ROLLA WATER RESOURCES LUNCHEON SEMINAR

Thursday, September 15, 2011
1:00 p.m. – 2:30 p.m.
U.S. GEOLOGICAL SURVEY
1400 INDEPENDENCE ROAD
ROLLA, MO 65401

Use of SPARROW Models to Determine the Spatial Distribution and Sources of
Nutrients in Streams throughout the Great Lakes
and Mississippi River Basins
Dale M. Robertson
U.S. Geological Survey, Wisconsin Water Science Center

To address eutrophication problems in the Great Lakes and Gulf of Mexico, such as hypoxia and excess algal growth, targets were established for nutrient loadings, and TMDLs are being developed for many locations. Because detailed nutrient and flow data are not available for most locations, it is difficult to determine where the largest nutrient sources originate and what are the main sources of the nutrients. To fill the gaps left by sparse monitoring data, SPARROW (SPAtially Referenced Regression On Watershed attributes) models were developed for phosphorus (P) and nitrogen (N) for the Great Lakes and Mississippi River watersheds. SPARROW model results are used to: 1) estimate total P and N loads to each Great Lake and from the entire Mississippi River basin, and estimate loads from each of the major tributaries and river basins (from the U.S. contributing area); 2) rank individual tributaries and major river basins based on total loads and relative yields; 3) determine the relative importance of each of the major sources of P and N (atmospheric, point sources, fertilizers, manure, fixation, and forested and urban lands) to the loadings; and 4) compare the yields and sources among major river basins. To forecast potential changes in nutrient loads associated with various future climate change and land-use change scenarios, a regional model (HydroSPARROW) is being developed which links SPARROW with several water-quantity models. A web-based decision support system (DSS) will be described that provides access to SPARROW simulation results and offers scenario testing capabilities for research and water-quality planning via a graphical user interface.

Friday, September 16, 2011
11:00 a.m. – 12:30 p.m.
UNIVERSITY OF MISSOURI—SCIENCE AND TECHNOLOGY
216 MCNUTT HALL
ROLLA, MO 65401

The Role of Science in the Long-term Rehabilitation of Delavan Lake
Dale M. Robertson
U.S. Geological Survey, Wisconsin Water Science Center

Excessive nutrient loading to Delavan Lake, Wisconsin, resulted in the lake becoming hypereutrophic with severe blue-green algae blooms and a fishery dominated by rough fish. One of the most extensive rehabilitation efforts ever conducted was implemented from 1990–1993 to improve the lake's water quality and fishery. The efforts were extremely successful and resulted in the lake becoming oligotrophic and dominated by game fish. Much of the improved water quality was short-lived because nutrient loading could not be adequately reduced. Even with the high nutrient loading, water clarity remains relatively good because of the biomanipulation and changes in the food web. Changes in water quality continue to occur because of changes in nutrient loading and the invasion of zebra mussels. Efforts continue to improve the water quality of the lake.

---Next Luncheon—
NEED A SPEAKER!!!!!!
Thursday, October 20, 2011 11:45 AM – 1:00 PM

Park in the USGS south lot (free parking) and enter the visitor entrance in the southwest corner of the building. For those of you attending the meeting from outside Rolla, you can find directions to the USGS Rolla Center at: http://mcmcweb.er.usgs.gov/. The Rolla Water Resources Luncheon is a Brown Bag Lunch event. For those unfamiliar with the area and disinclined to brown bag it, you can find take-out options offerings among the Rolla restaurants found at: http://mcmcweb.er.usgs.gov/rollamap09ext.pdf