

Upper Mississippi River Basin Association Water Quality Executive Committee and Task Force Meeting

June 4-5, 2019

Highlights and Action Items Summary

January 29-30, 2019 WQTF Highlights and Actions Meeting Summary

The WQ Task Force (WQTF) approved the draft highlights and actions summary of the January 29-30, 2019 WQTF meeting following a correction on page A-4 from USEPA Region 7 to USEPA Office of Science and Technology.

Upper Mississippi River Water Quality Improvement Act

Kirsten Wallace reviewed the history and legislative framework of the Upper Mississippi River (UMR) Water Quality Improvement Act (WQ Improvement Act). The Act's monitoring and modeling network components were proposed in the 1990's by Representative Kind (D-WI). Rep. Kind approached UMRBA about updating the Act in 2017, and since that time, UMRBA drafted a legislative framework that focuses on sediment and nutrient reduction investment and coordination. UMRBA's proposed legislation would establish a joint a joint USDA-NRCS and USEPA program office. The current sponsors include Reps. Ron Kind (D-WI) and Rodney Davis (R-IL) and Senators Roy Blunt (R-MO) and Amy Klobuchar (D-MN).

In spring 2019, Wallace met with Anna Wildeman from USEPA Office of Water. Wildeman expressed support for the measure. Her observations include:

- *Lower Mississippi Recommendation:* Wildeman said it would be better from USEPA's perspective to involve the Lower Mississippi states. MRCTI and a few other voices have also expressed similar sentiment.
- *TMDL Observation:* Wildeman was sensitive to the statement "state-federal collaborative," explaining her understanding that the Chesapeake stakeholders used similar language and ultimately resulted in a TMDL. She didn't have other language to suggest, or way of describing it, but offered caution.
- *National Program Office Observation:* Wildeman also mentioned that there are some challenges to USEPA's national program offices and offered that we might have a different, unique place in the USEPA's budget. Wildeman said she would give that further thought.

In spring 2019, Wallace also met with USDA Policy Advisor Faith Burns and Aaron Weber, assistant to NRCS Undersecretary Bill Northy. They expressed support of the measure, and offered assistance to UMRBA in answering questions or providing technical input as the Association advances the measures. A summary of their feedback includes:

- There would be greater power and legitimacy of a NRCS-USEPA jointly administered program office. USEPA would bring a legitimacy to clean water interests.
- The measure would be applicable and relevant to all 10 states and thought that commodity groups may push for that. The Hypoxia Task Force (HTF) could also help in that discussion.

In response to a question from Katrina Kessler, Wallace stated there is not an equivalent organization similar to UMRBA on the Lower Mississippi River that can speak to the states' perspectives in a single voice. UMRBA will instead work with the Lower Mississippi states work through the HTF. Ted Krastchmer added that he attends the Lower Mississippi River Conservation Committee meetings and the group is usually concerned about water quality-related funding. Wallace mentioned that the legislation can eventually expand relatively easily to the Lower Mississippi states. The framework is for a Mississippi River Program Office, and pending interpretation, it may allow for spending in those areas to establish a monitoring program, etc. Wallace said the political acceptability of the measures is unknown and would require a lot of work. Wallace also cautioned about telling the Lower Mississippi states what to do.

Adam Schnieders asked when the legislation will be introduced. Wallace said the House WRDA 2020 may be a promising legislation or through the natural resources committee or agriculture committee. The next steps are to establish a timeline for the legislative process and schedule regular calls with the WQ Executive Committee (WQEC) in order to flush out the text, review outreach efforts, address probable questions, and develop cost estimates for implementation. For example, The Nature Conservancy asked where are the data gaps. Kelly Warner suggested clearly articulating the purpose of the nutrient and sediment reduction monitoring.

Regarding costs, the WQEC can utilize Dave Wall's presentation on estimating costs to reduce nonpoint source nutrients and possibly extrapolate to the other Upper Mississippi states. Chris Wieberg noted that Missouri spends \$40 million per year but nutrient trends are still positive. Good and Searle added that they would like to have their state's legislative liaisons involved.

