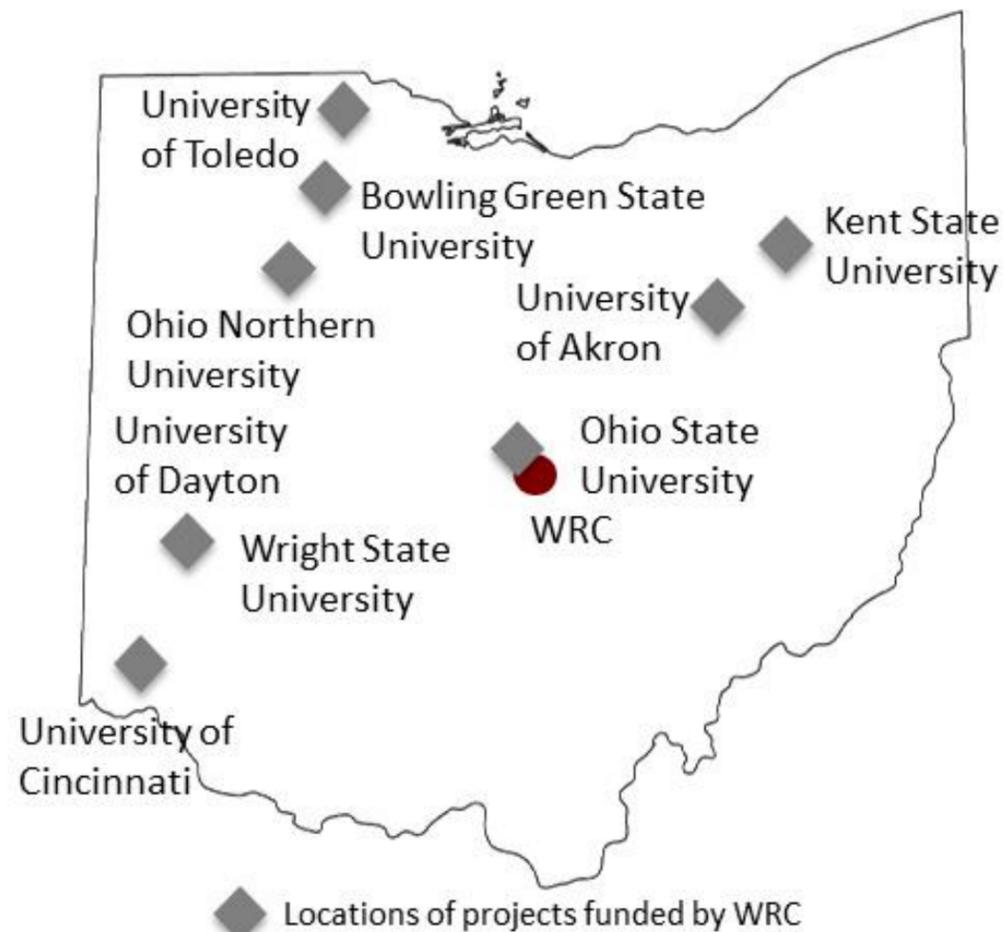


# State of Ohio Water Resources Center



## Funded Universities



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### Executive Summary

As a National Institutes for Water Resources (NIWR) institute, the Water Resources Center (WRC) is the federally-authorized and state-designated Water Resources Research Institute for the State of Ohio. The WRC promotes innovative, water-related research in the State of Ohio, and educational outreach activities.

### Partnerships

Water Management Association of Ohio  
Ohio River Basin Consortium for Research and Education  
Clean Waternet (Ohio-based startup)  
Ohio Water Development Authority  
Ohio Sea Grant

Ohio Environmental Protection Agency  
Office of Energy and Environment at The Ohio State University  
Ohio Department of Natural Resources  
University Council on Water Resources



# 2011 - 2012 Activities

# FY 2011 by the Numbers

## WATER SUPPLY & TECHNOLOGIES

Drinking water and wastewater treatment are fundamental requirements for all Ohio residents, but they come at a cost. Water treatment membranes clog with bio-films, requiring cleaning and eventual replacement. Arsenic occurs naturally in Ohio groundwater, a water source for 40% of the residents, sometimes at concentrations above the EPA allowable threshold. WRC researchers work to ensure that drinking water supplies and wastewater technologies are safe, reliable, efficient and cost-effective.

