partners and other interested folks was a fun social networking event and a great time and an opportunity to discuss successes of the organization in 2019 and upcoming 2020 MOARC advocacy work.

Nearly 60 members and interested public joined MOARC at the social providing a great opportunity to network with MOARC members, other regional partner including KCIC and CPMR, local government representatives, and the Corps of Engineers. Col Bill Hannan Jr, Commander of the Kansas City District, Corps of Engineers was the keynote speaker addressing flood and recovery efforts from the 2019 flood event and updates on several on-going flood risk reduction projects across the region.

MOARC also presented its Eagle Award to Senator Jerry Moran for work "above and beyond" in support and assistance in securing federal funding for completion of the Kansas City's Levees project. MOARC also formally elected its new officers and Board in the business session of the meeting. The meeting was a great event, and we thank those who attended and Husch Blackwell LLP for once again hosting the event in their offices.



MOARC Presents Eagle Award to Senator Jerry Moran

Senator Jerry Moran (KS) was recognized by the MOARC Board on 3 December at the MOARC Annual Social and Membership Meeting for his continued support of water resource development within the Kansas and Missouri River basins and specifically in his continuing support of the Kansas City Levees project. The Eagle Award was developed by MOARC decades ago to recognize individuals who have gone "above and

beyond" in providing support of water resource development or activities within the region. The Eagle Award has been presented only six times over the past century and MOARC was proud to present Senator Moran the Eagle Award for having gone "above and beyond" in helping to secure the more than \$450 million of federal funds to complete the Kansas City Levee project that will protect over 90,000 jobs and nearly \$25 billion in infrastructure development.

\$453 million in project work has its own the economic impact throughout implementation, the greater benefits come in the Bi-state Kansas City region near the juncture of the Kaw and Missouri Rivers having greater and more reliable flood protection.



Senator Jerry Moran (KS)

Having long understood that sound water resources management and reliable flood protection are important to the state of Kansas and the Kansas City region, Senator Moran was not only able to support the Kansas City Levees project for many years, both as an authorizer and appropriator, he has gone "above and beyond" in having the project included in a Senate report explanatory language to further clarify congressional intent. That action by Senator Moran was instrumental in the Administration's policy directive from the ASA-CW, Mr. RD James, to the Corps of Engineers that allows for the Kansas City Levees to move forward as a single project funded to completion. The economic impact to the project and in the MOARC region is enormous. Most significantly, the Senator's efforts serve to guarantee the entire \$453 million can be spent to complete construction of the project. While



Alex Richard accepting the Eagle award on behalf of Senator Moran. Karin Jacoby, MOARC treasurer, presenting the award.

Such a historic outcome on securing the funding and direction provided on the project speaks highly to role of Senator Moran in Congress, his recognition of the importance of water resource development, and his support in the social and economic development of Kansas and the Kansas City metropolitan region. And for that, MOARC gratefully, and with tremendous pleasure, presented Senator Jerry Moran of Kansas the Eagle Award. Accepting the award and speaking in behalf of Senator Moran was Alex Richard, State Director for Senator Moran.

National Waterways Conference Hires New President



The National Waterways Conference (NWC) is the only national organization advocating for water resources issues with a collective membership representing navigation, flood control, water supply, hydropower, and recreation sectors. MOARC is a member organization of NWC and serves on its Board of Directors. Recently the Board of Directors of the National Waterways Conference, Inc. announced that Ms. Julie Ufner will take over as President and CEO effective November 4, 2019. Ms. Ufner will succeed longtime NWC President Amy Larson, who will step down at the end of the year, ensuring a seamless leadership transition. Previously, Julie held several other positions in Washington, D.C., including Associate Legislative Director for Environment, Energy and Land Use at the National Association of Counties (NACo). Since 2002, she has worked with NACo's 3,069 counties on the development and

implementation of federal policies with the Congress, the White House, and numerous federal agencies, including the U.S. Army Corps of Engineers and the Environmental Protection Agency. She began her career in Washington with House of Representatives member Phil English (Pa.) who served on the Ways and Means Committee. In announcing the Board's decision, newly elected Chairman David Yarbrough, Director of the Tulsa Port of Catoosa, stated, "We are thrilled that someone with Julie's expertise and experience will take the helm. She is a successful policy advocate, and well respected for her stakeholder engagement and partnership building acumen." In her first action as NWC President, Julie provided testimony to the House of Representatives Transportation and Infrastructure Committee's Subcommittee on Water Resources and the Environment on the "Concepts for the Next Water Resources Development Act: Promoting Resiliency of Our Nation's Water Resources Infrastructure" as the subcommittee plans to examine how to incorporate more natural infrastructure into Army Corps of Engineers civil works projects in advance of development of the 2020 Water

Resources Development Act authorization. At the request of NWC, MOARC provided information regarding testimony prior to the 19 November hearing. MOARC continues to be active in the NWC and is excited to be working with Julie in her new role as NWC President.