Action Items

- **UMRBA will set up regularly scheduled conference calls to discuss the WQ Improvement Act.**
- **UMRBA will create a timeline and communication strategy.**
- **The WQTF will extrapolate Dave Wall's presentation on nutrient reduction strategy implementation to help UMR states estimate a budget for the WQ Improvement Act.**

Nutrients

Groundwater/Surface Water Interactions

During the January 29-30, 2019 WQTF meeting, Shawn Giblin presented on the Wisconsin Groundwater Coordinating Council's report to the state legislature on nitrates in the groundwater. The report called attention to nitrate exceedances across the state above the maximum contaminant limit, 10mg/L. The state has vulnerability to nitrate contamination due to geology, soil characteristics, surficial deposits, and land use. The WQTF agreed to explore the following nitrate issues further: 1) whether groundwater sources of nitrate are acknowledged in states' nutrient reduction strategies and 2) investigation into basin scale studies of groundwater-surface water interactions at basin scale.

Salvato said there were few basin scale studies on groundwater-surface water interaction. One notable publication is Sprague et al., 2011, which looked at a 30-year data set of nitrate on the Mississippi River. She asked each of the states to report whether their nutrient reduction strategy acknowledges groundwater contribution to nutrient loading.

Missouri – Wieberg mentioned that groundwater loading is only mentioned in the context of soil and water conservation practices. Nitrate contamination with public water suppliers is not an issue. He suspects there are localized issues in the bootheel part of the state and added that, if there are issues with groundwater, Missouri DNR would be double counting i.e., nutrient concentrations are measured in surface water.

Minnesota – Anderson shared that groundwater is called out as a source in Minnesota’s strategy. She said that Dave Wall will be redoing their source assessment as they have found more phosphorus in tile lines.

Kessler stated that the MN Department of Agriculture was able to pass a 5 to 10-year rule to protect groundwater from contamination. Areas with nitrate greater than 10 mg/L will be identified from MN Department of Health dataset, starting with public water supplier wells. The rule restricts fall manure application if areas are greater than or equal to 10 mg/L. While the legislature did not pass funding for this rule in 2019, the MN Environmental Quality Board wants to discuss this issue further. Kessler added that there is a lot of momentum.

Wisconsin – Searle recognized that Wisconsin does not explicitly link its nitrate trend analysis to groundwater. However, that is changing as nitrate is increasing in the state at an alarming rate. There is a lot of political traction with the Evers administration.

Giblin said that groundwater flow directly impacts whether a backwater slough experiences a phosphorus or nitrate impairment. Backwater areas tend to be phosphorus starved early in the growing season and nitrate starved later in the growing season. As a result, Giblin has reached out to county conservationists in Buffalo and Trempealeau counties to discuss agriculture sources of nutrient runoff.

Iowa – Kendall said nitrate is included as part of tile drainage but not implicitly in models i.e., you cannot separate out groundwater contributions.

Illinois – Good said Illinois’ nutrient reduction strategy does not acknowledge groundwater, but Illinois EPA is using Section 106 funding to study groundwater in a sandy area of the state.

Warner contributed that USGS directed a study placing in-situ nitrate sensors to understand groundwater movement. Participants agreed to request a presentation on the study at a future WQTF meeting.

Donna Keclik asked the group if federal agencies are measuring how landscape activities affect the river ecosystem and nutrient loading. Schnieders replied that Indiana and Arkansas are employing a pilot to measure the nonpoint source (NPS) measurement framework developed by the HTF NPS measures workgroup. NPS metrics were evaluated with remote sensing to measure and capture landscape level changes from the implementation of conservation practices. The pilot was funded by the Walton Family Foundation. In 2019, a similar pilot will be carried out on Illinois, Kentucky, and Minnesota. Colin Geisenhoffer asked if the pilot study’s remote sensing components were focused on BMPs. Schnieders said yes, and explained that LiDAR was used to map terrain, ponds, grass waterways, etc. Researchers looked at past photography to detect changes over time.

USEPA Memorandums

Salvato reviewed USEPA’s recently released interpretation statement of the Clean Water Act (CWA) regarding groundwater pollution. The CWA only regulates direct discharges, and therefore, USEPA will not regulate pollution to surface waters that passes through groundwater.

