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

September 9-10, 2014
Davenport, Iowa

Meeting Summary

Participants

Gregg Good	Illinois EPA
Matt Short	Illinois EPA
Marcia Willhite	Illinois EPA
Shelli Grapp*	Iowa DNR
John Olson	Iowa DNR
Rebecca Flood	Minnesota PCA
Glenn Skuta	Minnesota PCA
Mohsen Dkhili	Missouri DNR
John Hoke	Missouri DNR
Jim Fischer	Wisconsin DNR
Aaron Larson*	Wisconsin DNR
Susan Sylvester	Wisconsin DNR
Brian Weigel	Wisconsin DNR
Tim Henry	US EPA, Region 5
Linda Holst	US EPA, Region 5
Steve Kalkhoff	USGS, Iowa Water Science Center
Gregg Nalley	USGS, Iowa Water Science Center
Mayor Roy Buol	City of Dubuque
Deron Muehring	City of Dubuque
Greg Swanson	City of Moline
Dru Buntin	UMRBA
Dave Hokanson	UMRBA

** Joined the meeting by phone.*

Call to Order and Introductions

The joint meeting of the UMRBA Water Quality Executive Committee (WQEC) and Water Quality Task Force (WQTF) was called to order at 1:05 p.m.on September 9, 2014 by WQEC Chair Rebecca Flood. Introductions by all participants followed.

Approval of Previous Meeting Summary

Dave Hokanson asked if there were any additions or corrections to the draft summary of the June 10-11, 2014 WQTF meeting. No changes were requested and the meeting summary was adopted as final by voice vote.

Interstate 305(b) Assessment and 303(d) Impairment Listing Consultation

Hokanson displayed the current comparison chart of the states' UMR impairment listings. Each state provided comments on its assessment and listings as follows:

Minnesota

Flood said Minnesota has submitted its 2014 303(d) list to US EPA Region 5 for review. She explained that the list does not include wild rice production waters at this time, as MPCA continues to investigate the impact of sulfate on these waters. Flood said US EPA will review Minnesota's list in full once these waters are added. Glenn Skuta added that the UMRBA chart reflects current Minnesota listings correctly.

Wisconsin

Susan Sylvester said Wisconsin has also submitted its 2014 303(d) listings to US EPA Region 5 and the UMRBA chart correctly reflects Wisconsin's 303(d) listings.

Illinois

Gregg Good said the summary table is correct for Illinois, adding that Illinois has submitted its 2014 listings to US EPA Region 5 for approval in March 2014.

Iowa

John Olson reported that Iowa is currently working on its 2014 303(d) list. He noted that Iowa is planning to remove all of the arsenic and cadmium impairments listed for the river. Olson explained that all of the data used initially to create the cadmium listings is "remark" data – meaning that while cadmium is present, the results are between the method detection level and the reporting level and therefore cannot be quantified to the degree needed for regulatory purposes. In the case of arsenic, all of the results used to create the listing were for total arsenic, whereas the applicable water quality criterion in Iowa utilizes the arsenic (III) form. As such, these results cannot be directly compared to the water quality criterion. Skuta asked whether these rationales, for cadmium and arsenic, applied in all cases of Iowa's listings on the UMR. Olson replied that, yes, the rationales apply river-wide.

Missouri

Mohsen Dkhili noted that Missouri has added an *E.coli* impairment for UMR reaches 12-13 in its 2014 303(d) listing. John Hoke added that Missouri had submitted its list to US EPA Region 7 in April 2014 and just received word of its approval.

Holst asked why impairment related to mercury in fish tissue appears in all of Illinois' reaches of the UMR, but does not appear in listings for either Iowa or Missouri. Olson replied that Iowa does look at the data used by Illinois, but has a different standard in place. Dkhili said the same is true for Missouri, noting that Missouri *does* list the Mississippi River for mercury impairment below the Ohio River.

Other Agency/Partner Reports

Illinois

Marcia Willhite said UMRBA staff had met with representatives from several Illinois agencies the preceding day in Springfield, Illinois; noting that there had been productive discussion regarding a number of issue areas. Good added that Illinois EPA is working to update its monitoring strategy and plans to submit it to US EPA by the end of September.

Iowa

Olson said Iowa is also working to update its monitoring strategy. He further noted that the UMRCC-Water Quality Tech Section (WQTS) will hold its next meeting October 1-2, 2014 in Muscatine, Iowa. Olson said he will provide the UMRCC-WQTS with an update on the WQTF's monitoring and assessment work.

Wisconsin

Sylvester said Wisconsin, like Illinois and Iowa, is in the process of updating its monitoring strategy. Fischer reported that Shawn Giblin has been hired to fill the vacancy created by John Sullivan's retirement from Wisconsin DNR.

US EPA Region 5

Holst said US EPA's monthly water quality standards branch chiefs' call is upcoming and that she is willing to carry forward any recommendations from the states regarding topics to be addressed. Willhite noted that one recent area of activity has been in regard to microbeads, with Illinois recently taking action to ban them. Flood asked when Illinois' ban would take effect. Willhite replied this will occur in 2016. Both Flood and Willhite observed that manufacturers have already been moving toward discontinuing their use.

Henry said the August 2014 incident in Toledo, Ohio related to a harmful algal bloom has illustrated the challenges for drinking water systems in this regard. He said this event in particular has highlighted the issue of reserve capacity, as Toledo did not have a reserve storage capacity that could be utilized until the issue was resolved. Henry said he is not aware of harmful algal blooms creating similar problems on the UMR, but would like to raise the topic in discussions with the water supply representative attending the second day of this meeting. Flood asked if there were any other unique factors associated with the incident, aside from apparently outdated infrastructure in Toledo. Henry replied that another facet of the incident to consider is how fast it progressed and the public demand for information, particularly in light of the time needed to process laboratory results.

Willhite said Toledo's lack of storage capacity is a bit surprising, as Illinois requires its systems to maintain reserve storage. She added that one of the outcomes of the nutrient workshops hosted by UMRBA in 2011 was the need to develop a harmful algal bloom tracking system for the UMR, noting that this may be an area the WQEC and WQTF might want to revisit. Henry replied that the lack of storage is actually a more common problem than may be generally recognized. He also said US EPA is working on a health advisory for algal toxins, as no maximum contaminant level (MCL) exists for these.

