Urban Landscapes Capability Team

Northeast Region

CAPABILITY TEAMS

The Northeast Region of the U.S. Geological Survey (USGS) has created the Urban Landscapes Capability Team (ULCT) to improve the sharing of methods, resources, and personnel among Science Centers and its partners in Federal, state, and local agencies and organizations. The ULCT helps build relationships among scientists, technicians, students, and specialists studying urban environment interactions in order to provide the best science to the Nation. The USGS operates Science Centers in every state and that provide state-of-the-art impartial scientific expertise through collaborative programs on local, regional, and national scales.

OBJECTIVES

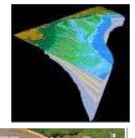
The ULCT serves as a resource to assist the Region and its Science Centers for developing regional science programs that provide technical support on impacts of urban development on water resources and ecosystems. Specific objectives include:

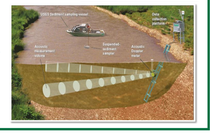
- Build expertise to help communities understand their natural resources and effects of urbanization
- Develop expertise in the effects of climate change and natural disasters on urban waters and ecology
- Interface with other Federal agencies
- Create a technical vision for urban waters science
- Support the Urban Waters Federal Partnership

RESOURCES

The USGS develops and employs complex water-resource monitoring, modeling, and GIS applications.

- Real-time monitoring
- Long-term data collection networks in most urban areas in the Northeast
- Advanced technologies
- Labs leading the way in research and analytics of trace levels
- Automated sampling
- Empirical modeling

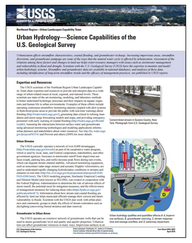


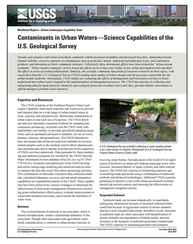


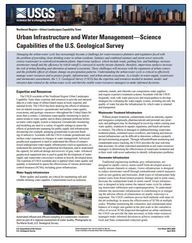
USGS data are served to the public via data reports, publications, and the National Water Information System—
http://waterdata.usgs.gov/nwis

SCIENCE TOPICS

- **Contaminants in Urban Waters**—urban water quality; contaminant loading (TMDLs), trends, and sources; and assessment of BMPs
- **Urban Hydrology**—groundwater flooding, coastal and inland inundation of urban areas, geomorphology and streamflow in and around urban centers
- **Urban Development and Stream Ecosystem Health**—study of land-use and development that affects water and ecosystems
- **Urban Infrastructure and Water Management**—assessment of water supply and wastewater treatment, low-impact development, and resiliency
- **Urban Geology and Hydrogeology**—assessment of aquifer artificial storage and recovery, geophysical properties, and geothermal effects and potential







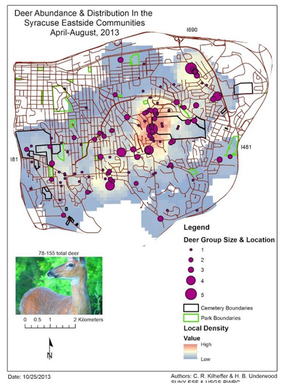
Capabilities in Urban Environments

The USGS conducts unbiased studies in urban areas throughout the country to support management decisions necessary for protecting life, the environment, and property.

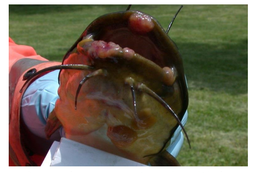
Identifying trace levels of human-derived contaminants, such as pharmaceuticals and personal care products, in waters influenced by development

Real-time monitoring of nutrients and other water-quality parameters to inform Total Maximum Daily Loads regulations

Assessing water-quality and ecological health of compromised ecosystems



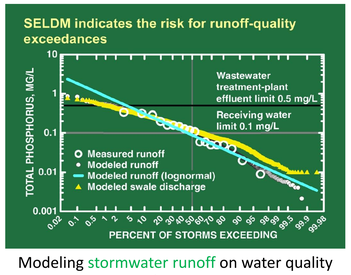
Wildlife response to urbanization



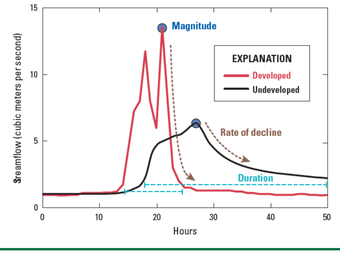
Assessing ecosystem health in response to urbanization

Continuous monitoring of urban streamflow for early flood warning

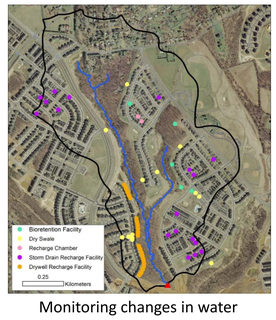
Monitoring changes in groundwater in response to pumping for public supply



Modeling stormwater runoff on water quality and quantity



Assessing effects of inundation from major coastal storms in urban areas



Monitoring changes in water quality and quantity in response to implementation of Best Management Practices

