

Abstracts

Wednesday, April 30

Session G7: Developing and Using Local and Regional Water Quality Data Exchanges

10:00 – 11:30 am | Room 231

The AL-MS-KY Multi-State Configurable System: Promoting Data Consistency and Comparability, Improving Efficiency, and Reducing Costs of Managing State Agency Water Quality Monitoring Data

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Abstract

Management of water quality data is a significant challenge for state agencies dealing with ever-changing needs for compiling, reviewing, and analyzing data to support decision-making with increasingly limited resources and staff. In 2008, Alabama Department of Environmental Management (ADEM) demonstrated their newly developed data management system, ALAWADR, at a regional state biologists meeting. After discussions and further demonstrations, Mississippi (MDEQ) and Kentucky (KDOW) decided to adopt this system to meet similar needs to bring water quality data from different state programs into a single comprehensive data management system. Both states have been able to focus efforts and money on state-specific requirements and new capabilities, such as more tools for data assessment and incorporating more types of biological data. ADEM began benefitting when the other states enhanced the system and reported back on what they had done. In 2013, EPA Region 4 became involved in supporting and facilitating a more formal collaborative structure for the group and the “Multi-State Configurable System” was born. A formal structure and a direct line communication with EPA data management personnel has allowed the group to work with better focus on sharing system enhancements and planning for the future. The collaboration also allows the states to benefit from a collective set of skills and expertise not found in any one state. ADEM was able to successfully write a grant for system enhancements that included funding for multiple in-person work meetings of the MSCS, the first of which was held in October 2013. Three posters in this session show the basic details of the state systems and selected features developed by each of the states.

WaDE: An Interoperable Data Exchange Network for Sharing Water Planning and Use Data

Sara Larsen

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Abstract

Whether addressing population growth, national security, drought, climate change, or meeting our growing energy needs, questions surrounding water availability in the West will only increase and become more important in the coming years. The Water Data Exchange (WaDE) is a project initiated to assist state water agencies to answer these kinds of local, regional, and national water availability questions more easily, more sustainably, and more cost effectively. In 2011, the Western States Water Council (WSWC), in coordination with the Western Governors’ Association (WGA), the Department of Energy (DOE) National Laboratories, and the Western States Federal Agency Support Team (WestFAST), initiated the WaDE project to enable the exchange of water planning, water use and water allocation data between state water agencies, federal agencies, and the public. The goals of the project include the establishment of a governance structure, the evaluation of the current capabilities and methods used within the states, the design of a common format (*i.e.*, data schema) that specifically targets derived water data products and/or water-quantity type information, database and web service design and development, and implementation within state IT environments.

WaDE employs an innovative, distributed data framework, wherein partners control and maintain datasets locally (ensuring that published data are the best available), while making them discoverable via a centralized web mapping application and web service requests. The data are transferred using platform-independent eXtensible Markup Language (XML), which can be automatically incorporated into other models or products. The implementation of WaDE will dramatically increase the availability of water quantity-related information, both from state and eventually federal partners. It will also directly support national water security efforts and better decision-making by agencies pursuing an integrated water resource management approach. The project itself serves as a model for other parties interested in developing and sharing specific datasets using a distributed, real-time retrieval mechanism.

Calamari or Compliance? New Mexico Combines Water Quality and CWA 303(d)/305(b) Reporting to Make “SQUID”

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Abstract

Surface water quality monitoring consists of a wide variety of field and laboratory data, which can be received in numerous formats, but ultimately must be reported to national databases for 303(d) and 305(b) purposes. Data collected by New Mexico Environment Department’s (NMED) Surface Water Quality Bureau (SWQB) during rotational watershed surveys includes field and laboratory physical/chemical data; flow data; long-term data sets using thermographs and sondes; fish, benthic macroinvertebrates, periphyton, and phytoplankton; and habitat and geomorphic data. For many organizations that collect water quality data, multiple databases are used to house these data, resulting in duplication of work and wasted time, or the need for such a system prioritized.

In 2009, NMED’s SWQB and IT Department developed a water quality database (called NMEDAS) to improve internal data storage and reporting, as well as to streamline uploading data to the US Environmental Protection Agency’s (EPA) Water Quality Exchange (WQX). Using EPA Exchange Network Grant funds, NMED combined NMEDAS and NM’s version of the Assessment Database (ADB) in 2013 to create New Mexico’s Surface water Quality Information Database (SQUID). SQUID houses both water quality data and associated 303(d)/305(b) designated use attainment conclusions based on the water quality data in one Oracle® database schema. A variety of custom reports have been built into SQUID to assist with data verification and validation, assessment, and preparation of NM’s CWA 303(d)/305(b) Integrated List. Using SQUID, NM is now able to electronically report assessment conclusions to ATTAINS via the OWIR Central Data Exchange (CDX) data flow.

SQUID has resulted in improved uniformity and consistency in data management and reporting and is an essential tool for NMED SWQB’s Monitoring, Assessment, and Standards Section in order to meet CWA 106 grant deliverables. The combined database allows monitoring staff to upload data which can be directly accessed by assessment staff. With all staff working within the same system, and electronic reporting of assessment conclusions, errors due to crossing between separate databases are limited, or altogether avoided, saving time and energy. [Working Together for Clean Water 35 Abstracts – Wednesday](#)

Using Cloud Computing to protect Ecology, Economy, and Tradition through the Wild Rice Wetlands Water Quality Data Sharing Project

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Abstract

For many tribes in the upper Great Lakes Basin, wild rice is a very important resource from traditional, economical, and ecological viewpoints. Tribes have various programs and methodologies for monitoring the water quality and the rice production in the wetlands where wild rice is found. However, tribes don’t necessarily use common procedures resulting in common metrics that can be compared and/or aggregated. Furthermore, tribes don’t have a good way to share and analyze data and have almost no mechanisms for collaborating regarding the data. Many tribes have no effective way to show water quality changes over time compared to a baseline data set.

The Wild Rice Wetlands Water Quality Data Sharing Project is designed to address these problems. Using a combination of agreed-upon procedures and Information Technology, the project will establish common measures and will employ a web-based database application for capturing, analyzing, and sharing the data. Consortium members will be able to use the web-based system to consult with their peers regarding their data without having to email files of data back and forth. With the data in a single database, researchers will be able to view and analyze the data from an aggregate perspective; thus giving them the tools they need to obtain a broader perspective of the wild rice situation over time. Members will be able to include each other’s data when performing analysis with reports, graphs, and maps.

The key enabling IT technology for this project is the Ambient Water Quality Monitoring System (AWQMS), which has been used by the Fond du Lac Environmental Program for several years. A major task of the project will be to aggregate historical datasets and import them into the AWQMS database. The web-based AWQMS application will be provided via “the cloud” for consortium members. Using AWQMS, members will be able to collaborate with and assist one another to load, analyze, and interpret their water quality information. Furthermore, members will be able to share data outside of the consortium via the EPA’s Water Quality eXchange (WQX) on the exchange network.