Jim Fischer said Wisconsin does observe algal blooms in the La Crosse area on the UMR, which has been primarily a recreational issue, as there are not public water supplies using the river for source water in this area. Good said Illinois now has a harmful algal bloom program in place and he is aware that Moline has had several issues with algal blooms. He suggested that Greg Swanson of the City of Moline, who is attending the meeting's second day, would be able to address the specifics of these events. Matt Short said algal blooms on the UMR are most often observed in backwater areas. Fischer agreed that backwaters are the location of most UMR blooms. Olson commented that Iowa has not had issues recently, but that Des Moines had encountered high levels of cyanobacteria in previous years.

Fischer said Wisconsin has, in some cases, struggled with how to address harmful algal blooms. He gave an example where an algal bloom was observed at a USACE dredging materials site that is used by the public for recreation; noting that it was difficult for USACE to engage in the issue given that this was not an officially designated recreation site. Olson said dealing with harmful algal blooms is challenging to

address in a 305(b)/303(d) framework, noting that it is perhaps the most prominent of issues not adequately addressed under existing 305(b)/303(d) approaches. He suggested that the creation of a health advisory would be a helpful first step in better addressing harmful algal blooms.

Minnesota

Skuta said MPCA has just completed a report on 35 years of monitoring under its Minnesota Milestones program which is available at http://www.pca.state.mn.us/index.php/water/water-types-and-programs/surface-water/streams-and-rivers/minnesota-milestone-river-monitoring-program.html. He noted that some of the general trends documented in this report include declines in total suspended solids and phosphorus concentrations, with increases in nitrate and chloride concentrations. Skuta also noted that MPCA has recently created a user-friendly "How's the Water" web page which can be found at: http://www.pca.state.mn.us/index.php/water/hows-the-water/index.html. Flood said this web page seeks to use plain and clear language to describe water quality conditions. Willhite commended Minnesota for their work on this web page, saying she really appreciates the emphasis on effective public communication.

U.S. Water Alliance Report: Coming Together to Protect Mississippi River Watersheds

Skuta noted this recently released report and asked if others had been able to review. Willhite commented that David St. Pierre, Executive Director of the Metropolitan Water Reclamation District of Greater Chicago, gave her very positive feedback about the report, particularly in regard to the "watershed protection utility" approach it describes. She explained that this involves assigning such a utility with the responsibility for nutrient-related actions, and then providing the utility with a means (e.g., fee) to finance its activities. Henry asked whether the report describes market mechanisms to achieve reductions that go beyond trading programs. Willhite said it includes discussion of approaches such as sustainable supply chains. She added that Ben Grumbles would be presenting on the report's findings at the upcoming Gulf Hypoxia Task Force meeting.

UMR CWA Monitoring Strategy Implementation

Hokanson initiated the monitoring strategy discussion by providing a brief presentation reviewing the origin, purpose, and status of the UMR CWA monitoring strategy effort. This background presentation was intended to benefit those individuals new to discussion and to set up subsequent conversation among the WQEC and WQTF.

Minnesota-Wisconsin Pilot Monitoring Effort

Flood said MPCA has been work on its biennial budget and staff have included the UMR CWA monitoring effort in their request. However, whether or not funding comes through remains to be seen.

Skuta said Minnesota and Wisconsin have been discussing how to implement monitoring and avoid having the monitoring plan "sit on the shelf." He explained that since the UMR states have agreed that pilot implementation makes sense, Minnesota and Wisconsin are specifically working on this aspect. Skuta said the two states have targeted 2016 for implementation are looking at a geographic division of labor where Minnesota would sample reaches 0 and 1, while Wisconsin would sample reaches 2 and 3. He noted that since downstream end of reach 3 is quite near to the Iowa state line, there has been some consideration of extending the monitoring down to the border.

Skuta commented that there are likely some very specific choices to be made as implementation proceeds. For example, he noted the discussion of paring back metals during pilot monitoring to only fixed sites, as well as reducing the number of metals sampled. Skuta emphasized that there may be some changes made

during the pilot that affect the pilot only, while other changes may be identified which affect the design of the monitoring plan itself.

In terms of cost, Skuta said that Minnesota estimates its likely cost to implement monitoring on reaches 0 and 1 at between $200,000 and $250,000. He added that there is also certainly a need for an operations manual to guide implementation. Rebecca Flood added that there will also need to be a way to evaluate the results of the monitoring.

Brian Weigel said, in his opinion, the monitoring plan is the "ready" step, and the pilot project work is the "aim" step, as the states prepare to "fire" by implementing monitoring. He emphasized the importance of methods studies in moving to implementation, adding that the experience and work done by UMRR-EMP LTRMP positions the states well to implement UMR CWA monitoring. Weigel explained that while Wisconsin cannot count on new funding to support this monitoring, he sees many efficiencies in collaborating with Minnesota. He also said CWA Section 106 funding may be option to support some of the UMR monitoring. Weigel emphasized that when the sharing of workload is considered, monitoring expenses will likely not increase greatly to implement the UMR CWA plan. Fischer added that Wisconsin is definitely supportive of pilot implementation, while noting there are some tradeoffs in pursuing a geographic rather than functional division of labor.

Olson asked whether the pilot will include monitoring at the probabilistic sites. Skuta replied that probabilistic sites will definitely be part of pilot implementation. Willhite asked whether the $200,000-$250,000 estimate is per state or total for the pilot. Skuta replied that this is just for Minnesota. Fischer added that Wisconsin has estimated its likely costs at $220,000, noting that these estimates are for sample collection and analysis only, and do not cover data management or other activities. Linda Holst asked if monitoring is being done for all four major designated uses as part of the pilot. Skuta answered that the drinking water use is not assigned in these reaches, but monitoring would be done for aquatic life, fish consumption, and recreation uses.

Skuta and Weigel said current plans call for a next conversation of the Minnesota-Wisconsin pilot group in late September.