Salvato reviewed USEPA’s February 6, 2019 memo from Assistant Administrator Dave Roth supporting water quality trading and market-based approaches to improve water quality. The memo is an update to

the 2003 policy on water quality trading and includes six market-based principles based on new information and technology. Next steps are to engage with regional offices (e.g., HTF) and conduct outreach and develop webinars on topics such as nutrient financing. Schnieders is pleased that USEPA is opening the door on trading policy, which will allow more programs to take hold and increase agriculture-urban collaboration.

State and Federal Updates

Missouri – Wieberg said USEPA approved Missouri DNR’s combined criteria for lakes and streams. Missouri DNR looked at nutrient models for wastewater allocations and synchronized the information on 8-digit watersheds. In response to a question from Warner, Wieberg says the combined criteria are for lakes and reservoirs greater than 10 acres and the criteria contain chlorophyll- α thresholds.

Regarding Dave Ross’ memo on water quality trading, Missouri DNR is revising its 2016 trading framework. Wieberg hopes that policy hurdles can be addressed to ensure projects can be implemented in the long-term.

Missouri’s trend data from the 1980’s is in development.

Minnesota – Kessler shared that Minnesota River Basin eutrophication TMDL’s agriculture-urban stakeholder process has begun. Minnesota PCA hopes to bring stakeholders to the table and catalyze discussions.

Regarding USEPA’s guidance, Minnesota PCA wants to remove barriers to water quality trading. Kessler says PCA hopes to use Minnesota’s agricultural water quality certification program in which early actors can receive credits.

Wisconsin – Searle shared that the 2017-2019 update to Wisconsin’s nutrient reduction strategy will be completed in late 2019.

In 2017, Wisconsin Land and Water Conservation Association led a project called “Food, Land, and Water” that included a focus on integrating approaches to managing nitrate.

Schnieders asked if money for Wisconsin’s nutrient loss reduction strategy has been impacted by Governor Evers’ declaration of “The Year of Clean Drinking Water.” Searle replied that the strategy has not been impacted to date.

Iowa – Schnieders noted that Iowa DNR petitioned in 2018 for a recreation use protection based on water clarity. USEPA Region 7 denied Iowa DNR again, and now DNR is working with USEPA headquarters on new models for microcystin ends points. Iowa DNR is looking at the science of chlorophyll- α , total phosphorus, and nitrogen numbers to see if the equations used in the model are valid. This is part of a national case study with North Carolina and Utah.

Iowa DNR is working on the 6th annual report of its nutrient reduction strategy, including water quality endpoints and tracking landscape changes. Some of the highlights include a map of agricultural BMPs, LiDAR, and benchmarks to show progress over time. Schnieders presented on this update at the May 15-16, 2019 HTF meeting.

Last year, significant funding from an excise tax on metered water was allocated to the implementation of wetlands, bioreactors, and buffers. Iowa DNR partnered with the Corps and USDA to develop incentives to participate in source water protection. Ultimately, Iowa DNR would like to give cities credits for these efforts. Schnieders said he estimates that Iowa will receive \$1 million this year from the water excise tax, \$3 million in 2020, and \$5 to 10 million in 2021.

In response to a question from Warner, Kendall explained that the volume of a microcystin sample can be directly linked to a HAB event. Kendall said he will share the paper on the microcystin dataset. In response to a question from Giblin, Kendall said that there is an asymptotic goodness of fit line with Iowa's dataset, but when considering nation-wide dataset, he found a different trend.

Illinois – Good said the Illinois Nutrient Science Advisory Committee published recommendations for numeric nutrient criteria and eutrophication standards. Now Illinois EPA needs to coordinate with the Illinois Pollution Control Board, the agency that determines, defines, and implements environmental control standards for the State.

USGS – Warner announced that DOI is reorganizing and restructuring USGS. One such change is that the National Water Quality Assessment (NAQWA) will be sunset by 2020. Water resources is currently a mission area of the USGS, and after 2020, the components of NAQWA will be spread into other programs.

USEPA – Heather Golden said that USEPA Office of Research and Development recently underwent a large research planning exercise. Two of the six focal areas are the most relevant to UMRBA's water quality committees are HABs research and nutrient thresholds. Golden and co-authors are involved in research utilizing wetland flowpath metrics (e.g., magnitude, frequency) to evaluate explanatory variables such as total nitrogen and total phosphorus in the UMRB. Next steps include integrating the results into large scale process-based watershed models to enable predictions on flood, drought, and nutrient conditions.

