# Abstracts

Wednesday, April 30

## Session I6: Data Management Approaches for Diverse Monitoring Groups

3:30 – 5:00 pm | Room 232

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### *Using an Environment Information Lifecycle Framework to Improve the Quality and Sharing of Data and Information*

**Wayne Davis[1] and Roy Chaudet[2]**
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**Abstract**
An Environmental Information (EI) Lifecycle has been used to provide a framework to identify opportunities to improve the quality, exchange and sharing, access, and use of environmental information for tracking environmental progress, decision-making, and setting policy for water quality management. Realizing that it takes many different types of professionals (*i.e.*, citizens, lawyers, bureaucrats, policy makers, scientists, chemists, IT specialists, etc.) to turn data into information will uncover opportunities to improve the quality, access, and use of the information. The general elements of the lifecycle include Program and Policy Planning, Data Collection, Information Exchange and Management, Information Access and Use, and Public/Stakeholder Feedback. An example for water quality programs will be provided.

Program and Policy Planning is one of the lifecycle elements and sets the direction for any information collected, exchanged, accessed, and used. This set of activities is typically based on regulations and guidance to carry out regulatory requirements for each environmental program. Data Collection is the second element and includes a data collection program plan that identifies quality objectives and major activities, methods, and procedures for collecting key environmental indicators. Information Exchange and Management include data that is transmitted or exchanged and managed in data systems where it may be accessed and used by all pertinent stakeholders. This allows stakeholders to access, share, and more fully use environmental information. Information Access and Use involves stakeholders finding, understanding and using environmental information. Electronic interfaces may be used to retrieve information that is stored and made accessible to pertinent stakeholders to ensure agencies fulfill their obligation to make sure their data and information is well documented, clearly understood, and can be used by stakeholders to further their participation in decision making. Public/Stakeholder Feedback and participation in all aspects of the environmental information life cycle will facilitate cooperation and improvements in the quality and use of the data. In fact, allowing the public to question the data and information, provide their own data for consideration, and receive a response to each of the requests, will ultimately result in greater accountability, reduction in pollutant releases and improvements in data quality.

### *The Kentucky Interagency Groundwater Monitoring Network: A Collaborative Effort in Groundwater Resource Characterization*

**Bart Davidson[1] and Robert Blair[2]**
[1]*Kentucky Geological Survey, Lexington, Ky.,* [2]*Kentucky Division of Water, Frankfort, Ky.*

**Abstract**
The Kentucky Interagency Groundwater Monitoring Network (hereafter referred to as “Network”) had its early beginnings in June of 1995 with a series of meetings held by several members of state, local, academic and federal agencies that were involved in collecting groundwater information for Kentucky. These meetings resulted in the establishment of what is now known as the Interagency Technical Advisory Committee (ITAC), a group of 12 agencies that assist with oversight of the Network. A detailed framework document was compiled by ITAC in April of 1996, outlining a plan to characterize the groundwater resources of Kentucky by obtaining ambient or baseline

sample data from wells and springs, review and summarize the data collected, and distribute the results by various means, including the Kentucky Groundwater Data Repository (KGDR).

Legislation for the Network and the ITAC committee was enacted in 1998, through KRS 151.625 and KRS 151.629, respectively. The Kentucky Division of Water (KDOW) obtained funding from the Clean Water Act House Bill 319 to sample about 60 sites (wells and springs) on a regular basis for bulk parameters, nutrients, major and minor inorganic ions, metals, volatile organics and caffeine. These sites are considered ambient groundwater sites, representative of background (or baseline) water quality values. Other regional groundwater-quality studies have been conducted by KDOW and the Kentucky Geological Survey (KGS) and are considered part of the Network initiative.