New NWC XD Julie Ufner

In the News

MOARC Elects New Officers and Board

MOARC elected its new officers and Board at the recent 3 December 2019 MOARC Social and Membership Meeting in Kansas City. The Board and its officers reflect the diversity of our membership and the interests of the regional advocacy organization. The nominating committee put forth nominations to the 2019 Board members and approved by the membership at the business meeting. The Board sees two long term members leave with one new Board member joining MOARC. In addition, the Board approved changes in the organization's by-laws revising two administrative committees to be more effective in meeting future organizational requirements. The Board approved the development of a new Education committee and its combination with the Finance committee into the Education & Finance Committee. In addition, the Board recognized the link between communication and membership and approved combining the two committees into the Membership & Communication Committee. The committees became effective at the approval of the revision of the by-laws on 3 December 2019.



2020 MOARC Officers and Board Members

Officers/Executive Committee

Tom Poer, President, HNTB, MO
Jeff Fisher, First Vice-President, UG WYCO-KCK, KS
Karin Jacoby, Treasurer/Chair Education & Finance, Husch Blackwell LLP, MO
Glenda Johnson, Chair Membership & Communication, KCMO-PW, MO
David Combs, Secretary*, (USACE Retired), MO
*Executive Director (appointed by the Board)

At-Large Board Members

Frank Pogge, (KCMO-WSD Retired) MO
Tom Kimes, KCMO-WSD, MO
Dong Quach, BPU, KS
Tracy Streeter, Burns & McDonald, KS

Committee Chairs

NAVIGATION, SHIPPING & TRADE—**Richard Grenville**, PORT KC, MO
WATER, POWER & PERMITTING—**Kevin Caveny**, Water One, KS
FLOOD CONTROL & RISK MANAGEMENT—**Steve Dailey**, Fairfax Levee District, KS
LEGISLATIVE POLICY—**Matt Bond**, KCMO-WSD, MO
MEMBERSHIP & COMMUNICATION—**Glenda Johnson**, KCMO-PW, MO
EDUCATION & FINANCE—**Karin Jacoby**, Husch Blackwell LLP, MO

MOARC Says Thank you and Goodbye to Board Members

Two of MOARC's long serving Board members are retiring from the MOARC Board. John Patrick, the MOARC and MOARC Education Foundation's Finance Chair announced his decision at the 3 December Board meeting effective immediately. John, an officer of Clay and Bailey Manufacturing in Kansas City, is retiring from Clay and Bailey on 31 January 2020. John has been a long time member of MOARC and an active member of BVIA and KCIC. We wish John a great retirement and thank him for his long service to MOARC. The other notable retirement is Lynda Hoffmann, retiree from

KCMO Water Services and current CEO of the Dust Filter Shop in East Lynne, MO, who has been a long term MOARC member and Past President of the organization. Lynda's leadership as president and as a member of the Executive Committee on the Board help build the advocacy program enjoyed today and set the stage for funding of many of the flood control projects within the Kansas City metropolitan area and those in Topeka, Manhattan and St Joseph, MO. Her input and decision-making have been greatly appreciated and we wish her the best as she steps away from MOARC at this time.



John Patrick



Lynda Hoffmann

Your MOARC Board

MOARC leadership is composed of an Executive Committee and a 14-Member Board that guides the direction and messaging of the organization. Board members are volunteers from regional businesses and local governmental organizations who have interests in water resources and water resource development to shape and enhance the social and economic vitality of the region. These individuals provide personal time within the region advocating for projects and travel to Washington DC to meet with congressional offices and federal agencies to ensure the advocacy for water resource development meets the needs of the region. This Quarterly Newsletter provides the opportunity to introduce additional members of the Board. Refer to the August 2019 newsletter for previous board bios.

At this time, we would like to introduce the following Board members:

David Combs, PMP MOARC Executive Director/Executive Committee Member

David Combs serves MOARC as the Executive Director/Secretary of MOARC addressing the day-to-day activities of the organization. David retired from 42 years of public service including over 32 years with the



Corps of Engineers in environmental and water resource planning roles with the Chicago, Tulsa, and Kansas City Districts. David retired from the Corps as the Planning, Environmental Resources and Fish Policy Chief at the Northwestern Division overseeing water resource and environmental studies of the five Corps districts within the Northwestern Division. David holds a BS in Aquatic Biology and an MS in Fisheries Biology from Eastern Kentucky University and post-graduate work in a doctoral program in

Environmental Engineering at Oklahoma State University. He is a graduate of the Army Staff College Leadership Program and played multiple roles in the Corps of Engineers' Planning Community of Practice and as a member of the Planning Advisory Board. David has been an active member of MOARC for 2 years serving as its Executive Director.