Schnieders requested that Golden provide factsheets of the research areas.

Presentations

Kratschmer provided an overview of Great Lakes to Gulf Virtual (GLTG) Observatory, which is an interactive geospatial application that integrates water quality data (specifically nutrient data) from different sources. The Observatory allows users to analyze data sets and gain an understanding of nutrient pollution and water quality conditions in the Mississippi River watershed. For example, GLTG has analysis tools for users to add a threshold for nitrate and overlay geospatial context layers such as land use or best management practices. Another feature of GLTG is a storyboard to allow a non-technical audience to learn about the Gulf of Mexico Hypoxic Zone.

Kratschmer and his colleagues have been working with the Illinois Nutrient Monitoring Council to calculate annual nutrient loads within the state's tracking method. The GLTG team hopes to work with other states in the Mississippi River Basin and add value to existing data and projects.

Warner asked if GLTG is involved with the University of Illinois' development of the Midwest Big Data Hub. Kratschmer said GLTG is a partner but is currently evaluating its role within the project. Warner offered that GLTG and Midwest Big Data Hub can help identify data gaps for the WQ Improvement Act. In response to a question from Schnieders, Kratschmer explained that GLTG does not allow for direct comparisons between datasets.

Action Items

- **UMRBA will coordinate with USGS regarding a future WQTF presentation on in situ nitrate sensors to measure groundwater levels.**
- **UMRBA will distribute research information from USEPA Office of Research and Development regarding its research focal areas.**

HABs

State Updates

Missouri – Missouri DNR utilized data from the beach monitoring program to look at microcystin and chlorophyll- α relationships. A small percentage of the samples were $> 1 \mu\text{g/L}$. Missouri DNR found that algal blooms with chlorophyll- $\alpha > 30 \mu\text{g/L}$ are at a higher risk for microcystin. Wieberg said the agency has seen an increase in algal blooms. Hoke added that Missouri DNR did not file comments on USEPA's Recommended Human Health Recreational Water Quality Criteria for microcystins and cylindrospermopsin.

Minnesota – Anderson shared that Minnesota PCA's toxicologists worked on ambient water quality criteria and came up with $6 \mu\text{g/L}$ for microcystins and $7 \mu\text{g/L}$ for cylindrospermopsin based on 7 oz of exposure. The criteria were evaluated by an inner agency HAB workgroup. PCA used a similar equation developed by Oregon.

Minnesota PCA is also putting together a beach monitoring document and poster for local beach managers. Anderson explained that beach monitoring is the responsibility of municipalities.

Wisconsin – Regarding USEPA's recreation water quality criteria, Gina LaLiberte said Wisconsin DNR is still evaluating the recommendations. When illness occurs from a bloom, DNR works with the Wisconsin Division of Public Health. Wisconsin DNR currently uses World Health Organization guidelines. Wisconsin DNR does not have a beach monitoring program, and monitoring is conducted through public health departments. LaLiberte explained that response monitoring is ongoing to gain a better understanding of where algal blooms occur within the state.

Shawn Giblin is conducting HAB sampling on the UMR to develop thresholds for microcystin and anatoxin-a endpoints. He noted the predictability of HABs on the UMR in backwater areas with high phosphorus and low nitrogen.

Iowa – Schnieders said Iowa DNR had issues with the USEPA's scientific premise for short-term acute exposure to microcystin and cylindrospermopsin. Iowa DNR joined a USEPA focus group, which took states' comments into consideration. Schnieders mentioned agency staff are currently looking at the science to see if their concerns were addressed. Kendall added that, when $4 \mu\text{g/L}$ was originally proposed, agency staff met with public health and wastewater agencies and found that the proposed criteria were more stringent than drinking water standards.

Action Items

- **UMRBA and the WQTF will update the HABs manual annually.**

Chloride

Chloride Long-Term Trends

Salvato reviewed the UMRR LTRM fixed site data in 1993-2002 for chloride as evaluated by KathiJo Jankowski. Jankowski found statistically significant trends for each of the fixed sites (Pool 4, Pool 8, Pool 13, Pool 26, the Open River at Cape Girardeau and the Illinois River at Havana). Findings include:

- There are no significant trends in Pool 4.