Defining the Details of Monitoring

Hokanson commented that the Minnesota-Wisconsin pilot discussions, as well as work on the assessment methodology feasibility project, had already led to a number of decisions regarding the specifics of monitoring implementation. He concurred with Skuta's earlier comment that some of these changes affect only the pilot effort, while others affect the core design of the monitoring plan. Hokanson summarized changes in these two categories as follows:

<u>Changes/Clarifications Affecting the Monitoring Plan Itself</u> (i.e., "permanent" changes)

- Increasing the total number of fixed sites from 11 to 15 river-wide.
- Reducing the number of metals and "other" parameters sampled from 23 to 14 analytes.
- Defining metals analyses as those for dissolved metals.
- Reducing fish tissue contaminant analysis to mercury and PCBs only.
- Dropping urban area *E.coli* sampling from the plan.

<u>Changes/Clarifications Affecting Only Pilot Monitoring</u>

- Sampling for metals and "other" parameters *only at fixed sites*.

Hokanson said there are also many questions which still need to be answered in regard to the specifics of monitoring. He noted, for example, that there has been discussion regarding fish tissue monitoring and a number of decisions have been made. However, a number of significant challenges – including the selection of top predator(s) to sample – remain. Further, there has been some skepticism expressed by states' fish consumption advisory staff in regard to the plan being over-ambitious in the number of samples it specifies for fish tissue. Olson said he understands the concerns expressed by fish consumption advisory staff, but feels that monitoring should be pursued as described in the plan. Weigel added that, when considering sharing of work across states and spreading out monitoring over a five-year cycle, it is unlikely that there will really be a significant increase in overall workload.

Flood asked what was behind the decision to reduce fish tissue contaminant analysis and particular asked whether PFOS should be part of the analyte group. Hokanson replied that anticipated cost had been one of the considerations. Additionally, he noted, it is likely that a different type and size class of fish would be needed for PFOS testing and as such was likely beyond the immediate scope of the shared monitoring effort.

Willhite asked why the urban area *E. coli* monitoring had been dropped from the plan. Hokanson replied that the assessment workgroup found that this type of monitoring simply did not integrate well into CWA condition assessment because of the low frequency of monitoring and limited number of samples collected. Instead, the assessment group and the WQTF recommend keeping a focus on *E. coli* monitoring that would allow for statements of condition to be made at the reach level (i.e., fixed site monitoring supplemented by probabilistic monitoring).

Mapping and Data Compilation/Virtual Pilots

Hokanson noted that UMRBA staff had initiated some efforts to map monitoring locations and examine the availability of data through the new water quality portal sponsored by USGS, US EPA, and the National Water Quality Monitoring Council (NWQMC). However, he said, input is still needed in selecting "virtual pilot" monitoring areas in which to focus efforts regarding data compilation to meet the specifications of the UMR CWA monitoring plan.

Willhite commented that pursuing this "virtual pilot" component is important as it allows the states say something specific about the utility of existing data in the context of *the UMR CWA Recommended Monitoring Plan*. Dru Buntin asked the group where they might see the greatest utility in focusing a virtual pilot effort. Matt Short suggested that both the Quad Cities and Open River reaches held promise as areas to investigate.

Olson asked whether a virtual pilot effort would include biological data. Hokanson replied that biological data will be included in a virtual pilot, in particular noting that a virtual pilot provides an opportunity to bring in biological (fish) data from the UMRR-EMP LTRMP program and practice compiling LTRMP fish sampling results in order to calculate Great River Fish Index (GRFIn) scores. Olson and Fischer both agreed with the importance of integrating LTRMP results, with Fischer noting that LTRMP will provide an opportunity to compare results from CWA program-specific sampling (using EMAP methods) with results obtained using LTRMP methods.

Staffing/Funding to Support Implementation

Buntin said he had recently had a conversation with staff of the McKnight Foundation, who indicated that McKnight may be willing to support a limited term (2 year) project providing staff to aid the states with implementation of the *UMR CWA Recommended Monitoring Plan*. He said this opportunity is something to discuss with the WQTF, WQEC, and UMRBA's Board. Hokanson said this could potentially support an individual engaged in data system development, data collection and management, data analysis and

report writing. Weigel cautioned that data system development and data analysis/statistics can require two very different skill sets, and as such it may be challenging to find an individual who can successfully fill both roles. Fischer suggested that another potential way to boost staff support may be to enter into an interagency personnel agreement. Flood recommended that, in the near term, the possibility of working with McKnight be investigated further. Buntin said UMRBA staff would draft up a proposal and send it around for review by the WQEC and WQTF, subsequently forwarding to the UMRBA Board as appropriate.

Partnership Opportunities

Hokanson noted that the next day's discussions are designed to further explore potential partnership opportunities, building on the discussions held with regional universities at the June WQTF meeting. In particular, he noted that Dubuque's Mayor Roy Buol will be discussing both Dubuque's specific activities in regard to water quality, as well as the goals of the Mississippi River Cities and Towns Initiative (MRCTI).

Buntin said he is interested in hearing what the WQEC and WQTF's desired message to Mayor Buol and the other MRCTI mayors is. Willhite said she is interested in getting the mayors together to better understand what their views of water quality are. She added that there is great value in the WQEC and WQTF getting a better understanding of what the mayors would like to achieve in regard to water quality. Buntin indicated that this and other conversations with the MRCTI mayors could potentially be an opportunity for education and exchange of information.

Sylvester asked whether the WQEC and WQTF would be specifically asking the mayors to support the monitoring strategy at this time. Willhite replied that she did not think this was part of an initial conversation, but may be something to address in later conversations. Flood agreed, saying initial conversations need to be at a more global level than the specifics of Clean Water Act monitoring and assessment. Buntin suggested that the WQEC, WQTF and/or UMRBA staff may want to present to MRCTI at one of its future meetings. Willhite agreed, adding that another communications strategy would be for WQEC members to follow up with the mayor from each of their states who is part of the MRCTI Executive Committee.

In regard to other possible partnerships, Willhite suggested that the WQEC and WQTF need to think about who may value monitoring information the most, and that this may include some of the larger corporations along the UMR.