Tracy Streeter At-Large Board Member

Tracy Streeter serves as business development manager with Burns & McDonnell in Kansas City, MO. Tracy joined Burns & McDonnell in January of 2019 after a 33 year career with the state of Kansas where he



served as Director of the Kansas Water Office, the state's water planning, policy and coordination agency from 2004-2018. Before joining KWO, he served as Executive Director of the State Conservation Commission. Tracy's current duties with Burns & McDonnell involve assisting communities and industry with water planning and water supply solutions throughout Kansas and across the country. A native Kansan, Tracy grew up

on a diversified family farm in Brown County and graduated from Horton High School. He earned undergraduate degrees from Highland Community College and Missouri Western State University and a graduate degree from the University of Kansas. Tracy served eight years on the Valley Falls Board of Education and is a private pilot. Tracy is a new member with MOARC and will bring strong leadership skills and a wide range of experience in water resource development to MOARC.

Dong Quach, P.E. At-Large Board Member

Dong Quach is the manager of the Electric Production Division at Kansas City Board of Public Utilities (KC BPU), overseeing all power plant assets and Environmental Services. He has been in the utility industry for



27 years, ranging from environmental, engineering, maintenance, operations and construction. Dong received a Masters of Science in Engineering Management from the University of Kansas in 2004 and B.S. in Mechanical Engineering from North Dakota State University in 1992. Dong has been a member of MOARC for six years and has previously served as Chair of Flood Control & Risk Management and continues to serve as an advisor as an At-Large Board member.

Tom Poer, P.E., PMP, ENV. SP, F.SAME MOARC President/Executive Committee Member

Tom Poer is in his fourth term as President of MOARC and is a water resource engineer, project manager, and vice president for HNTB Corporation. He has more than 26 years' experience working with hydrologic, hydraulic and civil projects specializing in levees, conduits, gates, pump stations and watersheds for riverine, coastal, water main, sanitary sewer and



green stormwater infrastructure. Over the past several years, Tom has worked on many federal flood risk management and military construction projects as well as state, local and private entities. Projects with the Kansas City District of the Army Corps of Engineers include serving as the project manager for over 175 projects ranging from planning, design, construction to operations and maintenance including civil works infrastructure and technology. He is currently the project manager for the US-

ACE Kansas City Levees Armourdale and CID levee raises, the KC Levees Trails study for the Unified Government and the CID Green Infrastructure demonstration project for KCMO Water Services. Tom holds a Bachelor of Science in Civil Engineering and a Masters of Science in Engineering Management from the University of Kansas. He is a registered Professional Engineer, a Project Management Professional, an Envision™ Sustainable Professional and fellow in the Society of American Military Engineers.

