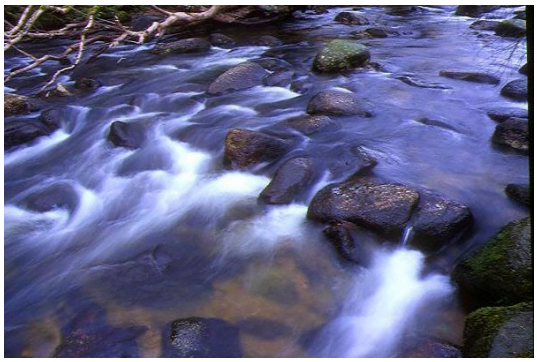

The Vermont Water Resources and Lake Studies Center

A Brief History...and a Look Ahead

The Vermont Water Resources and Lake Studies Center at the University of Vermont is one of 54 institutes established by Congress through the Water Resources Research Act of 1964. Throughout its history, the Vermont Water Center has served the citizens of Vermont by supporting research on major issues of concern to the state, by distributing information on water resources throughout Vermont, and by helping to educate students about water resources.

In 2006 the Vermont Water Resources and Lake Studies Center entered an exciting new partnership with the Vermont Agency of Natural Resources to focus on issues related to River Corridor Management. This new partnership is continuing and complements the Center's recent efforts to produce new knowledge and tools that will help resource managers, policy makers, and local residents understand how to better manage our valuable water resources. Recent developments on several projects in this initiative are summarized below.

Serving Vermont

…through USGS-supported research on relevant state-wide water issues

Past land use, including extensive deforestation and agriculture has stripped riparian vegetation and loaded riparian soils with high levels of nutrients such as nitrogen and phosphorous. With over 7000 miles of waterways in Vermont these sediment and nutrient deposits are important potential sources of water pollution. This research examines what makes some banks stable and other banks fail over both time and changing river and groundwater conditions. The goal is to develop a reliable quantitative model of stream bank slope stability. This project has been developed in conjunction with the state River Management program and will be used to inform their Stream Geomorphic Assessment initiative.

A large portion of the phosphorus that enters streams in the Lake Champlain Basin is associated with surface runoff and sediment, especially from riparian zones. Local concentration of soil phosphorus, site-specific hydrology, and chemical processes within riparian soils control the amount of soluble phosphorus that enters these streams while erosion of stream bank soils adds sediment and phosphorus to streams directly. In either case, it is important to quantify phosphorus levels in riparian soils in different soil and landscape conditions. Few studies in Vermont or the Northeast have explicitly investigated phosphorus levels of riparian zone soils and sediments. The results from this research are of direct interest to local resource managers and the state **River Management Program**.

The **Vermont Agency of Natural Resources' River Management Program** has recently developed protocols to conduct remote sensing and field-based assessments that provide a scientific basis for river management. These assessments summarize extensive data on land use, land cover, habitat, and geomorphic condition of streams and rivers. The data set currently includes information on ~1000 miles of stream and river reaches throughout the state. Researchers in the **Vermont Water Resources and Lake Studies Center** are working closely with staff from the state River Management Program to develop and test Artificial Intelligence techniques that will help water resource managers integrate data from this database to support projects designed to reduce fluvial erosion hazards and to protect and restore river habitats

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Long-term streamflow records exist for most of Vermont's larger rivers; however, few records exist for the smaller streams that are typically impacted by stormwater runoff from urban, suburban, and recreational developments which are becoming more commonplace in the Vermont landscape. There is an urgent need, therefore, to collect precipitation and streamflow data for both impaired and attainment watersheds, to produce comparable data for analysis of development effects on stormwater runoff. . The **Vermont Water Resources and Lake Studies Center** is working with the **Vermont Agency of Natural Resources Stormwater Program** to produce data that can be used to guide policy and management decisions.

The **Vermont Water Resources and Lake Studies** Center has been collaborating with the **US Environmental Protection Agency**, the **City of South Burlington Vermont**, the **Winooski Conservation District** and **local stakeholders and residents** in an innovative new project called *Redesigning the American Neighborhood (RAN)* which is focused on to better managing the impacts of stormwater runoff from residential developments. The RAN project is providing a blueprint for other communities to follow as well as valuable information to agency stakeholders who have to management stormwater runoff to protect the environment but also to allow economic development.

The **Vermont Water Resources and Lake Studies Center** has a strong program of **outreach to local stakeholders, communities, and schools** on important issues related to water resources management. For example, scientists from the Water Center are working with campus planners from the University of Vermont to help the university lead by example in developing effective ways to reduce storm water impacts. We meet with neighboring communities to assist them as they struggle to meet their obligations as Phase II regulated storm water municipalities. And we participate actively in state and regional government initiatives to manage the valuable water resources upon which we all depend.

For more information visit our web site at http://www.uvm.edu/envnr/vtwater or contact

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