UMR CWA Assessment Feasibility Project

John Olson presented the draft UMR CWA Assessment Methodology, which is the primary product of the ongoing assessment feasibility project. He highlighted the following overarching components of the draft assessment methodology:

- The assessment methodology is intended to provide a means to evaluate the water quality condition of the UMR – with the result being along the lines of a "State of the River" report and having similarities to a 305(b) condition assessment. It will try to answer the question "to what degree does the UMR meet the goals of the CWA?"
- However, it is <u>not</u> intended for use in creating 303(d) impairment listings, and each state will continue to produce its own 305(b) assessment and 303(d) listings for the UMR. States may choose to reference/incorporate the outcomes of the shared UMR assessment, as well as underlying data, into their formal CWA processes as they see fit.

- The methodology addresses the four "major" designated uses assigned to the UMR: aquatic life, drinking water, fish consumption, and recreation.
- Three condition classes – "good", "fair", and "poor" will be utilized to characterize the water quality status of the UMR. The assessment work group advocates three classes to improve the ability to communicate status to the public (rather than two-tiered "impaired/not impaired" approach).
- Data from multiple monitoring designs, as described in the *UMR CWA Recommended Monitoring Plan*, are to be utilized in conducting an assessment – this includes probabilistic, fixed station, and targeted monitoring.
- The 13 UMR "minimum assessment reaches" will be utilized as the unit of assessment.
- The cycle of monitoring and assessment is expected to be five years (i.e., a condition report would be produced once every five years, using data from the preceding five years).

Flood asked whether flow condition will be taken into consideration, as this would likely vary over the course of a five-year assessment cycle. Olson responded that this had not yet been discussed in the assessment group, and as yet there are no flow-related stipulations included in the assessment methodology. Olson then described some of the specifics of individual use assessments as follows:

Aquatic Life Use Assessment: Multiple biological assemblages will be utilized in the assessment including fish and macroivertebrates in all reaches, as well as vegetation in the six uppermost reaches. Scores will be calculated at individual sites and the compiled at the reach level, allowing a "good/fair/poor" statement to be made at the reach level. All indicators must be in the "good" range for a reach to be considered as meeting CWA goals. In this assessment, chemical and physical data will only be used to diagnose causes of water quality problems (i.e., the biological data is the arbiter of condition, chemical/physical data used for stressor identification). One issue to be addressed is whether using three indicators in the upper reaches results in holding these to a "higher standard" than the lower reaches.

Tim Henry noted that this approach, which relies primarily on biology, is a departure from traditional approaches to 305(b)/303(d) processes and may be different than the way states are currently categorizing the river. Olson concurred, but added that there are already many disparities in the states' listings for the river and the intent here is to actually bring the states into closer alignment by all focusing on biology.

Henry asked whether specific thresholds had been identified for chemical/physical parameters to be employed in identifying stressors. Olson responded that this had not yet been addressed in the methodology work group. Hokanson and Skuta said that it may not be necessary to identify such thresholds up front for the purposes of stressor identification, but rather look at data when biological impairment identified to determine what parameters appear to be most closely associated with the impairment (via statistical means or otherwise).

Recreation Use Assessment: *E.coli* data will be used to determine the degree to which recreation uses are supported on the UMR. Level of support will be based on *E.coli* data from 15 fixed sites, where monthly samples will be collected during the recreation season (April-October). Data from across five years of recreation seasons will be combined to calculate geometric mean and single sample threshold value (which is analogous to the "statistical threshold value" in US EPA's 2012 recommendations for recreational criteria). The US EPA 2012 recommendations (i.e., geometric mean of 126 cfu/100 ml; statistical threshold value of 410 cfu/100 ml for an illness rate of 36 per 1000 recreators) will be used as threshold values for this assessment. *E. coli* data from probabilistic sites (where *E. coli* collected alongside other parameters) will not be used in the assessment *per se*, but will be used to "ground-truth" assessments based on the fixed site data.

Linda Holst said the approach of combining data across recreation seasons may be problematic, as this may be outside the intent of the 2012 EPA criteria recommendations. Hokanson replied that the assessment group recognizes that it may need to take some novel approaches in order to craft a shared assessment and for this reason it envisions that text will accompany each use assessment explaining the assumptions and methods used in making a condition statement.

Drinking Water Use Assessment: This use will only be assessed in segments of the river where public water supply intakes exist. On the interstate mainstem UMR, this is from the Quad Cities downstream. Data from two monitoring networks will be utilized to assess this use: fifteen main stem fixed site locations and targeted monitoring near drinking water intakes. Safe Drinking Water Act maximum contaminant levels (MCLs) will be used as threshold values for the purposes of this assessment. One challenge here is prioritizing which contaminants to focus on from the MCL list of more than 80 substances.

Holst expressed concern about the use of "10%" rule in comparing results to an MCL, as this is not necessarily how MCLs were designed to be used. Hokanson concurred that this may not be the original regulatory use of an MCL, but it does provide a common starting point for the states to share and can be discussed in the text of an assessment report.

Fish Consumption Use Assessment: Fish tissue data from probabilistic sampling will be used to estimate whether a reach is meeting CWA goals for fish consumption (i.e., good, fair, poor). Both predator and bottom feeder groups will be sampled and analyzed for the presence of PCBs and mercury. One issue to be resolved is the identification of a predator species that can be used river-wide (or an alternative to the use of a single species). Thresholds used for this assessment will be drawn from states' fish consumption advisory levels.

Willhite thanked the assessment work group for their efforts. Weigel said the draft assessment methodology provides a good starting point and that it can potentially be refined by running data through the process and then adjusting as needed.

The meeting adjourned for the day at 5:00 p.m. and resumed at 8 a.m. on Wednesday, September 10.

Wrap-Up of Day 1 Discussions

Glenn Skuta revisited the issue of using three biological assemblages in the impounded UMR and two biological assemblages in the unimpounded river. Hokanson said this concern had been raised in recent discussions he had with Minnesota PCA staff. Skuta said the assemblages that apply in each reach should be utilized and this does not create an issue of "unfairness" in the assessment of the aquatic life use. John Olson and Matt Short also agreed that the WQTF should proceed in using the applicable assemblages in each reach, even if this results in a different number of assemblages being used among reaches.