- Chloride concentrations are increasing in the following areas:
 - Impounded and main channel areas in Pool 8
 - Backwater channel, impounded, main channel, and tributary areas in Pool 13
 - Impounded and impounded lake areas in Pool 26
 - On the Illinois River at Havana, backwater impounded, main channel and tributary areas
- Chloride concentrations are decreasing in the side channel and tributary on the Open River at Cape Girardeau.

Karen Hagerty said that the UMRR program is having ongoing discussions regarding adding chloride back to its LTRM water quality sampling. Sampling may be initially limited to the fixed sites and expanded at a later date.

Iowa – Kendall followed up on his chloride presentation to the WQTF regarding Iowa’s long-term trends on January 30, 2019. The few areas with increasing trends are those discharging into the Mississippi River. There is currently one chloride impairment in the state. Iowa utilizes brine to manage winter roads which may be contributing to decreasing chloride trends. Schnieders added that Des Moines captures truck wash water and recycles it for roads. NPDES discharges for chloride have been eliminated throughout Iowa.

UMRBA Resolution

Salvato introduced the draft chloride resolution dated April 25, 2019. Wieberg suggested adding an advocacy statement on USEPA’s chloride criteria. He mentioned that USEPA has been working on chloride criteria for the past seven years and had not updated the 1988 criteria. It is hard to convince players to invest in reduction when standards are in flux and unpredictable. Aaron Johnson confirmed that USEPA is still working on updated chloride criteria. Addressing multi-ion toxicity is challenging. Kessler suggested a “let it further be resolved” statement for USEPA to refine the science related to toxicity.

Wallace said the UMRBA Board requested that the WQEC convene a conference call with state DOTs to discuss chloride trends, resources, and share best management practices. Schnieders recalled that Iowa State University is working on using potassium acetate as a substitute for salt. Researchers do not necessarily interact with DOTs and it would be good to connect researchers and regulators. Giblin suggested inviting Jim Hughes, WIDOT to present at the September 17-18, 2019 WQTF meeting.

The WQEC endorsed the chloride resolution following the additional “let it further be resolved” statement on chloride criteria.

Action Items

- **UMRBA will update the chloride resolution to request advancement in science from USEPA on chloride aquatic life criteria.**
- **UMRBA will request a presentation from Jim Hughes, WIDOT, at the September 17-18, 2019 WQTF meeting.**
- **UMRBA will coordinate a chloride outreach call with the WQEC, WQTF, and state DOTs.**

Emerging Issues

PFAS Presentations

Sarah Grace Longworth, from the Environmental Council of the States (ECOS), presented on the history of per- and polyfluoroalkyl substances (PFAS) manufacturing, key players, and state and federal efforts to address PFAS. PFAS is a family of over 10,000 chemicals that were manufactured starting in the 1940's. The chemical is added to a wide variety of products spanning household, manufacturing, and industrial uses. The sources and pathways for exposure include landfills, air, drinking water, and food (via environmental uptake). There are no regulatory standards for cleanup and no federal enforcement for USEPA's health advisory. The current attention towards PFAS is because of the discoveries of contamination on military bases from the use of aqueous fire fighting foam.

Longworth said there is a lot to consider regarding the regulation including findings of emerging science and how to regulate the large quantities of PFAS (i.e., individually or in groups). This has left states to decide whether they will take an aggressive or cautious approach.

ECOS' role is to convene the PFAS coordinating committee, a group of state and federal agencies that meet every two weeks, to communicate about scientific and other policy developments, newly identified sources and exposure pathways, and best practices for investigation, corrective action, and public engagement. The PFAS caucus meets bimonthly to discuss states' scientific and legislative activities. The caucus is developing a white paper due in fall 2019 and will cover how states set standards.

Schnieders asked if Longworth had any information on application of PFAS in biosolids. Longworth replied that Maine is on the forefront of the issue, and is trying to stop application of all biosolids because of seepage into groundwater. Salvato asked WQTF and WQEC members if their respective agency is involved in the PFAS coordinating committee or caucus. Kessler said Minnesota PCA staff are involved in both groups. Schnieders said Iowa DNR has been cautious but recently learned that there is PFAS contamination on a National Guard base. Now Iowa is taking advantage of these groups and trying to learn more. Salvato asked if ECOS has any outreach and communication materials available to share. Longworth replied that ECOS and USEPA Office of Research and Development are developing a manual for PFAS risk communication, that is anticipated to be published at the end of summer 2019.

