Abstracts

Wednesday, April 30

Session F2: Bridging the Gap: Diverse Strategies for Better Decision-Making

8:00 – 9:30 am | Room 262

Toward Sustainable Water Information: Are Existing Water Monitoring Data Sufficient to Make Scientifically Sound Water Policy Decisions?

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Abstract
Public concern over development issues that could affect water resources, such as hydraulic fracturing, agricultural runoff and urban development raise an important question: is the Northeast-Midwest region's water monitoring system adequate to support decision making? "Toward Sustainable Water Information", a cooperative partnership between the Northeast-Midwest Institute and the United States Geological Survey, is exploring the availability of multi-agency water monitoring data to support decision-making in the Northeast-Midwest region of the United States. The study focuses on stream and groundwater quality, streamflow, and macroinvertebrate monitoring data collected by Federal, state, and local programs, and addresses water issues of interest to policy makers in two case study regions. The case studies will describe the water quality data necessary to inform a specific policy question for each issue, assess whether those data are currently available, and identify any additional data that may be needed to address the policy questions. The first case study looks at nutrient enrichment in the Lake Erie basin (MI, IN, OH, PA, NY), which has resulted in large-scale harmful algal blooms. It is investigating data needed to address the policy question "How effective are Best Management Practices (BMPs) at reducing nutrients from nonpoint sources at the watershed scale?" The second case study looks at shale gas extraction in the Susquehanna River basin (NY, PA, MD), which has raised questions about potential impact on water quality. This case study investigates data needed to address the question "Do shale gas development activities contaminate ground water or surface water?" This objective and science-based analysis will provide insight into the types of data the Northeast-Midwest region as a whole might need and describes the extent to which available data in the network of Federal, state, and local monitoring programs might be collectively used to support decision making. The project ultimately seeks innovative, feasible and science-based monitoring approaches that will support regional policy decisions and safeguard the region's water resources into the future.

Partnering to Establish a Sustainable Biological Monitoring Program

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Abstract
Since 1995, the Charles River Watershed Association (CRWA) has successfully employed citizen scientists to collect water quality samples and take field measurements on a monthly basis. This program played an integral part in the successful Charles River cleanup by helping to locate major pollution sources, track restoration efforts, and measure seasonal and weather influences on water quality. In a time of shrinking budgets, it is challenging to find funds simply to maintain this program, let alone expand and sustain it. However, in 2013, CRWA was able to add a low-cost, sustainable biological monitoring component to our existing volunteer program through a successful partnership with the Freshwater Ecology Lab at the University of Massachusetts Boston (UMB). By capitalizing on CRWA's strong network of volunteers, intimate knowledge of the watershed, and deep background in water

quality investigation and UMB's technical knowledge and expertise in biological monitoring, our team was able to use minimal resources to establish a program that can successfully be maintained by CRWA.

The CRWA/UMB biological monitoring program uses volunteers to conduct the EPA Rapid Bioassessment habitat sampling methodology and a citizen science [Stream biotic index (SBI)] biomonitoring index to measure water quality of wadeable streams. UMB is analyzing samples according to the State of Massachusetts (MA) biomonitoring index protocol which involves identifying invertebrates below family taxonomic level. UMB will compare the volunteer SBI results with the higher level MA protocol analysis to provide a basis of comparison between the two. This will help CRWA assess the accuracy, usability and comparability of volunteer-collected data. Through this project, our team has also been able to successfully connect with officials at the Massachusetts Department of Environmental Protection to discuss use of volunteer data in state watershed assessments. CRWA and UMB will share their experience in working together, describing the roles each group played and how the strengths and weaknesses of both a small non-profit and a large university can be combined to build a strong and successful partnership. This successful collaboration can serve as a model for many other organizations looking to do more with less.

The Water Quality Framework

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Abstract
The Clean Water Act Sections 303(d) and 305(b) require the states to assess and report to EPA every other year on the water quality within the state. As part of these reports, states must also identify waters that are impaired (not meeting water quality standards) and identify which pollutants are causing those impairments. For these waters that are listed as impaired, EPA and the states also develop pollution budgets or Total Maximum Daily Loads (TMDLs). EPA and the states invest a significant amount of resources in meeting these requirements using a combination of paper and electronic submissions. In the most recent ICR for the 303(d)/305(b) program, it is estimated that the state burden alone is $193 million a year.

The Water Quality Framework (Framework) is a new way of thinking about how EPA's water quality data and information systems can be better integrated to more effectively support water quality managers and meet program goals. The Framework will streamline water quality assessment and reporting, eliminate paper reporting and provide a more complete picture of the nation's water quality by allowing for tighter integration with data at the local, state, and national scale. The Framework will start by focusing on better integrating three systems: 1) EPA's water quality monitoring repository (STORET and the Water Quality Exchange), 2) EPA's Assessment TMDL Tracking and Implementation System (ATTAINS), and 3) EPA's surface water mapping tool (the National Hydrography Dataset Plus -NHDPlus). Following the integration of these systems, further integration is possible with other water programs such as: water quality permits, enforcement and compliance, source water protection, and nonpoint source projects.

EPA has already taken steps to improve this process by developing automated approaches for capturing water quality monitoring data via the Exchange Network and subsequently publishing that data in coordination with the USGS via web services in the Water Quality Data Portal (http://www.waterqualitydata. us/). The next step is to evaluate the assessment process to improve automation and alignment with the program priorities.

Evaluating the Representative, Accuracy and Potential Use of Facility Wastewater Discharge Information for Toxic Chemicals in the Mid-Atlantic Region

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Abstract
The two major sources of information on US facility discharges of toxic chemicals to surface waters are the Discharge Monitoring Reports (DMR) required under the National Pollutant Discharge Elimination System in the Clean Water Act and the Toxics Release Inventory (TRI) required under the Emergency Planning and Right to Know Act (EPRCA). A pilot study was conducted in the Mid-Atlantic Region of the US to evaluate the precision, accuracy, representativeness, completeness, and potential use of information submitted to the DMR and TRI data systems using an online analytical tool.

The DMR Pollutant Loading Tool allows comparisons of DMR and TRI data, identifying omissions of information under each system for further follow-up, and highlighting pollutant releases to impaired waterbodies as well as the pollutants contributing to waterbody impairment.

This study identified large data quality submission errors, substantial differences in reporting of the same chemicals by the same facilities to the DMR and TRI Programs, potential omission of reporting under the DMR or TRI program, and potential industry sectors reporting large quantities of toxic chemicals in the DMRs that are not currently required to report under TRI. In most cases, toxic pollutant discharges calculated using the DMR data are higher than those in TRI which may indicate an under-reporting in TRI, but may also be due to data quality issues or different reporting requirements.

We identified several uses for this tool including to 1) improve quality of the DMR and TRI data, 2) identify potential compliance and enforcement actions under each program, 3) recommend additional chemicals and industry sectors for the TRI program, 4) provide a voice for stakeholders and citizens to correct data errors, and 5) gain understanding of the sources of point source pollution in US waterways and the relationship with sources and causes of impairment.