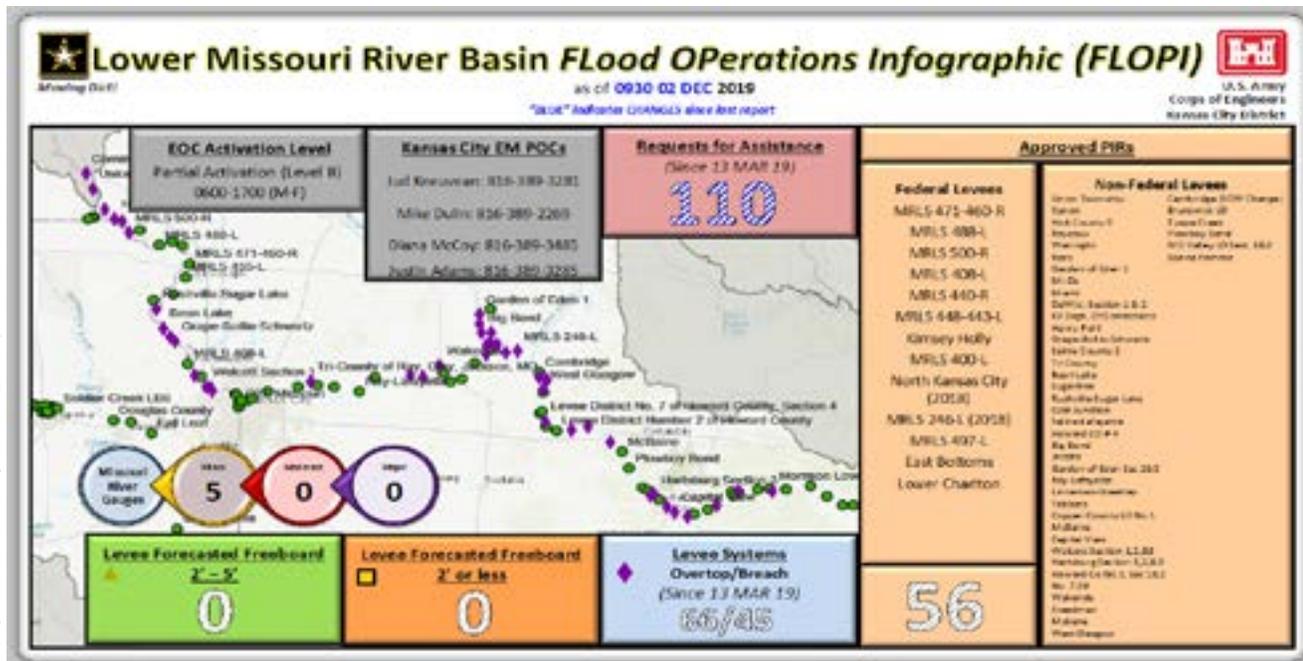
Missouri River Matters

Levee Recovery Status

The Missouri River levee system sustained significant damage during the 2019 flood event with over 80 levees in the lower basin below Gavin's Point damaged though over topping and/or breaching of levees. Most levees above Kansas City were over topped or breached during the March – April rainfall and runoff flows from unregulated tributary tributaries into and below Lewis and Clark Lake/Gavin's Point Dam. Periodic flooding and high-water releases through the present have resulted in damages to additional levees downstream of Kansas City to Saint Louis. Although damage assessments are continuing in some areas as the river recedes allowing access and inspection, the Corps districts (Omaha and Kansas City) are moving forward in recovery. As of 8 December 2019, the Missouri River shows only five river gages in minor flood stage. As releases continue to decline from Gavin's Point and lower basin precipitation remains low, the river is expected to be below flood stage across the basin for the first time since March. To date, Kansas City District has had 110 requests for assistance from levee districts within their Area of Responsibility (AOR). Sixty-six levees within the AOR were breached with 45 overtopped. The Kansas City

District has completed inspections on most levees with 56 Project Inspection Reports (PIR) approved by the Northwestern Division Commander. Eleven additional requests are awaiting review and approval. Kansas City District reports that three contracts for repairs have been advertised with approximately 20 additional contracts being readied for advertisement. Estimates of repairs to the 66 levee units are expected at \$60-70 million at the present time. Levee repairs are beginning, and assistance will continue through the winter months in preparation for spring runoff. Recovery from the flood event above Rulo, Nebraska within the Omaha District AOR has been underway on mainstem levees, their tie-back levees, and now on tributary streams. Of the levees overtopped and/or breached be-

tween Gavins Point and Rulo, Omaha District has received 76 requests for assistance and rehabilitation. All levee inspections and PIRs have been approved and Omaha has contracts and currently in active construction on six federal levees on the mainstem (R616-613, R-613, L611-614, L-594, L-550, L-575) with contracts let on three tributary streams. Omaha has closed 15 of the 50 breaches within the system at this time and have completed repairs/rehabilitation projects at Pierce, NE; Ida Grove, IA; Broken Bow, NE; and Scribner, NE. They currently have plans to award 25 additional contracts over the winter and into the spring. Like Kansas City District, levee repairs within Omaha District are underway and will continue through the spring runoff season.



Missouri Governor's Flood Recovery Advisory Working Group



On 18 July 2019 the Governor of Missouri established a Flood Recovery Advisory Working Group (FRAWG) through Executive Order 19-14 to provide input and recommendations on short-, medium-, and long-term flood recovery priorities on the state's current levee system and changes to benefit the state and its citizens. The scope of the FRAWG included a review of the needs with the basins of the State of Missouri impacted by previous and recent

flood event, address repairs needed to levee systems, and explore options and opportunities to improve conveyance of flood waters through the major river systems. The FRAWG is composed of representatives from State of Missouri agencies, agricultural businesses, county and municipal

governments, levee districts, and non-profit organizations representing river basin water resource interests. MOARC was invited by the Governor's office to participate as one of the non-profit organizations and is represented by the Executive Director and the President as his alternate. The FRAWG has met monthly from August through the 9th of December to hear from agencies involved in the recent flood event and recovery activities underway. Through the process the Working Group has developed a series of recommendations that will be part of the initial report to the Governor. These initial findings and recommendations will be submitted at the end of December 2019 with additional work by the FRAWG in 2020 resulting in a final report by May 2020. MOARC is pleased to participate representing the diverse interests of the members of our organization.

