

The Pennsylvania Water Resources Research Center



About the Center...

The **Pennsylvania Water Resources Research Center (PaWRRC)**, founded in 1964, is one of 54 federally funded state and territorial water research centers and institutes nationwide designated to conduct a research and technology transfer programs. The Center operates under the authority of the Water Resources Research Act of 1984 and in cooperation with the U.S. Geological Survey, U.S. Department of the Interior. The Center has three objectives:

- To plan, facilitate, and conduct research to help resolve local, state and national water resources problems.
- To train water scientists and

engineers through participation in water resources research and outreach.

- To promote technology transfer and the dissemination and application of research results.

With a focus on water problems pertinent to Pennsylvania and the mid-Atlantic region, research areas include water quality and quantity management, hydrologic model development and assessment and fate and impact of pollutants. The center maintains a fully equipped and staffed inorganic water quality laboratory. A water resources extension specialist, employed jointly by the center and the College of Agricultural Sciences, serves as a liaison between scientific and technological community and the public.



Location...

The PaWRRC is located in the Land and Water Research Building on the University Park campus of the Pennsylvania State University, which is home to the Penn State Institutes of the Environment (PSIE). PSIE is an amalgam of several institutes and centers at Penn State with a focus on environmental problems.

Recent Research Activities...

Using an annual allotment of \$85,000, the PaWRRC provides administration and funding for a program of small grants in support of exploratory water resources research, public education, and training. Funds are provided on a 2:1 non-federal: federal matching basis. Recently funded projects during 2003 are summarized below.

Spruce Creek Watershed Keystone Project

This proposal supports an interdisciplinary team of graduate students and faculty engaged in watershed assessment and planning on Spruce Creek basin in central PA as part of a Keystone Project of the Center for Watershed Stewardship at Penn State. The entire Spruce Creek

watershed is designated as a High Quality-Cold Water Fishery by the PADEP Chapter 93 Water Quality Standards. However, a major tributary was recently listed as impaired for suspended solids by the PADEP 303(d) list, attributable to agriculture and land development activities.

Students will help collect water quality and flow data for use in development of a watershed management plan to rectify current problems. The Keystone team will organize a series of community stakeholder input meetings. A day-long watershed planning workshop of experts will be convened in Spring 2004 to review and critique the proposed pollution abatement recommendations

developed by the student team and to develop strategies for implementation of management practices. These recommendations would be presented at a public forum at the completion of the Keystone Project in April 2004.



Using Crumb Rubber Filtraton for Ballast Water Treatment

The objective of this research being conducted at the Penn State Capital Campus is to investigate the application of crumb rubber filtration for ballast water treatment. Discharging ballast water from ships causes many water resource problems in Pennsylvania, especially in Lake Erie, the Susquehanna River, the Delaware River, and their tributaries. When non-indigenous species (e.g., Zebra mussel) are introduced to a new water body in ballast water, aquatic ecosystems are often significantly impacted. Conventional sand/anthracite filtration is not economically feasible for ballast water treatment due to its heavy weight and low production efficiency. The crumb rubber filter allows greater depth filtration and greater filtration rates. The lower weight of crumb rubber filters permits use in mobile and/or in-vessel treatment facilities for ballast water filtration.

Development of Passive Treatment System Monitoring and Research Program

The focus of this project is the evaluation of the long-term performance of various types of passive acid mine treatment systems within the Slippery Rock Creek



Watershed by scientists and students with Grove City College and Restoration Inc. The quality of the headwaters was documented in 1970 by Operation Scarlift to be heavily impacted by abandoned mine drainage. To date, 15 passive treatment systems have been constructed within the project area including every major type of component, such as vertical flow ponds, aerobic wetlands, anoxic limestone drains, open limestone channels, and horizontal flow limestone beds. Even though the passive systems are low maintenance, periodic inspection and monitoring are needed. Decreasing effectiveness in water treatment over time will also be documented in order to improve the design of future passive systems.



Water Conservation Training and Public Education

Recently passed water-use legislation in Pennsylvania has focused on water conservation as an important tool for future management of the state's water supplies especially during droughts.

This project would increase public knowledge of water conservation and water use issues through education programs delivered by trained Cooperative Extension Agents at Penn State with water conservation publications and displays. A two-day in-service program related to water conservation education would be delivered to approximately 25 Extension agents from Pennsylvania. The program will include presentations and field trips on drought, water use, home water conservation, youth water conservation education, landscape water conservation, water re-use, agricultural water management, river basin water management, and western water conservation experiences.

How to obtain more information...

PaWRRC maintains a web site at www.pawatercenter.psu.edu that describes water research and outreach programs at Penn State. Additional information on Penn State's environmental research, education, and outreach is available on the PSIE web site at www.environment.psu.edu.

Information about water and environmental research also may be obtained from:

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