



Member-Agency Case Study

RBDMS.NET for Water: Assessing the Effects of Fossil Fuel Extraction on Watersheds

REMIEDIATING AND RESTORING WATERSHEDS

Overview

States: OH, PA, NY

Business Situation

The GWPC is partnering with the ODNR to create a data management system to store and analyze the laboratory data provided by coal operators to comply with requirements for pre-mining characterization of background hydrologic conditions, and quarterly monitoring and NPDES reporting.

Solution

Phase 1 of RBDMS for Water is a .NET/SQL Server application with an integrated GIS. Phase 2, now in development, will Web-enable the application for automated reporting from third-party laboratories. Phase 3 work in NY and PA will extend the program to track the effects of hydrofracturing.

Benefits

- E-transfer of lab data
- 3-click report creation
- Improved decision-making
- Transparency to the public through Web reporting

RBDMS for Water extends the RBDMS family of software programs into water quality, laboratory information management, produced water management, and water quantity assessment. The application is used to manage surface water, ground water, and waste stream quality (e.g., oil field brine, associated waste and acid mine drainage) data associated with mining operations to evaluate permit applications and application revisions. Phase 2, now underway, will allow oil and gas and mine owners and their laboratory consultants to refer to the database through a Silverlight Web application to track compliance with water information reporting requirements. In Phase 3, the GWPC will extend this work to track the effects of hydrofracturing in New York and Pennsylvania.

Situation

The Ohio Department of Natural Resources views RBDMS for Water as a mission-critical tool that will significantly improve the ability of the agency and its watershed partners to access and analyze water quality data and the confidence and speed with which program decisions are developed.

The ODNR processes and files over 76,000 water parameter tests provided by coal operators to comply with requirements for pre-mining characterization of background hydrologic conditions, QMR, and NPDES reporting. The agency also manages significant volumes of hydrologic data associated with its Coal Regulatory and AML programs. Each year, the ODNR laboratory conducts over 25,000 parameter tests that are used for the following purposes:

- Assessing hydrologic consequences of mining operations.
- Responding to citizen complaints near mining operations.
- Developing strategies to prevent and/or treat acid mine drainage (AMD).
- Developing AMD abatement and treatment plans to remediate mining-impaired waters.
- Monitoring long-term success of AMD treatment systems.

Solution

The internal agency portion of the RBDMS for Water application is a .NET WinForm application that encompasses the laboratory information management system, water quality, source water assessment components, and links to the other databases. This application features an integrated

PROTECTING WATER QUALITY

“Being able to overlay sampling locations with laboratory results within the boundaries of watershed project or source water protection area helps all stakeholders protect water resources.”

Scott Kell, ODNR
Deputy Chief

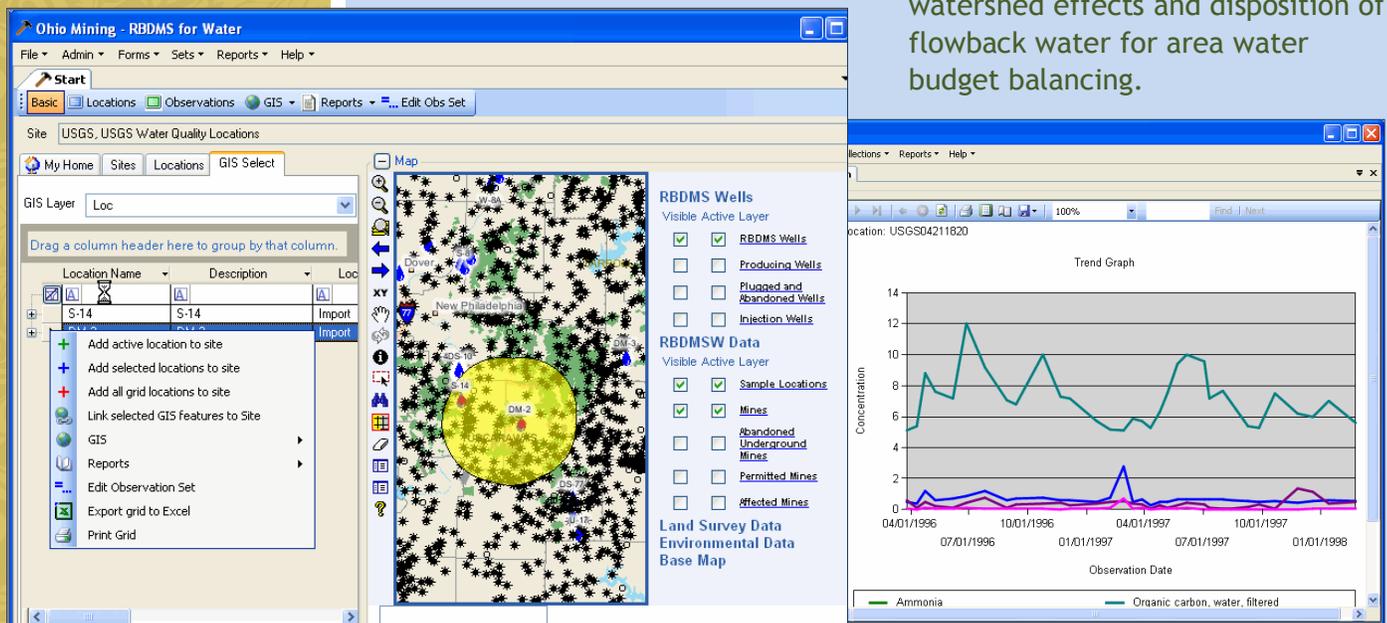
GIS and statistical and graphical reporting system. Historical data import, compliance tracking, and sample collection and analysis are also included in the Phase 1 application.

In Phase 2, which is underway now, the electronic data deliverable will be developed to be compatible with the EPA’s schemas for water quality, as appropriate for data exchange with laboratories and other state and federal agencies (Example: <http://www.epa.gov/storet/wqx.html>). The RBDMS for Water application will be Web-enabled with a Silverlight/ASP.NET interface, and a Web service will be created and installed to work with the Windows client application to receive data from third-party laboratories.

The application will track organic, inorganic, and physical water quality parameters and water source data such as well and spring construction details, water well test data, surface

sample source details, surface water flow measurements, waste stream source details, and abandoned and active mine source details such as seeps, impoundments, sediment ponds, and underground mine intercepts. Aquifer, watershed, usage categories for ground and surface water, and geographic information also will be tracked, as will laboratory and field test methods and observations. Sophisticated workflow and automated notifications to flag the occurrences of regulatory deadlines, permit violations, and analytical parameter exceedances are features of the application.

Phase 3 enhancements of RBDMS for Water will help agencies address specific concerns about the impacts of hydrofracturing. Among these will be the chemicals used in fracturing fluids, background water quality measurements, points of withdrawal, and amounts withdrawn, along with post-fracture monitoring for watershed effects and disposition of flowback water for area water budget balancing.



Innovative means of grouping locations, analysis parameters, and observation results also allows users to create and display varied formats of reports with as few as three clicks.