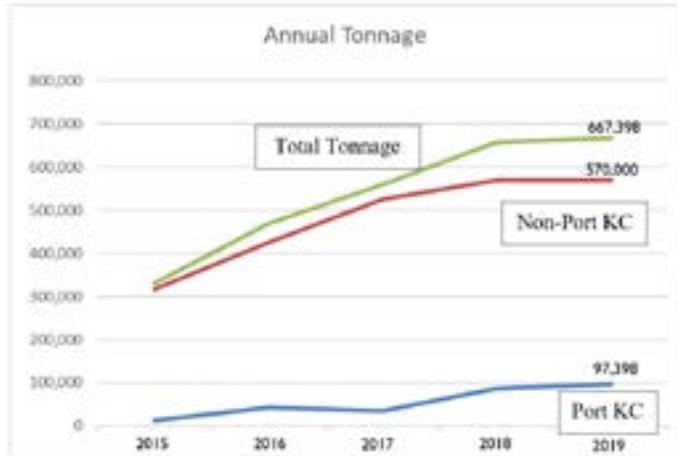
To view the Executive Order (E.O. 19-14) visit: <https://governor.mo.gov/press-releases/archive/governor-parson-signs-executive-order-establish-flood-recovery-advisory><https://www.sos.mo.gov/library/reference/orders/2019/eo14>



2019 Missouri River Navigation & Shipping Annual Report

Port KC prepared its annual report on the status of navigation and shipping in the Missouri River in 2019. Due to the 2019 flood event, navigation saw a ten week interruption on the Missouri and Mississippi rivers. Despite the interruption the total tonnage PortKC shipping was greater than tonnage shipped in 2018. Over the year, tows were limited to six barges because of higher than normal releases from Gavins point reservoir. Normally support releases are at 27,500 cfs from Gavins Point but this year water release levels were maintained at 80,000 cfs across the season.

out of Port KC and other area ports were diverted to other transportation methods over the flooding period. Flooding not only impacted navigation and shipping but affected port and navigation infrastructure along the navigation system. Port KC estimates the total economic impact as lost output to the navigation industry at \$121,000,000 with the loss of over 500 jobs related to navigation due to the flood event.



The outlook for 2020 looks positive for ample release supporting navigation. However, the picture for international commerce is reported as not quite so clear. The ongoing trade war with China will affect the region's agricultural trade and weather conditions influenced fall plantings reducing the amount of grain available for export. Prices are expected to remain bullish and farmers with grain in storage will reap the benefits. Total tonnage for 2020 is expected to increase by 4 to 5% depending on management of flood waters and releases from upstream reservoirs in 2020. A repeat of 2019 high water will impact both navigation and shipping on the Missouri River. Port KC reported the financial impact of the flood event to their shipping terminal and others along the Missouri River. The flood event and high waters prevented tow and barge passage from the Mississippi River into and through the Missouri River. Shipping of products normally

Flood of 2019 Total Economic Impact

525 Jobs Lost
\$31,274,144 Lost Labor Income
\$121,054,632 Lost Output
\$3,737,560 Lost Tax Revenue

The annual report also provided estimates of the economic impact of the 2019 flood event on transportation by the Missouri Department of Transportation (MoDOT) and impacts to shipping at Port KC. Due to the prolonged flooding on the Missouri and Mississippi Rivers MoDOT estimated impacts to the State's transportation as the following:

- Damage was sustained in 95 of the 114 Missouri counties
- Four hundred seventy state roadways were closed for sustained periods
- Rail, navigation and airports were impacted
- To date the estimated damage to roads stands at \$146.3 million
- I-29 between Omaha and Iowa closed for a total of 75 days
- Detour and delay costs \$ 103.8 million for an additional 149 mile routing of traffic
- Three railroads reported infrastructure cost of \$40.5 million
- Local and regional airports reported infrastructure and economic losses of \$16.5 million
- Missouri Ports reporting damage and economic losses of \$180.1 million
- \$950,000 for PortKC Damaged Mooring Structures

The Total impact to transportation reported by MoDOT in the PortKC annual report was estimated at \$383.3 million.