Ryan Albert from USEPA Office of Water provided an overview of PFAS, USEPA's previous work related to PFAS, and current areas under the PFAS Action Plan. The PFAS Action Plan is a national research, management, and risk communication plan to address the challenges of PFAS. The plan was developed from extensive public input. The Action Plan will also provide tools and resources to assist municipalities, tribes, and states. Albert highlighted actions within the Action Plan spanning drinking water, cleanup, monitoring, research, toxics, enforcement, and risk communications.

Wieberg requested clarification on the authorities of USEPA's enforcement orders. Albert was referring to Section 1431 under the SDWA, the same order used for Flint, Michigan. Kessler wanted to know the progress in wastewater treatment standards, adding that the Midwest states have aquatic life and technology-based draft numbers. Albert replied that USEPA is in the early phases of exploring effluent limit guidelines for PFOA and PFOS.

In a question directed to Minnesota and Wisconsin, Wieberg asked whether the PFAS numbers developed were for aquatic life use or fish consumption. Kessler stated that both Minnesota and Wisconsin have PFAS fish consumption standards. The number of lakes listed was the impetus for the 3M lawsuit. In response to a question from Good, Albert said PFAS exposure can result in changes to liver and kidney function, low birthweight, breast and testicular cancers, and cardiovascular effects.

Schnieders inquired about the technology to remove PFAS in drinking water and wastewater. Granular active carbon and reverse osmosis are both effective but expensive treatment options. Longer chains of PFAS have worse health effects, but are easier to treat and remove than shorter chains. PFAS byproducts are disposed by incineration. Activated carbon needs to be actively managed and could be used up quickly for removing PFAS. Albert said he will follow-up with additional information on technology options.

Manganese

Schnieders reported on recent manganese issues in drinking water in the state of Iowa. Manganese is a naturally occurring mineral found in rock. Initially manganese is an aesthetic issue by turning the groundwater black. Science is also showing that higher levels pose health risks. There is no determined maximum contaminant level for the mineral. Bagley, Iowa sampled its drinking water source and found manganese in exceedance of the USEPA health advisory (0.3 mg/L lifetime and 1 mg/L for one day). Iowa DNR issued tier 1 bottled water advisories, and Bagley is utilizing grant money and moving forward to connect to a regional water supply. Iowa DNR is not required to take action but has worked with USEPA on how to approach the issue. Over 100 communities are likely to be impacted. Schnieders mentioned that he is willing to share protocols and outreach materials, and asked whether other states have dealt with elevated manganese.

Chris Jones stated that water with high levels of iron has a lot of manganese. In a high flow event, 1 ppm is not atypical. In response to a question from Good, Schnieders said there are a lot of ways to remove manganese (e.g., chemical removal, green sands) but small towns do not have the funding to upgrade their water treatment plants. Kessler asked if nitrogen fertilizer has manganese. Warner replied that she is unsure whether manganese is in fertilizer but manganese is present in glacial materials and has found it is not correlated to land use.

Schnieders described air quality issues from using manganese as a replacement for road gravel. Giblin said Wisconsin has dealt with manganese in sediment samples. There are USEPA criteria for sediment but not for aquatic life. Anderson contributed that Minnesota PCA has guidance values but is not required to sample sediment.

WQTF and WQEC members are interested to learn more about manganese, and monitoring for manganese should be included in the Reaches 8-9 pilot.

Action Items

- **UMRBA will share information on PFAS removal technology for drinking water and wastewater treatment plants.**
- **Adam Schnieders will share Iowa DNR's manganese monitoring protocols and outreach materials.**
- **Manganese will be sampled and reported as part of Reaches 8-9 pilot monitoring.**
- **UMRBA will schedule future presentations related to manganese.**

Updates

UMRBA Diversion Charter

Wallace detailed the 1985 diversion charter, an agreement that the five UMR states report annually regarding any request for out-of-basin water transfers greater than 5 million gallons per day. However,

no such instance has occurred since the Charter was developed. The diversion charter was recently discussed in light of the summer 2018 Missouri drought and a review by the Great Lakes Commission of a similar charter. The UMRBA Board requested that Association staff review the Charter to determine if any changes are needed. Wallace said UMRBA staff will request that the WQEC review the charter and provide input.