The KGDR, initiated in 1990 by the Kentucky Geological Survey under mandate from the Kentucky legislature (KRS 151:035), was established to archive and disseminate groundwater data collected by State agencies, other organizations, and independent researchers. All data gathered through the Network is entered on a quarterly basis. The KGDR database currently contains information for over 92,000 water wells, 5,100 springs, and over 58,000 suites of water-quality analyses. It features two main search engines, one for water well and spring data, and another for groundwater-quality data. All data can be displayed on topographic or aerial photography base maps.

This presentation will review the history of the Network and how Network data are disseminated online via the KGDR.

***Developing an Interactive Database for Volunteer Stream Monitoring Results***

**Justin Stratton[1], Bob Lentz[2], Donna McCollum[3] and Lynn White[4]**
[1]*Davey Resource Group, Kent, Oh.,* [2]*Butler County Storm Water District, Hamilton, Oh.,* [3]*Miami University, Oxford, Oh.,* [4]*Butler Soil and Water Conservation District, Hamilton, Oh.*

**Abstract**
The Butler County Stream Team is a volunteer water monitoring group that collects and analyzes stream samples from ~140 sites in Butler County each month. The group is jointly organized by Butler Soil and Water Conservations District, Butler County Storm Water District and Miami University's Institute for the Environment and Sustainability, but relies heavily on community volunteers for collection and analysis of water samples. Because volunteers are involved, timely feedback on sampling results are important as they want to see the results of "their" sites. Through the Davey Resource Group, a searchable database program has been made available on the Stream Team's website. The website presents all sample sites on a Google map, which allows volunteers to find a site, as well as learn more about neighboring sites. Once at a sample site, the user can view the comprehensive sample history for the site as well as generate a variety of graphs. The system includes data entry mechanisms, so the data set is dynamic, and can be updated moving into the future. Initial reaction of the volunteers has been very positive, and we hope the visualization of their data will help them appreciate the importance of their contribution to this ongoing effort. Our presentation will include a demonstration of the website, some example reports and graphs that have come from sample histories, as well as some thoughts on our experience on implementing this interactive database.

***Managing Spatial Data: The FlexiGrid Experience***

**Revital Katznelson**
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**Abstract**

The FlexiGrid concept was introduced in 2008 as embodied in a simple, MS Excel based spreadsheet that maps all the components of a spatial, multi-dimensional flexible sampling frame and connects each monitoring Result to the exact spatial component wherein it was measured (Katznelson, R., 2008. The FlexiGrid: a universal spatial

sampling frame. *in: Proceedings of the sixth National Monitoring Conference of the National Water Quality Monitoring Council*, "Monitoring: Key to Understanding our Waters", May 18-22, 2008, Atlantic City, NJ.). The FlexiGrid system can serve different kinds of protocols from any area of inquiry that requires spatial representation of a monitoring Result, and it can easily derive most types of calculated Endpoints (*i.e.*, metrics, indices, and descriptive statistics). The FlexiGrid concept can be implemented in a data structure that allows for reporting of (1) any type of Result (raw data or calculated Endpoint) that were generated for (2) any spatial component (or any aggregate of identical spatial components) at (3) any scale, even on a single database table. Unlike the rigid data management systems currently in use by major Agencies, the FlexiGrid system is extremely adaptable to changes in data collection protocols, even within the course of a single project. Moreover, FlexiGrid spreadsheets can be easily 'crosswalked' to the language and business-rules of any receiving database. The FlexiGrid system has been used by the San Francisco Bay Region and the North Coast Region of the Surface Water Ambient Monitoring Program (SWAMP) in a number of stream bioassessment studies over the years. It provided an easily-adapted, small-scale tool for management of physical habitat data and for derivation of multiple Endpoints by project personnel, independently of any IT support. This paper describes the tools developed for the following functions: (a) data entry into a template that captures all raw data; (b) streamlined calculation of Endpoints; and (c) data transfer using a "crosswalk" built into the Data Entry template that provides for seamless migration of raw physical habitat data, via a recently-developed upload template, into the SWAMP database. The potential use of the FlexiGrid tools by citizen monitoring groups and other small entities will also be discussed.