Review of the Missouri River Bank Stabilization & Navigation - Report

Section 1227 of the Water Resources Development Act (WRDA) 2018 directed the Secretary, acting through the Army Corps of Engineers (Corps), to submit a report to the Committee on Transportation and Infrastructure of the House of Representatives and the Committee on Environment and Public Works of the Senate regarding the function and performance of the Missouri River Bank Stabilization and Navigation Project (BSNP). The purpose of this Report to Congress was to determine whether there is a potential federal interest to undertake modifications to the existing BSNP project or to Operations and Maintenance parameters. The geographic scope of the Report to Congress focused primarily on the 498 miles of the river within the Kansas City District (river miles 0-498). The review was a limited review of exist-

ing information on the BSNP, but the report identified several potential improvements to the system. Due to the limitations of the review, none of the identified improvements were developed as detailed alternatives. They were presented in making a federal interest determination for further study consideration by Congress. The Corps reported that measures to improve the performance of the BSNP will need to take into account all changes to the hydrologic, hydraulic, sediment, and basin conditions that have taken place since construction of the BSNP. It is likely that a number of the issues identified above could be addressed in a manner that would increase the project's economic performance. Future modifications to the BSNP were reported to potentially include:

- Structural modifications to existing BSNP structures, to include extending dikes riv-

- Forward and lowering or raising the crest elevation of selected structures, both system-wide and / or in individual locations
- Changing the layout of BSNP structures to include construction of new dikes and revetments where needed on existing structures in selected locations where structures are spaced too closely
- Improved communication and innovative navigation technologies (e.g., improved surveillance and response approaches; new barge designs that require a shallower draft; changes to barge configurations)
- System-wide changes to O&M parameters
- Combinations of measures listed above

The Corps finalized the report recently and submitted it to Congress in December 2019.

Missouri River Matters

Missouri River Recovery Implementation Committee (MRRIC)

As the Missouri River Recovery Program continues to move forward, MOARC continues to be involved in the program and the recovery of the three endangered species in the river through participation in the Missouri River Recovery Implementation Committee (MRRIC). The Committee met on November 19-21, 2019 in Omaha, Nebraska. This meeting provided an opportunity for the Committee to continue to develop a shared understanding about the Missouri River Recovery Program (MRRP), including current and potential recovery and mitigation actions in the Missouri River Basin, and to provide guidance to the USACE and USFWS with respect to these activities.



MRRIC is a 70-member committee made up of federal, state, tribal, and stakeholder representatives from throughout the basin, which extends over 529,350 square miles and affects the lives of millions of people. Established in the fall of 2008, MRRIC serves as a collaborative forum developing a shared vision and comprehensive plan for the recovery and restoration of the Missouri River ecosystem. The Committee makes decisions by consensus.

Preceding the meeting, the Fish, Bird, and Human Considerations Teams met for in-depth discussion of the findings from recent monitoring and scientific efforts and the Tribal Interests Work Group met on to integrating the new Tribal and cultural knowledge expert into the work of the Independent Science Advisory Panel (ISAP). The full Committee, meeting on the 19th through the 21st, addressed both substantive and process decisions in moving the Committee and the MRRP forward.

Substantive Decisions - The Committee reached tentative consensus on the following:

- MRRIC recommends the lead agencies work with the AMGP Work Group to build in additional time in the Work Plan for in-person work group meetings and Fall Science Meetings in 2020.
- The success of MRRIC is reliant upon dedicated USFWS participation.

Missouri River Agency Operating Program (AOP)

Corps of Engineers Water Management Division released the 2019-2020 Annual Operating Plan (AOP) of the Missouri River in September for public comment to be completed and finalized in December in preparation for the on-going reservoir operations into and through 2020. The Corps hosted seven public meetings across the Missouri River basin in October with four meetings specifically in the lower basin to present information on 2019 hydrologic conditions and the planned operation of



tion. MRRIC recommends the USFWS support full participation of at least one USFWS staff in each of the substantive Work Groups (Bird, Fish, HC, Tribal Interests, Plover Habitat).

Process Decisions - During the meeting, the Committee also approved a number of process recommendations, including:

- Approved the Chair sending a letter to the Assistant Secretary of the Army R.D. James regarding travel funding
- Approved May and June 2019 plenary meeting summaries
- Approved content of the MRRIC FY 2019 Annual Report
- Approved the continuation of the MRRIC Chair for another year and approved a new Vice Chair
- Approved changes to Work Group and Ad Hoc Group membership and leadership

Information Exchange - MRRIC also is a forum for shared learning. During the meeting, MRRIC, agency representatives, and the public learned about:

- The new Independent Science Advisory Panel (ISAP) members and planned work for 2020
- The status of the Ft. Peck Draft Environmental Impact Statement (DEIS) and related analyses
- The Bank Stabilization and Navigation Project (BSNP) mitigation program, including purpose, scope, relation to the MRRP, current status and discussion of topics for possible future MRRIC engagement/discussion
- The MRRP Fall Strategic Plan, topics highlighted for attention, and how relevant MRRIC recommendations were addressed, and
- The current status of the three endangered species including information including the following:
- The Interior Least Tern delisting has been approved and published in the Federal Register Notice at: <https://www.federalregister.gov/documents/2019/10/24/2019-23119/endangered-and-threatened-wildlife-and-plants-removal-of-the-interior-least-tern-from-the-federal>
- The Piping Plover recovery plan is currently being revised by the USFWS for the Northern Great Plains Piping Plover.
- The Pallid Sturgeon recovery has various ongoing and planned activities for 2020. The USFWS, shared 2019 updates regarding captive spawning efforts, efforts to reduce early life stage mortality, and stocking fish in the river.

The November meeting summary development is underway. When finalized and approved by MRRIC, a summary of the meeting will be posted on the MRRIC website: <http://moriverrecovery.usace.army.mil/mrric/f?p=136:3:0:NO>. The next MRRIC meeting is planned for June 9-11, 2020 in Sioux Falls, SD.

the mainstem reservoir system during through 2020. The public meetings were an opportunity for the public to comment on the Corps operations and concerns as the basin recovers from the 2019 high water event and prepares for the 2020 runoff season. Although the final AOP has not been finalized, the draft 2019-2020 AOP can be viewed at <http://www.nwd-mr.usace.army.mil/rcc/reports/pdfs/draftAOP2019-2020.pdf>

Kansas River Basin Factoids - Did You Know?

- *Did you know?* The state of Kansas was named for the river. Its name (and nickname) come from the Kanza (Kaw) people who once inhabited the area.
- *Did you know?* The Kansas River is made up of 2 major tributaries draining 61,300 square acres of the state of Kansas
- *Did you know?* When including the Republican River and its headwater tributaries, the length of the Kansas River system is 743 miles, making it the 21st longest river system in the U.S.
- *Did you know?* The elevation of the Kansas River basin ranges from about 720 feet above sea level at its mouth to nearly 6,000 feet at Cedar Point in the uppermost drainage of the Arikaree River near Limon, Colorado.
- *Did you know?* From June 26-29, 1804, the Lewis and Clark Expedition camped at Kaw Point at the river's mouth. They praised the scenery in their accounts and noted the area would be a good location for a fort.
- *Did you know?* The Kansas River provides water supply to over 600,000 people in Kansas and Missouri.
- *Did you know?* In August 1819, Maj. Stephen H. Long steered the first [steamer](#) into the Kansas River with his 30-ton boat Western Engineer. He made it scarcely a mile up the river before turning back, citing mud bars from the recent floods.
- *Did you know?* Beginning in 1854, steamboats operated regularly from Kansas City to Lawrence and Topeka, and sometimes as far as Manhattan, Junction City, and Ft. Riley. Traffic continued through the territorial period and the early years of statehood, falling off rapidly about 1860.
- *Did you know?* The last steamer to travel the Kansas was the Alexander Majors, which was chartered in 1866 to run between Kansas City and Lawrence.
- *Did you know?* On February 25, 1864, the state legislature declared the Kansas River non-navigable, allowing railroad and bridge companies to build bridges and dams without restriction.
- *Did you know?* The mission of the Missouri and Associated Rivers Coalition (MOARC) is to promote conservation and beneficial use of land and water resources.
- *Did you know?* MOARC was created in 1952 by a group of individuals desiring better water management following the disastrous 1951 flood. Today, membership consists of organizations, associations, companies, governmental units and individuals interested in sound flood control programs and supporting conservation of land-water resources.
- *Did you know?* You too can be a member; go to www.moarc.org for information and an application.

SURFICIAL GEOLOGY OF KANSAS

2008



Agency Updates

Missouri River System Water Management Update December 2019

WATER®, a MOARC publication and a registered trademark, is the newsletter of the Missouri and Associated Rivers Coalition (MOARC). WATER® provides timely updates on matters of importance to the MOARC membership and stakeholders.



MOARC Association
PO Box 22647
Kansas City, MO 64113
E-mail: info@moarc.org



The lower basin is finally seeing relief from flood waters! As of 17 December, the river elevations in the lower basin are declining. This is the first time since March 2019 that river gages are showing only minor flood elevations across the basin and as of December reported high water at only five locations in the lower basin. With releases from Gavins Point and the upstream reservoirs continuing to step down the lower basin is below flood elevation throughout the basin in December.

reservoirs over the winter for the spring 2020 runoff season. Normal winter release rates are between 16,000 and 17,000 cfs so the higher releases are expected to provide for continued evacuation of the upstream reservoirs. Navigation flow support at the mouth of the Missouri River officially ended on 11 December, but because of continued releases at 27,000 cfs, navigation will continue into 2020. Lower release rates must be set during winter months because the Missouri River ices over in the northern reaches

limiting the amount of water that can flow beneath the ice.