HTF Meeting May 15-16, 2019

Schnieders reflected on the major highlights of the May 15-16, 2019 HTF meeting in Baton Rouge, Louisiana. After multiple postponements, the meeting was the first with new leadership, David Ross, USEPA Assistant Administrator for the Office of Water. The HTF membership includes states bordering the Mississippi River and federal agencies: USDA, USGS, USFWS, NOAA, USACE, and USEPA.

The water subcommittee, a group of federal agencies, met with key stakeholders to discuss two main questions: 1) what are the coordination opportunities and 2) what can the federal government do to support nutrient reduction strategies. Near-term and long-term priorities were discussed: scaling up nutrient reduction strategies to landscape level changes, USEPA's push for market-based water quality trading, and an additional line of revenue and support for the regulated community. The state caucus meets prior to the subcommittee meeting to discuss questions and areas of concern.

The executive session included discussion on information sharing with nutrient reductions strategies, the non-point source project tracker, and the 2016-2017 biennial report for point source tracking. Schnieders added that, during the half day public meeting, he presented on land use tracking for the adoption of conservation practices.

HTF meeting participants also had the opportunity to tour the LSU River Center, which houses basketball-court sized simulator of the Lower Mississippi River. Researchers are able to simulate water diversions or salinity balance for oyster health.

Wallace and Kratschmer also attended the HTF meeting and shared their observations. Wallace emphasized the important dialogue on watershed thinking that occurred during the roundtable listening session. There was significant discussion on restoring watershed and floodplain functions. Kratschmer said his main takeaway was federal agency emphasis on water quality trading and infrastructure.

Upper Mississippi Information System May 9-10, 2019 Workshop

Jones provided an overview of the Midwest Big Data Hub and recent Upper Mississippi Information System May 9-10, 2019 workshop. IIHR – Hydrosience and Engineering department at the University of Iowa houses the Iowa Flood Center and the Iowa Water Quality Information System (IWQIS). The IWQIS is a website interface that displays a water quality sensor network throughout the state. Jones said the IWQIS has been a big success and has aided the state's nutrient reduction strategy. This was, in part, the impetus for applying for NSF grant money to create the Upper Mississippi Information System (UMIS). With the help of university partners including the University of Illinois Big Data Center, the goal is to amass UMRB data and build up sensor network to have a clearinghouse of information. Utilizing big data increases the capacity to help solve water quality problems in the UMRB and the Gulf of Mexico.

Jones described the timeline of the three-year project. One of the outreach events held in the first year was the May 9-10, 2019 workshop. The goal of the workshop was to have organizations buy into the concept of the UMIS and show them how the website will look.

Anderson asked how a significant workload of making continuous monitoring available in real-time will be accomplished. Jones replied that the UMIS team is talking to existing organizations with sensors and will provide tools to stream data. The data themselves are not limited to nutrients. He added that the UMIS team is having ongoing discussions on metadata and quality control. Anderson requested a list of partners within the state of Minnesota who have been identified and contacted.

Warner questioned the value added of the UMIS. Existing resources include GLTG and the USEPA Water Quality Exchange portal. Jones replied that the goal is to create a system that is a one-stop shop. In-situ stream sensors are the future for UMRB — nutrient loading data for every HUC 12 can be fed into a real-time SWAT model. Warner advised including statistical analysis capabilities on the website. She recognized the value in comparing nutrient loading data across regions (e.g., the Great Lakes).

Kessler requested clarification on why the UMIS and GLTF sites are two separate efforts. Jones would like to join the websites. GLTG has sensors and is a participant in the NSF grant.

Action Items

- **UMRBA will share links to the UMIS website and information on future meetings.**

Interstate Water Quality Monitoring

Reaches 8-9 Pilot

Salvato provided an update on the Reaches 8-9 pilot planning. At the end of May 2019, Iowa and Illinois sent their respective Section 106 applications to USEPA to fund their portions of the pilot implementation. The planning committee is working on information for the public water suppliers participating in the drinking water use assessment, finalizing the PFAS quality assurance assessment plan for USEPA Region 5, and updating the Field Operations Manual and Provisional Assessment. Following Section 106 grant money disbursement, the planning committee will finalize laboratory contractors, order supplies, and prepare to begin sampling in 2019.