In regard to the US EPA Office of Inspector General report regarding nutrients, Tim Henry suggested that one potential way to respond to the critiques in the report would be for the states to integrate the UMR monitoring strategy into their individual state strategies.

Mayors' Perspectives/Mississippi River Cities and Towns Initiative

Rebecca Flood introduced Dubuque Mayor Roy Buol, who offered his comments both as Mayor and as a co-chair of the Mississippi River Cities and Towns Initiative (MRCTI). Mayor Buol first described the Sustainable Dubuque Initiative and the city's efforts to face climate change challenges. He noted a recent $70 million upgrade to the city's waste water treatment plant which has included features such as

anaerobic digestion and methane co-generation, as well as a goal of being electrically self-sufficient. Mayor Buol also detailed a stormwater project in the Bee Branch Watershed focused on both flood protection and water quality improvements; while seeking to improve the quality of life in the watershed generally. Another project described by the Mayor was a collaborative effort with IBM to track water usage and supply data to customers. During this 12 month pilot project, a 6.6% reduction in usage was observed, leak detection and response improved, and the project has now been duplicated in other cities. Mayor Buol emphasized that these examples illustrate that action at the local level is critical to water quality and water conservation efforts; and that communities of any size can make a significant impact.

Mayor Buol next provided a background on MRCTI, which was established in 2012 with assistance from a Walton Family Foundation grant. He said MRCTI's mayors are seeking to engage in a number of issue areas related to the river, including local economies, ecosystem restoration, sustainability, maintaining cultures and history, and water quality. The Mayor noted the importance of bringing cities in to policy discussions to pursue improved protection, restoration, and management along the river. He then emphasized the importance of water quantity and water quality to the MRCTI mayors, noting that MRCTI has recently received support from the McKnight Foundation to focus on water quality and is partnering with American Water to create a Sustainable Development Fund for the Mississippi River. Mayor Buol next described the following eight MRCTI priorities tied to water quality:

1) The U.S. Army Corps of Engineers Mississippi Valley Division taking a measurable step toward managing the main stem under one general management model;

2) The Federal Aquatic Nuisance Species Task Force making reestablishing the divide between the Great Lakes and the Mississippi River a priority;

3) Funding the Pre-Disaster Mitigation Grant Program at or above $25 million for FY2016, funding the USDA Conservation Innovation Grant Program above $25 million for FY2016, funding the State Revolving Loan Funds above $2 billion for FY2016, and funding the USDA Rural Business Cooperative Grants above $50 million for FY 2016;

4) Identifying one municipal entity willing to participate in a pilot nutrient trading program brokered by a municipality and open to land owners or other entities;

5) Organizing gubernatorial efforts to coordinate policy-setting activity around nutrient standard adoption between Mississippi River states;

6) Completion of the major constituent parts of a uniform waterfront zoning code with the American Planning Association that includes baseline performance and land management guidance methods to reduce run-off and sedimentation, improve water quality, and restore habitat;

7) Establishment of a partnership between the U.S. Army Corps of Engineers and at least one university to begin the process of implementing tributary transport modeling products in the Mississippi River basin to reduce sedimentation, erosion, and better trace the origins of nutrient inputs into the main stem River;

8) The commencement of one working project between one Mississippi River community foundation and world trade center whose focus is primarily improvement of water quality and/or education around the importance of water quality.

Mayor Buol said MRCTI is ready to work with UMRBA on these and other priorities and welcomes UMRBA's guidance and participation. In particular, he noted the recent governors' letter supporting the

Navigation and Ecosystem Sustainability Program (NESP) and indicated there may be interest in also securing support from representatives of the lower river.

In closing, the Mayor noted recent incidents in the region which threatened water supplies – including the Elk River, West Virginia chemical spill and the Lake Erie algae bloom at Toledo, Ohio – as illustrating the critical importance of protecting water resources. He said MRCTI hopes to give new urgency to issues facing the Mississippi River and new strength to effectively resolve them. He also noted upcoming MRCTI meetings September 16-18, 2014 in New Orleans and March 2015 in Washington, DC.

Rebecca Flood thanked the Mayor for presenting his remarks and noted that she sees some possible commonalities in the MRCTI priorities and those of the UMRBA water quality work groups. In particular, she noted agreement with the idea that the River should be considered holistically. Mayor Buol concurred that he sees this as both a major emphasis of MRCTI and a shared value.

Dru Buntin noted the states' work on a shared Clean Water Act (CWA) monitoring strategy for the UMR, as well as upcoming UMRR-EMP leadership event to be held in Dubuque. Mayor Buol noted that MRCTI is planning to hold its annual meeting in Dubuque in 2015. Buntin suggested that the Dubuque meeting would provide an opportunity for the states to share their water quality perspectives and water quality work with the MRCTI mayors. Susan Sylvester noted that MRCTI's work has been very impressive and that Wisconsin is definitely interested in partnering with local entities in nutrient reduction activities.

Gregg Good asked if the Mayor saw value in the shared CWA monitoring strategy being pursued by the states via UMRBA. Mayor Buol responded that it appeared to be very useful, emphasizing that the cities are very concerned regarding nutrient issues and in particular the pressure on cities/point sources to continue nutrient reductions while the need remains great to address nonpoint source pollution in rural areas. He said a shared monitoring approach, and any resulting report, may be helpful in communicating to the public regarding nutrient issues. Buntin concurred that public communication is critical for these types of water quality issues. Flood also agreed that the states will continue to look for and utilize mechanisms, such as the SPARROW model, to aid them in implementing their nutrient reduction strategies.

Water Suppliers' Perspectives/Quad Cities Area Water Suppliers Coalition

Rebecca Flood introduced City of Moline Utilities General Manager Greg Swanson, and invited him to offer his perspectives on UMR water quality as well as an update on the work of the Quad Cities Area Water Suppliers Coalition.

Swanson said there have historically been attempts to organize water suppliers on the UMR broadly and in the Quad Cities specifically, but that recent events including the Elk River, West Virginia chemical spill and the MV Colby sinking on the UMR have motivated renewed collaborative efforts. He noted that the newly-formed Quad Cities Area Water Suppliers Coalition includes three municipal utilities, a private utility, and one federally-operated installation. Swanson noted the goals of the Coalition as follows:

- Enhanced spill response readiness.
- Increased understanding of potential spill sources and risks.
- Improved spill detection and monitoring capabilities.
- Improved source water protection.

