Wednesday, May 2

Session D1: Developing Local, Regional, and National Water Quality Data Exchanges

Room A105
8:00 – 9:30 am

0332
D1-1

The National Ground Water Monitoring Network: Design, Piloting, and Implementation

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The Advisory Committee on Water Information (ACWI) Subcommittee on Ground Water (SOGW) was formed in 2007 to develop and encourage implementation of a nationwide, long-term groundwater quantity and quality monitoring framework to provide information necessary for the planning, management, and development of groundwater supplies to meet current and future US water needs and ecosystem requirements.

The SOGW accomplished this mission by designing a collaborative National Ground Water Monitoring Network (NGWMN) through Federal, Tribal, State, nongovernmental organization, private industry, and academia volunteers. The NGWMN is populated by partner data providers who evaluate their wells and the associated data within NGWMN requirements. The NGWMN has progressed through the design and pilot phases of work, and the network implementation phase is in progress. The NGWMN design scope, completed in 2009, includes water levels and water quality from US principal and major aquifers. This design is described in detail in the NGWMN "Framework Document."

The pilot phase tested the NGWMN design during 2010. Five pilots in six states evaluated wells within principal and major aquifers, well measurement and/or sampling frequency, field practices, database elements, and data management procedures. Each produced a report that included this evaluation along with estimates of overall network costs, benefits, and proposed Framework changes. The pilot phase demonstrated that a collaborative NGWMN is feasible. An Internet data portal is a key element to the success of a NGWMN. The pilot portal created a single location for compiling and distributing groundwater levels, quality, and associated metadata to the public from distributed databases located within participating agencies through a map interface.

The implementation phase is in progress. Initially, implementation includes improvements to the NGWMN portal, updates to the "Framework Document" based on pilot results, and gradual addition of data from volunteer states and the US Geological Survey. Full implementation will require new federal funds and provide many benefits, including a single, consistent dataset from which to evaluate the status of the Nation's aquifers and shared interstate groundwater resources, an opportunity to share data among state agencies, and an impetus for a critical review of field and data-management procedures by data providers.

0546
D1-2

Implementing an Organization-Wide Advanced Sampling Data Management System at the New South Wales Office of Water

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Water management in New South Wales (NSW) is becoming more sophisticated as greater demands are placed on the finite resources. Various water monitoring programs have been designed and adapted to provide the necessary information to describe the quantity, quality, distribution and variability of NSW' water resources to meet these management challenges. In order to overcome the challenges of water quality data management in NSW a new solution had to be developed.

The New South Wales Office of Water (NOW) contracted KISTERS to implement a new organization-wide advanced sampling data management system to replace their 15 year old in-house water quality system with a modern commercial package – KiWQM. KiWQM is designed for the efficient and effective management, analysis, and reporting of sampling data, which comprises water quality, ecological analysis and air quality. KiWQM's capabilities cover a wide range of functions and calculations used for the analysis, interpretation and comparison of sampling data. Furthermore, through the implementation of

ESRI's ArcGIS Engine users are also able to manage, access and analyze data from a spatial perspective.

KiWQM also comprises a sophisticated task management system and alarm management system that allows lab results to be automatically imported into the system - on a predefined schedule or event triggered and then alarmed upon if potential water quality or algae issues arise as soon data is reported.

A main focus of the implementation of the new system for managing water quality samples was the seamless integration with the existing NOW systems, in particular Hydstra, which is applied for handling all time series data. Data can also potentially be published to Hydstra/Web or exported to the Australian Bureau of Meteorology (BOM).

The new system includes more than 20,000 sampling stations, 500,000 samples and 3.5 million analysis results. The data migration is now complete, and as of June 2011 KiWQM is now available to staff from a variety of New South Wales government departments that deal with water quality data.

0148
D1-3

The California Environmental Data Exchange Network (CEDEN): A Statewide Water Quality Monitoring and Visualization System for California

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The California Environmental Data Exchange Network (CEDEN) is a developing system designed to facilitate integration, standardization and display of water quality data for California. Working with four Regional Data Centers (RDCs) data providers representing dozens of federal, state, local, nonprofit and private organizations contribute geospatially referenced data. These water quality data are available for exchange, integration, assessment and visualization via web-based query and map visualization tools. Additionally, CEDEN supports question-driven information themes through the California Water Quality Monitoring Council's "My Water Quality" web portals. CEDEN systems are built using commercial and open source technologies ensuring effective data exchange between participating organizations and to the public. The system is designed for two-way data exchange with the US Environmental Protection Agency's National Water Quality Exchange Network (WQX). Future work will include development of additional geospatial visualization and assessment tools internally and with partner organizations whose systems are powered by the CEDEN.

0452
D1-4

Cloud Based WQX Implementation for Tribal and Volunteer Communities

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For many smaller water programs, the goal of implementing an exchange network flow can be daunting if not impossible. The challenges of installing and maintaining a local data management system, an XML generation tool, and an exchange network node can be out of reach for programs that don't have the necessary resources and IT support. For these programs, adopting a cloud based computing platform can resolve many if not all of these challenges. Through a cloud computing solution, users can eliminate the need to develop their own custom database solution, to purchase the necessary hardware and software licenses, and to depend on internal IT support to keep their system up and running.

Gold Systems has developed a cloud based implementation of the Ambient Water Quality Management System (AWQMS) that has been adopted by programs across the country. In addition to resolving their WQX compliance requirements, the cloud based AWQMS system has helped these programs to streamline local data management, improve data analysis capabilities, and to simplify data sharing both with the EPA and other regional partners. The cloud based AWQMS environment is cost effective, easy to use, and has allowed these water programs to focus more resources on utilizing their data to produce desired environmental outcomes and less on the administrative aspects of building, supporting, and maintaining a local WQX solution.

During this presentation we will discuss the benefits as well as the challenges of the cloud based approach for volunteer, tribal, and

state water programs. Topics discussed will include implementation, security, data migration, training, user support and maintenance of the WQX solution. All project outcomes will be reviewed from both a programmatic and financial perspective.