How Clean is the River Report?

The report, published in 1989, examined water quality of the UMR. Salvato reviewed a few of the major conclusions including temporal trends in water quality and river miles affected by poor water quality. The authors noted increasing chloride trends on the UMR and concluded that the 118 mile stretch between Davenport, IA and Keokuk, IA had the best water quality. Overall, there was no indication of degrading water quality but few improvements.

Salvato observed that this publication can be used for comparison to UMR interstate water quality monitoring pilots. She is interested to see what the Reaches 8-9 pilot will reveal, including the water quality conditions in the stretch from New Boston, IL to Keokuk, IA.

Wallace asked WQTF and WQEC members if they are interested to revisit this report and make a 30-year update. She suggested this could be used to communicate the need for the UMR interstate water quality monitoring and the WQ Improvement Act. Giblin presented on UMR water quality at the 75th UMRCC meeting. The report is undergoing internal review but can be distributed when complete.

Action Items

- **UMRBA will investigate whether to pursue an update to the “How Clean is the River” report and potential funding sources**

Administrative Items

New Committee Member

- The WQTF and WQEC welcomed Katrina Kessler as Minnesota's new Executive Committee representative. Kessler is the Assistant Commissioner for Water Policy and Agriculture. She previously worked for the City of Minneapolis as the Director of Surface Waters and Sewer Division and MPCA in the Municipal and Industrial Division and Environmental Analysis and Outcomes Division.

Chairs

- Salvato thanked Gregg Good serving as the WQTF chair and Adam Schnieders for serving as the WQEC chair.
- Chair duties transferred to Dan Kendall for the WQTF and to Chris Wieberg for the WQEC.

Future Meetings

- The next WQTF in-person meeting is scheduled for September 17-18, 2019 in Quincy, Illinois.
- The next UMRBA Board-WQEC meeting is scheduled for October 28-29, 2019 in St. Paul, Minnesota

Attendance

Anna Belyaeva	Illinois Environmental Protection Agency
Gregg Good	Illinois Environmental Protection Agency
Daniel Kendall	Iowa Department of Natural Resources
Adam Schnieders	Iowa Department of Natural Resources
Pam Anderson	Minnesota Pollution Control Agency
Katrina Kessler	Minnesota Pollution Control Agency
John Hoke	Missouri Department of Natural Resources
Chris Wieberg	Missouri Department of Natural Resources
Shawn Giblin	Wisconsin Department of Natural Resources
Gina LaLiberte*	Wisconsin Department of Natural Resources
Greg Searle*	Wisconsin Department of Natural Resources
Karen Hagerty	U.S. Army Corps of Engineers, Rock Island District
T. Leo Keller	U.S. Army Corps of Engineers, Rock Island District
Ryan Albert*	U.S. Environmental Protection Agency, Office of Water
Colin Geisenhoffer*	U.S. Environmental Protection Agency, Region 5
Matt Gluckman*	U.S. Environmental Protection Agency, Region 5
Heather Golden*	U.S. Environmental Protection Agency, Region 5
Ed Hammer*	U.S. Environmental Protection Agency, Region 5
Aaron Johnson*	U.S. Environmental Protection Agency, Region 5
Jen Philips-Sanderburg*	U.S. Environmental Protection Agency, Region 5
Donna Keclik*	U.S. Environmental Protection Agency, Region 5
Jennifer Kissel*	U.S. Environmental Protection Agency, Region 7
Dave Werbach*	U.S. Environmental Protection Agency, Region 5
Aleshia Kenney	U.S. Fish and Wildlife Service

KathiJo Jankowski*	U.S. Geological Survey
Kelly Warner	U.S. Geological Survey
Sarah Grace Longworth*	Environmental Council of the States
Chris Jones	IIHR – Hydroscience and Engineering, University of Iowa
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Andy Gusse	Iowa STEM Teacher Externships Program
Ted Kratschmer	National Great Rivers Research and Education Center
Kathy Hawes	Tennessee Clean Water Network
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