- Enhanced monitoring of natural river changes.
- Enhanced communication among the Coalition members (both routine and emergency)

Swanson said the city councils of the municipalities involved have all passed resolutions in support of the Coalition. He noted the group's particular interest in emerging, real-time monitoring technologies as well as in collaboration with UMRBA and other partners. Swanson mentioned that UMRBA's Hokanson will be presenting regarding spill planning and response to an Illinois Section of the American Water Works Association webinar. He also noted that he sees data management and sharing as one of the primary challenges in collaboration on the UMR.

Flood said UMRBA's water quality work groups are also concerned with data management and are interested in any partnerships that can be developed. She asked Swanson how far upstream of their intakes utilities are typically interested in water quality conditions. Swanson replied that the upstream relevance of water quality conditions is actually one of the questions the Coalition wants to examine and it anticipates working with Western Illinois University and the University of Illinois on this to potentially model spill/contaminant transport on the River.

Flood described the likely outcome of a potential shared UMR assessment as categorizing water quality condition as "good," "fair," or "poor." She asked Swanson whether such a characterization would be useful from a public water supply perspective. Swanson replied that, in general, this would seem to be a helpful approach, but that suppliers would be interested in looking the specific parameters examined and how decisions on status are made. Willhite asked whether there are particular parameters of greatest interest to water supply systems. Swanson replied that ammonia-related compounds are definitely of interest, due to their impact on the disinfection process. He also said total organic carbon (TOC), algae, and taste & odor are leading areas of interest.

Gregg Good asked about the waters supplies' preparations related to the increased movement of oil products via rail and barge in the region. Swanson replied that water systems have developed written response plans which include contingency plans such as interconnection to other water supplies. He added that Moline in particular has a two day storage capacity which could be utilized should an intake need to be closed.

Skuta asked Swanson to further describe the real-time monitoring station maintained by the City of Moline. Swanson said this installation is located upstream from the Quad Cities and includes biological monitoring (of mussel gape behavior), a YSI multiparameter probe measuring conventional water quality parameters, and UV detection device for petroleum products. He explained that the installation pumps water up from the river's main stem and then runs this flow through the sampling devices, with additional sampling triggered as needed. Hokanson added that this installation, and others placed as part of a US EPA pilot project have demonstrated that the technology for continuous monitoring is effective, though organizational, funding, and data sharing challenges remain.

Swanson noted that Moline's City Council has stepped up in response to water infrastructure issues, having recently approved a contract for waste water system upgrades and is making efforts to address storm water challenges. Jim Fischer asked Swanson what he sees as the leading cost driver for UMR water supplies in the future. Swanson replied that TOCs are clearly a cost driver, both in terms of operational and compliance expenses, due to their linkage to disinfection byproduct formation. Fischer explained that the group is looking at potential linkages between the UMR CWA monitoring strategy and the needs of waters suppliers, and as such is particularly interested in what the suppliers see as their greatest information needs. Flood asked what the source of TOCs in the river is thought to be. Swanson replied that there are many likely contributors from the landscape.

Olson asked whether there are thresholds for TOCs or ammonia that the UMRBA water quality work groups should consider, particularly in light of assessment methodology development. Swanson did not indicate specific thresholds, but noted that TOC levels fluctuate significantly on the UMR, for Moline averaging around 6 mg/l in raw water but spiking as high as 35 mg/l. Skuta asked if the source of ammonia is known. Swanson replied that he is not aware of specific source(s) being identified, but that he can report that Moline observes significant increases in ammonia concentrations during spring snow melt. Mohsen Dkhili asked whether Moline sees seasonal variations in TOC levels. Swanson replied that increases in TOCs appear to be driven by rain events.

On a related topic, Hokanson noted that John Sloan of the National Great Rivers Research and Education Center (NGRREC) was unable to attend the meeting, but had submitted an update on the deployment of monitoring buoys as part of their Great Rivers Ecological Observatory Network (GREON). Hokanson read from Sloan's update, which noted that six GREON buoys are being deployed in addition to the single monitor established in 2013. He noted that these buoys will be placed in Pool 8 (backwater), in Pool 26 (four units), near Cape Girardeau on the Open River, and on Lake Decatur in the Sangamon River watershed. Hokanson said NGRREC also continues to work on development of their Great Lakes to Gulf (GLTG) Virtual Observatory data system and that this will focus initially on nutrient-related data. Hokanson indicated he would send along a copy of Sloan's update to the WQEC and WQTF members.

America's Watershed Initiative (AWI)

Dru Buntin explained that AWI Director Jordy Jordahl was not able to attend this meeting, but that he could provide on update on Jordahl's behalf, given his position on the AWI Steering Committee. Buntin described AWI's work to develop a report card for the entire Mississippi River basin, as well as its sub-basins, addressing issues including economy, ecosystems, flood control, recreation, transportation, and water supply. He said a draft report card would be presented at the upcoming AWI Summit in Louisville, Kentucky on September 30-October 2, 2014. Flood observed that, to the extent AWI includes a focus on water quality, there is an opportunity for ongoing partnership with UMRBA's water quality work groups.

Nutrient-Related Developments and Activities

Multi-State Regional Conservation Partnership Program (RCPP)

Hokanson described the proposal recently developed by the five UMR states under the new National Resource Conservation Service (NRCS) Regional Conservation Partnership Program (RCPP) authorized in the 2014 Farm Bill. He said the intent of the RCPP is to promote, implement, and evaluate conservation programs by building partnerships and using innovative approaches with priorities including water quality, soil health, and habitat. Hokanson said the RCPP established three funding pools: critical conservation areas (CCAs), national, and state. He added that RCPP combines four existing conservation programs and delivers assistance in accordance with the Environmental Quality Incentives Program (EQIP), the Conservation Stewardship Program (CSP), the Agricultural Conservation Easement Program (ACEP), and the Healthy Forests Reserve Program (HFRP). Hokanson said nearly $400 million in RCPP funding is available and that NRCS is seeking equal partner contribution on projects proposed for funding.