### Sample Projects

- Modeling drinking water distribution networks - Dominic Boccelli, UC
- Understanding arsenic release to groundwater - John Lenhart, OSU
- Developing novel biologically-inspired membranes - Isabel Escobar, UT
- Indicating sewage contamination with caffeine - Christopher Spiese, ONU



## WATER & ENERGY

Energy production depends upon a continuous supply of water while at the same time water treatment and distribution require significant energy. Power generation is the single largest water use category in the state of Ohio. In 2010, 75 percent of reported water withdrawals came from 41 power facilities. WRC researchers work to identify feasible methods of harnessing water for renewable energy generation, and to minimize the environmental impact of water and waste from coal and shale extraction.

### Sample Projects

- Generating energy from waves on Lake Erie - Ethan Kubatko, OSU
- Remediating coal mine drainage using microorganisms - John Senko, UA
- Water management during shale gas development - Zuzana Bohrerova, OSU



## ALGAL BLOOMS & NUTRIENTS

In 2011, all 1301 extended beach closures lasting more than six consecutive weeks in Ohio were attributed to harmful algal blooms. Each closure represents a significant economic loss for the state. Methods to treat urban runoff, like constructed wetlands, sometimes have unintended consequences. WRC researchers work to identify the specific nutrient sources and to better predict and manage these algal blooms.

### Sample Projects:

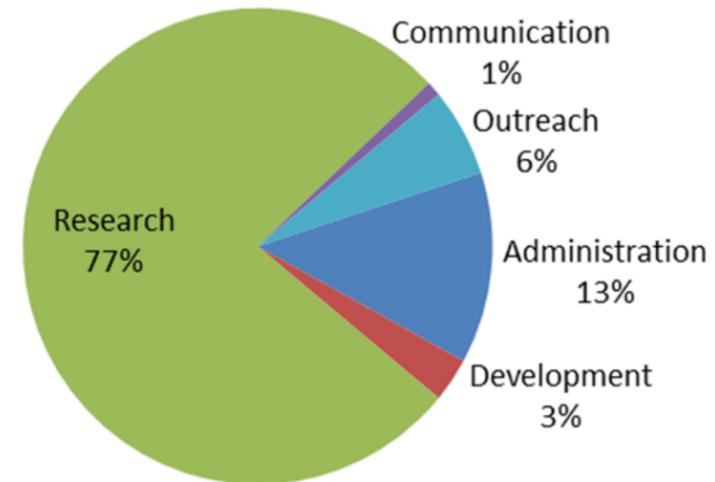
- Quantifying methane release from wetlands - Paula Mouser, OSU
- Developing microsensors to detect microcystin - Dion Dionysiou, UC
- Characterizing microcystin degrading bacteria - Xiaozhen Mou, KSU
- Tracking of toxic microcystins - George Bullerjahn, BGSU



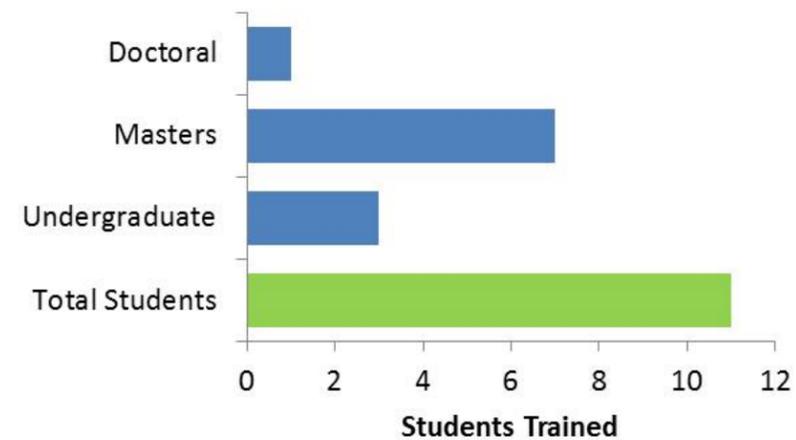
## Finances

Federal funding: \$98,918  
 Non-federal: \$484,574

Expenditures (based on non-federal)



## Education



## Outreach

Sponsor of OWEP and Project WET—water education program for teachers and students in grades K-12

Participant of Central Ohio Children's Water Festival - organized by the City of Columbus, educating 5th graders about water and water treatment

