TWRI 2019

ANNUAL REPORT

Helping Texans make every drop count since 1952

Texas Water Resources Institute
make every drop count

TWRI.TAMU.EDU

WHO WE ARE

The Texas Water Resources Institute (TWRI) has helped solve Texas' water issues through research, education and outreach for 67 years.

Established in 1952, TWRI became the state's official water resources institute in 1964. We are one of 54 institutes within the National Institutes for Water Resources that are partially supported by the U.S. Geological Survey.

We deliver science-based, community-supported solutions for the state's pressing water quantity and quality challenges through internal expertise and external collaborations.

We provide:

- project development and management
- stakeholder engagement
- watershed and aquifer assessment and planning
- bacterial source tracking
- water conservation research
- geospatial analysis
- professional training
- public outreach

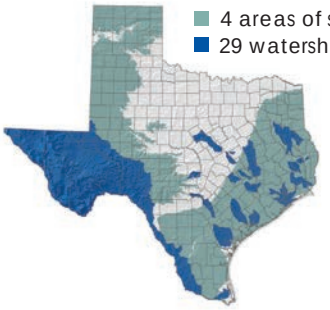
We connect research teams and communities to multidisciplinary expertise. We do this by serving as a gateway to a national network of water institutes, the Texas A&M University System and other universities and water resources organizations.

We are a unit of Texas A&M AgriLife Research, Texas A&M AgriLife Extension Service and the College of Agriculture and Life Sciences at Texas A&M University.

We collaborate with all Texas A&M System units engaged in water resources research and outreach. We maintain strong collaborations with:

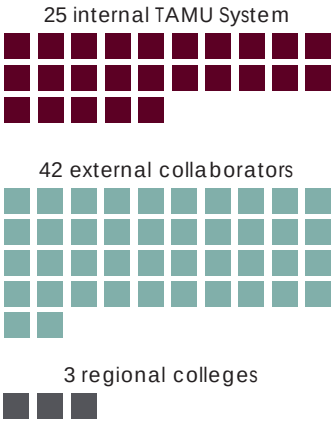
- Texas A&M College of Engineering
- Texas A&M College of Geosciences
- Institute for Science, Technology and Public Policy, Bush School of Government and Public Service
- Texas A&M Law School in Fort Worth

IMPACTS & ENGAGEMENTS



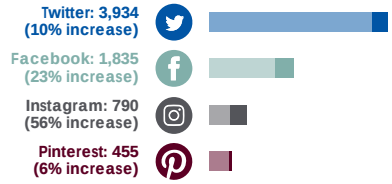
$5,388,680
— in new external grants —

Project collaborations



70 total collaborators on 60 projects

Social media followers



7,014 total followers (17% increase)

64 news releases

91 media mentions

130 presentations to

11,382 people in attendance

20 students supported

6,192 Facebook users engaged

91,128 Facebook users reached

46 publications

4,861 *txH$_2$O* magazine subscribers

5,472 newsletters subscribers

PROGRAM HIGHLIGHTS

RESTORING & PROTECTING: EAST TEXAS WATERSHED PLANNING

TWRI helps improve water quality through watershed-based plan development, implementation assistance and education and outreach. We are working with our partners in East Texas to better understand and address water quality issues in 11 different watersheds. We gather data, evaluate water quality changes over time and actively work with involved stakeholders to develop local solutions.

Many East Texas water bodies are considered impaired because of bacteria levels. Sources of bacteria include livestock, feral hogs and failing septic systems. To help address these issues, we help stakeholders develop watershed-based plans, including watershed protection plans (WPPs), total maximum daily load (TMDL) implementation plans and more. Our efforts are succeeding: Bacterial concentrations in some water bodies are decreasing.

We also manage the Attoyac Bayou On-Site Sewage Facility Remediation program, which provides financial assistance for septic system repair, replacement or first-time installment for families within the Attoyac Bayou watershed. As of the end of 2019, 49 failing septic systems have been repaired or replaced with funding for another 15 more.

SUSTAINING & ENHANCING: RIO GRANDE WATER

Rio Grande Basin water resources — plus the societies, economies, species and ecosystems that depend on them — are seriously threatened by drought, climate change and rapid population growth. The Diversifying the Water Portfolio for Agriculture in the Rio Grande Basin project is addressing these issues by exploring various water management strategies such as evaluating alternative water sources, new crops, best management practices and water conservation improvements to identify the most efficient and cost-effective use of water within the basin.