Hokanson reported that the UMR states all expressed interest in a collaborative RCPP proposal and worked to identify what could uniquely be done as a group of states. He said state agency staff participated in multiple consultation conference calls to develop a UMR multistate application. Hokanson said all five UMR states are participating in the application with Missouri serving as the lead state and UMRBA staff facilitating the process. He said the UMR states' preliminary proposal for the multistate project was submitted to NRCS on July 14, 2014.

Hokanson said the goals of the UMR multistate proposal relate to water quality, soil health, and the advancement of state nutrient reduction strategies. The interstate elements of the proposal include a shared watershed focus as well as a process for sharing information on evaluation and best practices. Each state determined the particular approach for implementation in their respective state. Illinois' focus is on soil erosion and phosphorus loss on highly erodible land in 18 UMR border counties. Iowa's focus is on statewide adoption of best management practices (BMPs) such as strip-till, no-till, nitrification inhibitor, cover crops, and bioreactors. Minnesota proposes to increase adoption of conservation practices in the Cedar and Root River watersheds. Missouri's approach targets extending adoption of cover crops on 30,000 acres as well as other conservation practices statewide. Wisconsin proposes to increase adoption of conservation practices in the Lower Rock, Black/Buffalo/Trempealeau, and Grant/Platte/Sugar/Pecatonica watersheds. Hokanson said the proposal envisions UMRBA facilitating the information-sharing provisions by way of three regional workshops during the course of the project.

Hokanson said the UMR multistate preliminary proposal requests $2.25 million in technical assistance and $14.32 million in financial assistance for a total of $16.57 million in funding primarily from EQIP. The preliminary proposal also includes $16.68 million in partner contributions from the five states and UMRBA for a project total of $33.25 million. Hokanson stressed that the figures in the preliminary application are subject to change in any subsequent full application.

Hokanson reported that on August 1, 2014 NRCS notified Missouri (as the lead state) that the project had been selected for a full proposal. NRCS received 600 preliminary applications for RCPP funding and selected 230 projects for full proposal applications. Hokanson said next steps include reconvening state agency staff, consultation with NRCS staff, and modification and finalization of the UMR multistate proposal by the October 2, 2014 deadline.

Skuta asked what the relationship is between RCPP and the Mississippi River Basin Healthy Watersheds Initiative (MRBI). Buntin replied that it appears RCPP will likely replace future rounds of MRBI funding. Fischer asked what the duration of RCPP funding is. Buntin replied that funding can be received over a five year period and Hokanson added that the multi-state proposal indeed seeks five years of funding. Tim Henry asked when funding awards for RCPP will be announced. Hokanson replied that the original announcement date was October 17, 2014, but that this may likely be pushed back given that the full proposal submission deadline had been extended by nearly a week to October 2, 2014.

State Nutrient Reduction Strategies

Wisconsin (Strategy) – Susan Sylvester reported that Wisconsin held nitrogen and phosphorus summits as part of their nutrient reduction strategy process. She said these summits have been intended as a forum where information can be shared with a number of stakeholders. Sylvester noted that the nitrogen summit had included more involvement from academic institutions and a focus on technology and research needs. Rebecca Flood asked whether the UMR states are sharing information regarding nutrient research needs. She noted that MPCA has developed a research list and suggested that UMRBA staff query the UMR states on their research activities and research needs related to nutrients and water quality. Sylvester offered to share summaries of the Wisconsin summits with the WQEC and WQTF, indicating she would send this information to Hokanson, who could then forward on to the groups.

Missouri – John Hoke said the sectors working on their component parts of the Missouri strategy have completed their work and submitted these parts to Missouri DNR. He said the draft plan will then be put out for public notice later this month with the intent of finishing the plan by the end of calendar year 2014.

Minnesota – Flood reported that Minnesota's strategy had just been finalized and that it will be formally submitted shortly. She then provided copies of the strategy's Executive Summary to the group. Flood noted that Minnesota will next develop an integration plan to guide implementation of the strategy and is considering an update to its groundwater protection strategy, which may include the creation of ground water protection districts. Skuta noted that the Minnesota Department of Agriculture (MDA) will soon be going through the rule-making process association with its Nitrogen Fertilizer Management Plan and will be targeting the most sensitive areas (i.e., Karst geology) of the state in particular.

Skuta said Minnesota's river eutrophication standards made it through all of the regulatory steps at the state level as of July 22, 2014 and will now be sent along to US EPA Region 5. He noted that this includes a site-specific standard for Lake Pepin and that MCPA plans to do a one-time comprehensive statewide assessment of river nutrients this winter. Flood added that Minnesota has also continued work to develop an aquatic life use-focused standard for nitrate as part of its triennial standards review.

Mohsen Dkhili asked what baseline nutrient level Minnesota used for the development of its strategy. Skuta replied that this varies for different basins in the state, as explained in the strategy's Executive Summary, but that for the Mississippi River, an average of 1980-1996 conditions are used.

Iowa – John Olson reminded the group that Iowa's nutrient reduction strategy had been finalized and released in May 2013. He noted that one of its goals had been issuing 20 NPDES permits per year utilizing technology-based limits as described in the strategy. Olson said this goal had been met and that the next step for these facilities is the development of feasibility studies over a two-year time period to aid implementation of treatment modifications. He noted that Clinton, Sioux City, and Iowa City also have new/upgraded plants coming on line. On the nonpoint side, Olson reported that Iowa has a work group focusing on verification measures, as well as on working on loading/load estimates. He said there has been some discussion of expanding Iowa's ambient water quality monitoring network down to the HUC-8 level or finer scale as the implementation of the strategy proceeds. Additionally, Olson mentioned the recent formation of the Iowa Agriculture Water Alliance, which includes Iowa commodity groups and is led by the former director of The Nature Conservancy's Iowa Chapter.

In regard to standards development, Olson said Iowa State University is investigating nutrient-related effects on aquatic life in Iowa lakes (i.e., the relationship between nutrient levels and fish assemblages). Also, Iowa DNR is currently working on revised recommendations for wadeable streams. Iowa hopes to work on non-wadeable streams, such as the UMR, subsequent to it work on wadeable streams.