The Missouri River Mainstem Reservoir System total storage is currently 56.9 MAF (million acre-feet) as of 17 December, occupying 0.8 MAF of the 16.3 MAF flood control zone (see graphic). Currently 6% of the flood control storage remains to be evacuated over the winter before the start of the 2020 runoff season. In December, the Corps revised estimates of the 2019 upper basin runoff forecast lowering it to 60.4 million acre-feet for

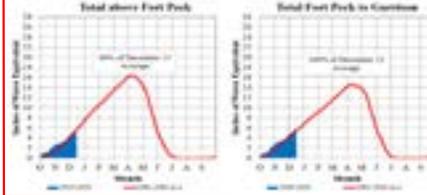
Missouri River Basin – Update – 17 December 2019

Mainstem Reservoir Status:

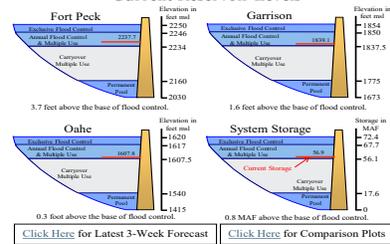
- System storage is 56.9 MAF; 0.8 MAF of the 16.3 MAF of flood control storage is occupied, and will be evacuated before the start of the 2020 runoff season.
- Mountain snowpack is accumulating at near average rates in the Fort Peck reach, and slightly above average in the Garrison reach (upper right quadrant).
- Gavins Point releases were reduced to the winter release rate of 27,000 cfs on December 15 (bottom right quadrant).
- Refer to the 3-Week Forecast ([click here](#)) for the most up-to-date System information – pool levels, inflows and releases.
- The Gavins Point release schedule and forecasted Missouri River flows and stages can be found here:

[Click Here](#) for Missouri River releases, flows & stages

Mountain Snowpack December 15, 2019

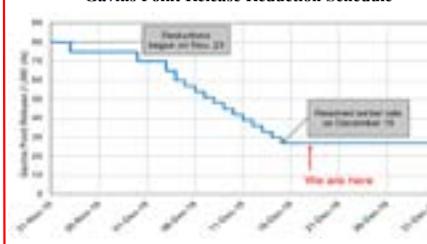


Current Reservoir Levels



[Click Here](#) for Latest 3-Week Forecast [Click Here](#) for Comparison Plots

Gavins Point Release Reduction Schedule



For more information on MOARC, find us at moarc.org



Through November, releases from Gavins Point were between 70,000 and 80,000 cfs (cubic feet per second) and continue to flood areas within the lower basin and limiting repair and recovery from the 2019 flood event. The US Army Corps of Engineers (Corps) Water Management Division announced on 3 December that releases were going to be stepped down to expected winter releases. As system storage begins to reach the multipurpose storage pool, the Corps began stepping down releases to the lower basin by 3,000 cfs each day until the release rate of 27,000 cfs was reached by mid-December (see the lower right quadrant on the graph). Based on continued monitoring the Corps may reduce the releases to 25,000 cfs in January as they continue to manage the storage of the upstream

the Missouri River Basin above Sioux City (approximately 238% of average). This runoff total would be 0.6 MAF less than 2011 (61.0 MAF), which is the highest runoff in 121 years of record-keeping.

As we begin to move into the winter months, the Missouri River basin has begun to accumulate snowpack both in the plains and in the mountains. Recent snows covered the upper plains from Omaha into Montana and mountain snowpack currently is at normal levels. Of concern is that soil moisture across the plains and the lower basin remain very high across the basin potentially setting the stage for limited precipitation absorption and high runoff to upstream reservoirs and unregulated tributaries to the lower Missouri River basin.

Future Newsletter Focus Area

Quarterly Newsletters are to be a venue to report on specific project changes, information of interest to the membership and specific areas of interest or action items membership needs to be aware of. In addition to project updates and what's in the news over the Quarter, the Spring Quarterly Newsletter (March) will provide a report on the recovery from the 2019 high-water event, preparation for 2020 Spring flood runoff and the results of the MOARC/KCIC Spring Washington DC visit. In addition, the newsletter will provide updates regional water resource projects, progress on the 2020 civil works budget, and outputs from MOARC's 2020 Policy Legislation workshop. Please look forward to the March Newsletter and send items you think would be of interest to the membership to MOARC at info@moarc.org