Poster by: Shawn C. Fisher and Amy E. Simonson

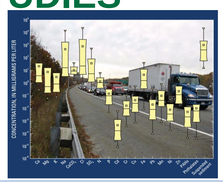
FEATURED STUDIES

New England WSC

Quality of Stormwater Runoff Discharged from Massachusetts Highways, 2005–07

U.S. Geological Survey SIR 2009-5269

Kirk P. Smith and Gregory E. Granato



New York WSC

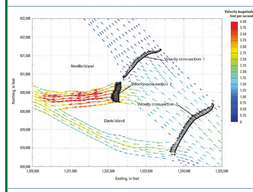
Pharmaceutical Formulation Facilities as Sources of Opioids and Other Pharmaceuticals to Wastewater Treatment Plant Effluents

ES&T, 2010, 44 (13), p. 4910–4916
doi: 10.1021/es100356f
Patrick J. Phillips and others

New Jersey WSC

Method to Support Total Maximum Daily Load Development Using Hydrologic Alteration as a Surrogate to Address Aquatic-Life Impairment in New Jersey Streams

USGS SIR 2013-5089
Jonathan G. Kennen and others



Pennsylvania WSC

Calibration of a Two-Dimensional Hydrodynamic Model for Parts of the Allegheny, Monongahela, and Ohio Rivers, Allegheny County, Pennsylvania

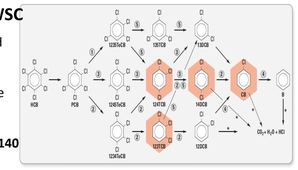
U.S. Geological Survey SIR 2013–5145

John W. Fulton and Chad R. Wagner

Maryland-Delaware-DC WSC

Hydrogeologic characterization and assessment of bioremediation of chlorinated benzenes and benzene in wetland areas, Standard Chlorine of Delaware, Inc. Superfund Site, New Castle County, Dela., 2009–12

U.S. Geological Survey SIR 2014–5140
Michelle L. Lorah and others



Virginia-West Virginia WSC

Streamflow, Water Quality, and Aquatic Macroinvertebrates of Selected Streams in Fairfax County, Virginia, 2007-12

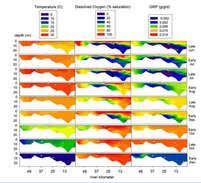
U.S. Geological Survey SIR 2014-5073
John D. Jastram

Great Lakes Science Center

Testing the thermal-niche oxygen-squeeze hypothesis for estuarine striped bass

Environ. Bio. of Fishes, 2015, 98 (10), p. 2083-2092
doi: 10.1007/s10641-015-0431-3

Richard T. Kraus and others



Eastern Geographic Science Center

Urban base flow with Low Impact Development

Hydrological Processes (in press)
doi: 10.1002/hyp.10808

Aditi S. Bhaskar and others

MEET THE TEAM

New England Water Science Center

Gregory Granato	Hydrologist
James Coles	Ecologist

Eastern Geographic Science Center

Aditi Bhaskar	Student Hydrologist
Kristina Hopkins	Research Physical Scientist
Daniel Jones	Physical Scientist

New Jersey Water Science Center

Zoltan Szabo	Research Hydrologist
Pamela Reilly	Hydrologist

New York Water Science Center

Karen Murray	Ecologist
James Tucci	Student Hydrologist
Brett Hayhurst	Hydrologist
Corey Saile	Hydrologic Technician
Simonette Rivera	Hydrologic Technician
Stephen Terracciano	Deputy Center Director
Irene Fisher	Hydrologist
Shawn Fisher	Hydrologist
Amy Simonson	Hydrologic Technician
Robert Welk	Student Hydrologist
William Capurso	Hydrologic Technician

Patuxent Wildlife Research Center

Harold Underwood	Biologist

Great Lakes Science Center

Peter Esselman	Nearshore Landscape Ecologist

Pennsylvania Water Science Center

Tammy Zimmerman	Supervisory Hydrologist

Virginia Water Science Center

John Jastram	Hydrologist
Kenneth Hyer	Chesapeake Bay Study Director

Maryland-Delaware-District of Columbia Water Science Center

Bob Shedlock	Emeritus (Hydrologist)
Rosemary Fanelli	Student Hydrologist
Edward Doheny	Supervisory Hydrologist
Joseph Bell	Hydrologist
Emily Majcher	Contractor

Midwest Region

Kevin Richards	Center Director (Iowa WSC)
William Selbig	Research Hydrologist (Wisconsin WSC)
Ralph Haefner	Deputy Center Director (Michigan-Ohio WSC)
Tim McHale	Science Coordinator

Southwest Region

Dave Hester	Geographer

Geosciences and Environmental Change Science Center

Mark Drummond	Geographer
Eugene Schweig	Center Director

USGS Headquarters

Jack Epstein	Emeritus (Geologist)
Randall Orndorff	Supervisory Geologist
Cherie Miller	Technical Specialist, Office of Water Quality
Doug Yeskis	Program Coordinator
Daniel Hippe	Associate Director (Northeast Region)
Peter Murdoch	Northeast Region Science Advisor
Vivian Nolan	Northeast Region Science Coordinator

U.S. Department of the Interior

Lisa Pelstring	Urban Issues Advisor

CONTACT

For more information, visit
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or email the Team at *GS-NE_ULCT@usgs.gov*