



COLUMBIA RIVER BASIN
RESTORATION PROGRAM



Columbia River Basin Restoration Program Toxics Monitoring Subgroup Meeting

JUNE 18, 2024 | 10:00 - 12:00 AM PACIFIC

MEETING SUMMARY

ATTENDEES

- Robin Atlin, Colville Confederated Tribes
- Austin Baldwin, U.S. Geological Survey
- Dianne Barton, Columbia River Inter-Tribal Fish Commission
- Eleanor Bash, The Freshwater Trust
- Jennifer Bayer, U.S. Geological Survey/Pacific Northwest Aquatic Monitoring Partnership
- Stephanie Blair, Confederated Tribes of the Umatilla Indian Reservation
- Peter Brumm, U.S. Environmental Protection Agency
- Rodney Cawston, Colville Confederated Tribes
- William Clawson, The Council Oak
- Steven Corsi, U.S. Geological Survey
- Megan Dethloff, U.S. Geological Survey/Pacific Northwest Aquatic Monitoring Partnership
- Margaret Drennan, Washington State Department of Agriculture
- Sherrie Duncan, Yakama Nation Fisheries
- Collin Eagles-Smith, U.S. Geological Survey
- Maya Faber, University of Washington Tacoma
- Cindy Fields, U.S. Environmental Protection Agency
- James Fischer, U.S. Geological Survey
- Quinnell Flanagan, U.S. Geological Survey/Pacific Northwest Aquatic Monitoring Partnership
- Nadine French, Confederated Tribes of the Umatilla Indian Reservation
- Cavan Garrish, U.S. Bureau of Reclamation
- David Gruen, Oregon Department of Environmental Quality
- Paige Haxton-Evans, Oregon Department of Environmental Quality
- Abby Hendrickson, Chelan County
- Kelly Hendrix, Western Montana Conservation Commission
- Edyth Hermosillo, U.S. Environmental Protection Agency
- Sierra High-Eagle, Nez Perce Tribe
- William Hobbs, Washington State Department of Ecology
- Stan Hoffman, Washington State Department of Health
- Jeff Houser, U.S. Geological Survey

- Janell Housman, University of Montana
- Deborah Iwanowicz, U.S. Geological Survey
- Andy James, University of Washington Tacoma
- Kathi Jo Jankowski, U.S. Geological Survey
- Mark Jankowski, U.S. Environmental Protection Agency
- Kristen Jordan, Western Montana Conservation Commission
- Caroline Keever, Upper Columbia United Tribes
- Tamara Knudson, Spokane Tribe
- Lisa Kusnierz, U.S. Environmental Protection Agency
- Krista Lammers, Western Montana Conservation Commission
- Casey Lewis, Western Montana Conservation Commission
- Lauren Locklear, City of Nampa
- Kevin Masterson, Oregon Association of Clean Water Agencies
- Lauren Mcdaid, U.S. Environmental Protection Agency
- Patrick Moran, U.S. Geological Survey
- Mason Murphy, Confederated Tribes of the Umatilla Indian Reservation
- Devan Noblit, Confederated Tribes of the Umatilla Indian Reservation
- Sean Payne, U.S. Geological Survey
- Mark Peterschmidt, Washington State Department of Ecology
- Laurie Porter, Columbia River Inter-Tribal Fish Commission
- Amy Puls, U.S. Geological Survey/Pacific Northwest Aquatic Monitoring Partnership
- Laura Shira, Yakama Nation Fisheries
- Rip Shively, U.S. Geological Survey
- Cailin Sinclair, Oregon State University
- Dorie Sutton, City of Vancouver
- Marisa Trego, NOAA Fisheries
- James Tuck, Trout Unlimited
- Dan Villeneuve, U.S. Environmental Protection Agency
- Ian Waite, U.S. Geological Survey
- Kirsten Wallace, Upper Mississippi River Basin Association
- Paul Weidner, Rooted Solutions
- Ellen Woods, Oregon Department of Environmental Quality

MATERIALS

Meeting slide deck: <https://gaftp.epa.gov/columbiariver/TMS/2024-06-18/2024-06-18%20TMS%20slide%20deck%20FINAL.pdf>

To request a link to the meeting recording, email gs-crbtoxmon@usgs.gov

SCREENING VALUES

Patrick Moran (U.S. Geological Survey) gave a short update on progress for identifying screening values for the CRBRP. They have found that there are not sufficient screening values for novel compounds, and a potential starting list includes some PFAS compounds, PBDEs, phthalates, and 6PPD (EPA has released aquatic life screening values for 6PPD and 6PPDQ, see here, <https://www.epa.gov/wqc/aquatic-life-criteria-and-methods-toxics#acute>) are a top priority amongst CRBRP monitoring efforts and are the most actively monitored. The next steps for the team include identifying specific chemicals and media for which to develop values. The team will also be compiling guidance on how to generate benchmarks for these and other chemicals of concern and chemicals of emerging concern.