TWRI, along with AgriLife Research, AgriLife Extension and New Mexico Water Resources Research Institute, is part of this Coordinated Agriculture Project, funded by the National Institute for Food and Agriculture.

To date, researchers have worked through calibration and validation of hydrologic models, evaluated the salinity tolerance of several crops and began an economic analysis of various water management strategies. Stakeholders have been engaged throughout the process, providing many recommendations to researchers to ensure that conducted research is useful for the community.

ENGAGING & EDUCATING: URBAN RIPARIAN & STREAM RESTORATION PROGRAM

TWRI's Urban Riparian and Stream Restoration Program is an educational program focused on the emerging discipline of natural stream design to restore riparian vegetation cover throughout urban Texas rivers and streams. The program includes Urban Stream Processes and Restoration trainings and a demonstration site at the Irma Lewis Seguin Outdoor Learning Center in the Geronimo Creek watershed. We collaborate with the Texas A&M AgriLife Center at Dallas, Texas Riparian Association, U.S. Environmental Protection Agency and Texas Commission on Environmental Quality on this program.

In 2019, we had trainings in Pearland, McKinney, New Braunfels, Waco and Corpus Christi. A total of 139 people attended the trainings. All respondents on the post-training evaluation were mostly or completely satisfied with the course. On average, there was a 59% increase in level of understanding of course topics from the beginning of the program to the end of the program. Over half of respondents said they would take action based on the information learned during the course.

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EXPANDING OUR IMPACT

WORKING INTERNATIONALLY TO MAKE EVERY DROP COUNT

NEW PARTNER: INSTITUTO MEXICANO DE TECNOLOGIA DEL AGUA (IMTA)

Under a Memorandum of Agreement (MOU) signed in 2018 by AgriLife Research, on behalf of TWRI, with Instituto Mexicano de Tecnologia del Agua (IMTA), TWRI and IMTA have a strong relationship, working together on topics and data related to groundwater along the Texas-Mexico border.

The MOU allows TWRI to work jointly with IMTA and other academic universities from Mexico and the United States on characterizing the hydrogeological units along the border region and other topics related to groundwater, such as regional groundwater flows and connectivity of aquifers below the Rio Grande.

The MOU represents the first effort at an academic level between Mexico and Texas regarding data sharing, joint research and collaboration over transboundary groundwater resources. It has opened new avenues for binational cooperation between Mexican and U.S. academic institutions, including developing joint research projects; collaborating on training programs; exchanging visiting scholars to teach or receive training and participate in research; and participating jointly in conferences, seminars, symposiums and other events. TWRI and IMTA are jointly planning and co-hosting the Transboundary Groundwater Conference planned for October 14-15, 2020.

EXPANDING RESEARCH PROGRAMS

DEVELOPING, COORDINATING WATER PROGRAMS AT THE AGRILIFE CENTER AT DALLAS

TWRI has been tasked with coordinating the development of future water resources programs and activities in the Dallas-Fort Worth region, with the Texas A&M AgriLife Center at Dallas serving as the coordination hub for the region.

The new TWRI programs will coordinate with Dallas-Fort Worth regional entities and develop water research, extension and education programs related to regional priorities such as resilient water resource management and the transition from rural to urban environments. We will also collaborate with the Dallas Center's urban agriculture and forestry and healthy living initiatives to better serve the Dallas-Fort Worth region.

The Dallas Center will serve as the water resource hub regional partners and stakeholders can turn to for information and education. The Dallas-Fort Worth region serves as a living lab, and knowledge generated from the Dallas hub can be used to address issues across Texas, the nation and the world.

SUSTAINABLE URBAN WATER SECURITY

As a partner in one of Texas A&M University's X grants, TWRI is working with 7 other Texas A&M departments to answer the question: Can desalination and wastewater reuse technologies deliver sustainable transformations of urban water systems across the globe?

Using 5 urban areas as case studies, the Pathways to Sustainable Urban Water Security: Desalination and Water Reuse Challenges in the 21st Century project is examining how existing water governance systems, law and regulation hinder or stimulate desalination and water reuse projects as well as stakeholder perspectives on urban desalination and water reuse. Researchers seek to use the outcomes and analysis to develop and advance a green financing framework for the sustainable implementation of desalination and water reuse projects.

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Texas A&M AgriLife Research | Extension

Texas A&M University

Photo credit: Chantal Cough-Schulze, TWRI.