Missouri – John Hoke noted that Missouri's previously proposed lake standards had been disapproved and that Missouri DNR is currently working on a regulatory impact report related to nutrient standards development.

Wisconsin (Standards) – Brian Weigel reported that Wisconsin's triennial standards review is currently underway and should be completed by December 2014. He noted that this review will include work on 1) anti-degradation, 2) ammonia, and 3) bacteria. Weigel went on to describe a major rule package WI DNR is working on with interrelated components as follows:

- Site-specific criteria for phosphorus, which are tied to biology. This criteria can be either more or less restrictive, dependent on the biology present (e.g., more restrictive to protect higher quality populations). This approach requires the other two elements of the package, which are:
- Codification of biological indices, and
- Refined designated uses based on models incorporating flow and temperature, and the associated ability to support aquatic life.

Because of these interrelationships, WI DNR has chosen to advance all these pieces as a single rule package and hopes to have rule language developed yet this year.

John Hoke asked whether Wisconsin has looked at more impacted urban streams and, if so, how it is choosing to address these in its criteria. Weigel replied that Wisconsin is planning to use a tiered aquatic life use (TALU) approach, which includes the categorization of various waterbodies, including highly impacted urban streams.

Illinois – Marcia Willhite said Illinois is emphasizing that its strategy is a nutrient *loss* reduction strategy, and that a draft strategy should be available in mid-October. This draft will then be available for public comment for a period of 30 days. Illinois then hopes to be able to send a final strategy to US EPA by the end of calendar year 2014.

Willhite explained that the Illinois strategy will include both interim milestones and an overall reduction goal, similar to Minnesota's strategy. She said the interim goals are a 15% reduction in nitrogen loss and a 25% reduction in phosphorus loss by 2025; with an overall goal of 45% reduction for both nutrients (in keeping with Hypoxia Task Force goal). Further, Willhite explained, the strategy will divide up actions across the point, nonpoint, and stormwater sectors. She said the strategy includes reference to the UMR monitoring strategy as well as a new eight- station, loading-focused network established in collaboration with USGS. Good said the stations in this network will be similar to the one in existence at Florence, Illinois which includes a YSI multiparameter sonde, flow measurement, and phosphate measurement. He explained that this is a six year project intended to generate approximately five years' worth of data.

Willhite said Illinois plans to have regular meetings to assess progress and make updates to the strategy at two year intervals. Tim Henry asked what baseline will be used by Illinois in its nutrient reduction strategy. Willhite replied it will be the same as that used by the Gulf Hypoxia Task Force (i.e., 1980-1996 average levels).

In regard to standards development, Willhite said Illinois has long had a phosphorus criterion for lakes, as well as a drinking water-related standard for nitrate, in place. However, the state has not had nitrogen or phosphorus criteria for flowing waters. Therefore, a science advisory group has been established to look into the potential creation of such standards. Illinois EPA plans to then follow the recommendations of this advisory group.

Gulf Hypoxia Task Force

Willhite said the next meeting of the Gulf Hypoxia Task Force will take place October 20-22, 2014 in Alton, Illinois. Buntin asked whether UMRBA/UMRBA staff should be pursuing any greater role in the Hypoxia Task Force at this time, aside from simply attending the meetings. Willhite replied that attendance is sufficient at this time.

Other Activities and Reports

Steve Kalkhoff said USGS continues to focus work on the development and use of real-time nutrient sensors, which should be an important source of information for this group in the future.

Linda Holst said US EPA Region 5 continues to work with Minnesota and Wisconsin on their nutrient criteria development, as well as with Illinois as it works on the application of its narrative criteria. She also mentioned Ohio's development of a Trophic Index Criteria which includes a stakeholder work group. In terms of standards more generally, leading issues for US EPA include ammonia criteria and investigating impacts from total dissolved solids (TDS), including potential chloride and sulfate criteria.

Hoke asked whether there is a known timeframe for the promulgation of chloride criteria. Holst replied that there is nothing definitive established, but that it is likely to be one or two years out. Hoke said the reason for his question is that Missouri is currently working on chloride and sulfate criteria but it is difficult to proceed when there is uncertainty about when US EPA's recommendations will become available.

UMRBA Water Quality Work Planning

Hokanson mentioned the following as upcoming UMRBA water quality work items, based on discussions during this meeting:

- Continuation of Minnesota-Wisconsin pilot monitoring planning, with participation and support from UMRBA staff.
- Sharing fish tissue monitoring narrative with fish consumption advisory staff, seeking in particular their input on predator species choice(s).
- Working to compile existing water quality monitoring data as part of "virtual pilot" monitoring. Likely target areas for virtual pilot are the Open River and the Quad Cities area.
- Development of proposal to McKnight foundation for review by the WQEC and WQTF.
- Completion and submission of full RCPP proposal.
- Presentation of water quality work to joint UMRBA Board-WQEC meeting in November.
- Continued collaboration with UMR water suppliers regarding monitoring strategy, assessment, and data sharing.

Rebecca Flood added two action items to this list: 1) following up with MRCTI in regard to a water quality presentation at an upcoming MRCTI meeting, and 2) gathering from the states information regarding ongoing nutrient research and nutrient research needs. Regarding MRCTI, Buntin suggested it may be worthwhile to explore how UMRBA may be able to collaborate with MRCTI on the eight water quality related priorities listed by Mayor Buol and to target their meeting in Dubuque next year for a water quality presentation.

Good asked whether the Walton Family Foundation might be a potential source of funding to support water quality work. Buntin concurred that this is an option, though he recommended the potential for McKnight support be explored first in the near term.

Flood commented that she felt the joint WQEC-WQTF meeting was very beneficial and recommended that it be pursued again next fall. Buntin concurred, adding that September seems to work well as it helps set up the joint Board-WQEC meeting in November. Glenn Skuta suggested that topics for a future meeting could include the Gulf Hypoxia Task Force Monitoring Collaborative, the recent US EPA Office of Inspector General Report, and the U.S. Water Alliance report. He also suggested that a future WQTF meeting be held in Dubuque to reciprocate for Mayor Buol's attendance at this meeting.

With no further business, the meeting adjourned at 12:03 p.m. on September 10, 2014.