- Question: How many toxics monitoring programs are looking at the four toxics presented?
 - Answer: They haven't tallied the number of projects that are looking at PFAS compounds, PBDEs, Phthalates, and 6PPDs, but acknowledged it's a good idea. The effort was centered around looking at commonly measured compounds without good benchmarks.
- Comment: Will Hobbs offered to share some work by Washington Department of Ecology for freshwater aquatic life criteria for 6PPD and PFAS and other provisions for pesticide criteria. The team welcomes such input.

COLUMBIA RIVER MAINSTEM FISH TISSUE AND WATER QUALITY MONITORING PROGRAM DEVELOPMENT

Laura Shira and Sherrie Duncan (Yakama Nation Fisheries Program) presented on program development, pilot study progress, and next steps for the Columbia River Mainstem Fish Tissue and Water Quality Monitoring Program. The program was initiated to address poor fish health and poor water quality throughout the Columbia River Basin. Even after initiating monitoring efforts, those involved did not know if ongoing responses were working due to a critical lack of sufficient data, scattered data collection, lackluster collaboration between monitoring programs, and other factors that led to tracking inefficiencies. Due to these issues, it was virtually impossible to generalize data and produce trends. It was concluded that long-term, sustainable funding was needed for a long-term monitoring program with better coverage and priority contaminant analysis.

The proposed solution is the Columbia River Mainstem Fish Tissue and Water Quality Monitoring Program. Acting as a monitoring effort and data repository, it will be an unbiased and permanent way to monitor toxic substances and evaluate status and trends within a single information system. The program has a three-phased approach, with phase one complete, and phase two in progress. There is no funding for phase three,

which includes implementing monitoring programs, confirming program leadership, securing long-term operations funding, etc.

UPPER MISSISSIPPI RIVER MONITORING PROGRAMS

Kirsten Wallace (UMRBA), Jeff Houser (USGS), and Kathi Jo Jankowski (USGS) on two complementary multi-state monitoring programs on the Upper Mississippi River - the Upper Mississippi River Basin Association (UMRBA) water quality monitoring program and the Upper Mississippi River Restoration Program's Long Term Resource Monitoring element.

UMRBA is a governor-level instate organization for multi-purpose management. A board member is appointed by the governor of each state. Made up of five states and other partners and stakeholders, UMRBA agrees to manage parts of the Upper Mississippi River for ecological and navigational purposes. Their mission is to facilitate cooperation and dialogue between participating states and stakeholders. UMRBA's Water Quality Program timeline was presented and included a history on the interstate program and Clean Water Act monitoring and assessment efforts. The Association has been able to pull together data on the success of ongoing efforts and found that the Clean Water Act has been successful in the Upper Mississippi River, but that other contaminants continue to be discovered and known contaminants, such as chloride, seem to be increasing. Additionally, the political backing of the program is important since it helps with funding and the acceptance of the results by the public. The 503(c) structure allows for shared ownership, political acceptance, and flexibility in their work.

The Upper Mississippi River Restoration (UMRR) program is a multi-agency partnership and is made up of two elements —Long Term Resource Monitoring (the focus of the presentation) and Habitat Rehabilitation and Enhancement Projects (which will not be discussed further). The focus of the Long Term Resource Monitoring Program (LTRMP) is to understand the status and trends of the river ecosystem and provide information that will inform decision making and how the river should be managed. The main topics monitored are water quality, aquatic vegetation, and fisheries, and the long-term changes to each. The program has a coordination team, sessions for strategic planning among partners and an ability to scale monitoring systematically by location and parameter type as funding levels change over time. A biennial science meeting is held to discuss research projects. Fixed and stratified random sampling design is used in which the main channel, side channel, backwater lakes and others are the strata. Sampling is done at the mouths of tributary rivers to evaluate upstream loading.

- Question: What are the funding levels that the UMRBA program receives? How much is federal and how much from the five states?
 - Answer: States contribute slightly over \$20k annually and then more dedicated resources for each monitoring implementation. USEPA funding is grant-related and therefore is incremental.
- Question: What are the Lower Mississippi River states doing?
 - Answer: The Lower Mississippi does not have equivalent programs, but funding has recently been included in Water Resources Development Act to build capacity across states, and there are other coordinating groups like the Lower Mississippi River Conservation Committee. Additionally, the Lower Mississippi River System is fundamentally different for many reasons, including

methodology, historical and institutional context, public use and involvement, and politics. It will likely take more time and perhaps a triggering event for the Lower Mississippi River to have a similar program(s) to the Upper Mississippi.

- Question: Does the data go into WQX?
 - Answer: The UMRBA water quality monitoring is loaded into WQX. For LTRMP WQ data, the fixed site data are in WQX, the stratified random sampling data are not. For SRS, the sample sites are redrawn from the population of possible sites for each sampling episode, which does not lend itself to be compatible with WQX.
- Question: What management action has resulted from the chemical increases in the Upper Mississippi River? Who is responsible?
 - Answer: USACE is not responsible, and the responsibility is with individual states. UMRBA passed a resolution several years ago to take cooperative action on chloride. There are several more local and state-level efforts as well.
- Question: How have the long-term trends been used for management decisions?
 - Answer: Data was used to develop a phosphorus TMDL for Lake Pepin. Also, groups have worked to collect and analyze sulfate data to help inform river-specific standards for wild rice, supporting nutrient reduction strategies through providing data/analysis.
- Question: Do you have any insights to share on identifying actions and looking at effectiveness of actions?
 - Answer: UMRBA can connect the management agencies and then through UMRR there's a way to think about how that affects their habitat projects, and we continuously work on integrating that science to inform where and why to do restoration and what that means for ecological processes. An example is the information that came out of chloride trends; the states had been thinking about chloride in specific areas, but then to see it's a basin wide program, that led the states to have UMRBA's board representatives - the governor's delegates – endorse a chloride resolution on more learning and monitoring, but also then doing something about it and investing in ways to reverse trends. We've presented the nutrient information and the sediment information to the Hypoxia Task Force and to the states so that they can think about what is working and use that and bring that back to their stakeholders and agriculture community. We've also presented to the Nonpoint Source Policy Council, to say wastewater treatment plans and sediment control measures are working, but we need to focus more efforts on then the in-ground filtration part of nitrogen. So, it's it has been helpful in terms of focusing priorities and creating leadership energy around issues. More generally, the information coming out of the long-term monitoring program has improved how people understand the river and has resulted in much more informed conversations.
- Question: You talked about overlap in the Clean Water Act polices, listings, and TMDLs. In a multi-state environment when you have different listing policies and probably even different water quality criteria that may impact assessments and other things, how did you deal with that? Was there a unifying agreement or policy to help make some of the data being collected relevant to water quality assessments?
 - Answer: we're very clear in acknowledging that the work we do is not to interfere with the states assessments but provide them with data that can help inform their assessments and they can do what they want with the data. And it's important because it might take a while. We might have very clear information that would suggest a criteria or threshold, but they still need to go through

their individual state legislatures to do that. So, if we have the information there and we can use it, that's what's most important. And then we can work with the states to take advantage of those windows of opportunities to move their states in different positions. But to have that happen and bet on that for five states at the same time is unrealistic, so we just try to move the needle as we can. Even though it's a slow process, it's still really important, and having UMRBA as an external coordinating force has been key.

- Question: Was UMRBA started after data collection began by Upper Mississippi River Restoration (UMRR) Program?
 - Answer: UMRBA started in 1981 and one of the first tasks we did, in addition to a detailed monitoring of water quality conditions, was to advocate for the UMRR, which then was authorized in 1986.

PRIORITIZING CONTAMINANTS OF ECOLOGICAL CONCERN IN GREAT LAKES TRIBUTARIES

Steve Corsi (USGS) and Dan Villeneuve (EPA) presented on integrated chemical and biological effects monitoring in Great Lakes tributaries and associated prioritization strategies. Over the course of a 10-year research effort and several hundred monitoring sites across the Great Lakes, researchers found a majority of the contaminants they were monitoring for (organic waste contaminants, pesticides, PAHs, etc.). After chemical surveillance efforts, they needed to understand which chemicals and which areas of the Great Lakes to prioritize. They created specialized guidelines and benchmark values for toxicity and hazard levels from existing literature and ECOTOX. The additional use of ToxCast allowed them to further understand the potential biological effects of the chemicals and what effects different chemical mixtures could cause.

They were able to organize and prioritize certain chemicals based on their levels of concentration and their level of concern. The current prioritization goes beyond the three hazard estimates used previously, now with the inclusion of pharmaceutical potency and chemical properties. After prioritizing through a stepwise process, they found only a small number of high-priority chemicals, with many falling into the "medium concern" category. Sites were also prioritized using the approaches discussed.

One research hurdle was that it is easy to monitor known chemicals and evaluate existing toxicities, but there are complex mixtures and unknown contaminants that researchers do not know to look for. However, by using an effects-based monitoring approach, in which researchers instead observed possible biological effects to zero in on their causes (through *in vitro* screening and *in situ* exposure) they were able to further conclude specific chemical effects. One significant item of note is to be sure to think through data management and integration prior to large scale sampling.

- Question: Did the chemical surveillance survey contain legacy contaminants like Hg, metals, or PCBs? If not, why?
 - Answer: There were relatively few legacy contaminants. Other Great Lakes monitoring programs regularly survey legacy contaminants; this effort was focused primarily on "emerging contaminants."
- Question: How were various tributaries selected for sampling?

- Answer: This effort tried to sample a variety of land uses and site types in consultation with local USGS members instead of a random selection. Additionally, there were multiple agencies involved and each had a different rationale for site selection. This effort started with the national monitoring program sites for initial monitoring. After that, an initial prioritization of chemical classes was done, which focused on individual chemical classes. For these efforts, sites were chosen based on a perceived gradient of potential contamination from the chosen chemical class.
- Question: How is the priority list of CECs being used to inform management decisions in the region?
 - Answer: In the case of PAHs, the work has led to source-control legislation in many municipalities.
- Question: If these contaminants and hazards were being studied in commercial products for public consumption, like fresh produce, packaged foods, and medical devices, would they be using the same benchmarks, risk assessment approaches, and timelines? For tribal people, these fishes and waters are First Foods, so I am wondering how the risk assessment process can better reflect this reality.
 - Answer: The effort was not a risk assessment effort, but a risk-based prioritization effort. We didn't do a lot of fish monitoring in our work and the fish monitoring that was done did not sample the consumable part of the fish – liver tissue not muscle. So, our data sets are not designed for getting at things like fish consumption advisories. It wasn't the nature of the type of work that we are doing and what we were being asked to monitor.
 - Comment: Perhaps the methods that were used for the prioritization process could be useful for us to look at. ToxCast methods are intended for public health uses, for example.

ONLINE RESOURCES

- UMRBA water quality program web page: <https://umrba.org/focus-area/waterquality>
- UMRBA interstate water quality monitoring (CWA) web page: <https://umrba.org/interstate-water-quality-monitoring-program>
- Link to the report: Ecological Status and Trends of the Upper Mississippi and Illinois Rivers <https://pubs.usgs.gov/publication/ofr20221039>
- Link to complementary, preceding report that might be of interest to some: Indicators of Ecosystem Structure and Function for the Upper Mississippi River System: <https://pubs.usgs.gov/of/2018/1143/ofr20181143.pdf>
- Habitat Needs Assessment that was based on natural resource professionals assessment of the condition as reported in the report immediately above: <https://umrba.org/sites/default/files/documents/HNA%20II%20Management%20Perspectives.pdf>
- Link to Upper Mississippi River Restoration program (UMRR) homepage: <https://www.mvr.usace.army.mil/Missions/Environmental-Stewardship/Upper-Mississippi-River-Restoration/>
- Link to Long Term Resource Monitoring element (LTRM) homepage: <https://umesc.usgs.gov/ltrm-home.html>
- LTRM publications page: https://umesc.usgs.gov/reports_publications/ltrmp_rep_list.html
- Contaminants of Emerging Concern in the Laurentian Great Lakes: [https://setac.onlinelibrary.wiley.com/doi/toc/10.1002/\(ISSN\)1552-8618.great-lakes](https://setac.onlinelibrary.wiley.com/doi/toc/10.1002/(ISSN)1552-8618.great-lakes)
- Assessing Contaminants of Emerging Concern in the Great Lakes Ecosystem: A Decade of Method Development and Practical Application : <https://setac.onlinelibrary.wiley.com/doi/10.1002/etc.5740>