



# Edwards Aquifer Research and Data Center



## Newsletter

Spring 2009

The Texas Legislature established the Edwards Aquifer Research and Data Center in 1979. EARDC's mission is to promote the study, understanding and use of the Edwards Aquifer.

### EARDC Staff

Director.....Dr. Glenn Longley  
Hydrogeology.....Raymond Slade, Jr.  
.....Rene Barker  
.....Stephen Porter  
Education.....Lendon Gilpin  
Lab Manager.....Joe Guerrero  
Biomonitoring.....Victor Castillo III  
Administrative Assistant.....Gail Crews  
Research Associates.....Michelle Allison  
.....Michelle Guardiola  
.....Cynthia Jackson  
.....Barbara Porter  
Student Workers.....Laura Alanis  
.....Claudia Luna  
.....Tiffany Mauldin  
.....Alicia Williford  
.....Caitlin Wright  
.....Victoria Ulrich

EARDC activities are organized around a Technical Services Center, an Education Center, a Research Center and a Data Center.

### Agency Interns:

EARDC has a contract to supply interns to work year-around for the Texas Commission for Environmental Quality (TCEQ). TCEQ interns mainly work in the Division of Water Hygiene. Interns also work for Texas Parks and Wildlife

Department (TPWD) and the U.S. Fish and Wildlife Service (USFWS). These internships are an excellent opportunity for students to get real-world experience and for the agencies to look at possible future employees. For information about these programs contact Dr. Glenn Longley at <mailto:GL01@txstate.edu>.

### Technical Services Center Activities:

EARDC offers on site composite or sequential sampling services, plus sampling for the Industrial Pretreatment Programs. EARDC has both refrigerated and portable ISCO Model 6712 samplers that are used.



ISCO refrigerated sampler.



ISCO Model 6712 portable sampler.

For information about sampling services, contact Victor Castillo at (512) 245-3546 or e-mail <mailto:VC05@txstate.edu>.

In addition to sampling, the biomonitoring lab is contracted by the U.S. Fish and Wildlife Service to collect individual Texas blind salamanders (*Typhlomolge rathbunii*) and San Marcos salamanders (*Eurycea nana*) and distribute them to refugia. A collection net is set up at Diversion Springs; a high pressure spring located near the old submarine theater at Aquarena Center.



Checking the net for salamanders at the Aquarena Center sampling station.

EARDC has an agreement with Texas Commission On Environmental Quality (TCEQ), to establish, operate and maintain water quality monitoring stations within one hundred miles of San Marcos, Texas to support TCEQ's Supplemental Environmental Project (SEP) program. Bandera, Bexar, Blanco, Burnet, Hays, Lee, Travis, and Williamson are the counties of interest for this program. The stations will consist of ambient water quality monitoring instruments, meteorological instruments, and ancillary equipment. The primary objective of these new monitoring stations is to provide continuous non-regulatory water quality information. The stations will also generate data on background concentrations. The data will be hosted by TCEQ on their webpage.



Water quality monitoring station in support of TCEQ's SEP program.

A Supplemental Environmental Project, or SEP, allows full compliance with the enforcement process while voluntarily taking a positive step toward enhanced protection and improvement of the Texas environment. SEPs can include a wide range of actions that protect or improve the environment in or near the community where an environmental violation took place. If a SEP is approved, an alleged violator, or respondent, may offset a portion of an assessed monetary penalty by taking on an environmental-enhancement project or contributing to an existing environmental project in, or near, the community where the violation occurred. Under

Texas law, the Texas Commission on Environmental Quality (TCEQ) may consider a violator's willingness to contribute to a SEP in the settlement of enforcement actions. The use of SEPs advances the goals of clean air, water, and soil throughout Texas and enhances the environment in communities affected by environmental violations.



Cynthia Jackson weighing sample in the EARDC lab.

The EARDC water analysis laboratory has been providing environmental services since 1979. The EARDC lab was granted NELAP (National Environmental Laboratory Accreditation Program) accreditation by TCEQ (Texas Commission on Environmental Quality) on July 1, 2008 for the analysis of bacteria and chemical analysis in potable and non-potable water.

The laboratory is equipped with basic water quality instrumentation and more advanced instrumentation such as Gas Chromatographs, Ion Chromatograph and Atomic Absorption Spectrophotometer with Graphite Furnace and Inductively Coupled Plasma. Furthermore, EARDC has a Nikkon Optiphot-2 microscope equipped with an Episcopic-Fluorescence attachment and associated attachments for detecting *Giardia* and *Cryptosporidium*. EARDC has submitted an application to EPA (Environmental Protection Agency) seeking certification for *Giardia* and *Cryptosporidium* analysis.

The EARDC Laboratory operates under a stringent Quality Assurance Program that insures that data produced is scientifically sound, legally defensible and of known documentable and verifiable quality. The quality assurance system at EARDC stresses training and planning that yields increased personal performance and improved laboratory management.

EARDC has provided a wide range of services for private citizens and numerous organizations including the Environmental Protection Agency (EPA), Texas Commission on Environmental Quality (TCEQ), Texas Parks and Wildlife Department (TPWD), Barton Springs Edwards Aquifer Conservation District (BSEACD) and City of San Marcos. Current customers for the EARDC water analysis lab include the City of San Marcos and many surrounding water systems in Hays and Comal Counties.

EARDC provides opportunities for students to train alongside biologists and chemists as student workers, work-study students or non-paid interns assisting in the preparation and performance of basic analyses. Students are trained and are allowed to perform analyses only after proficiency is demonstrated.

Laboratory hours are Monday-Friday 8 a.m. – 5 p.m. Containers and sampling instructions can be provided upon request. Bacteriological samples are not accepted on Friday. Special arrangements can be made to submit samples on Friday or after hours, if necessary.

For a price list or more information about laboratory services, contact Joe Guerrero at (512) 245-3545 or e-mail <mailto:JG13@txstate.edu>

## Education Center Activities:

### Aquatic Sciences Adventure Camp –

Eight week-long and two 2-day camp sessions were held during the summer of 2008. The camps were attended by 226 students and 31 teachers. The teachers who attended received 20 hours of Continuing Professional Education (CPE) and 20 hours of Texas Environmental education Advisory Committee (TEEAC) credit and 6 hours of Differentiated Curriculum plus 20 hours of Biology and Chemistry credit from the Texas Association for the Gifted and Talented.

The camp provides students aged 9–15 the opportunity to learn about aquatic biology and water chemistry in a university atmosphere while also enjoying various water-oriented recreational activities. Information about the summer camp program can be found on the camp website, <http://www.eardc.txstate.edu/camp.html>.



Campers trying out their snorkeling skills.

We would like to thank The Edwards Aquifer Authority, Guadalupe-Blanco River Authority and the Barton Springs/Edwards Aquifer Conservation District for providing scholarships for some of our campers this past year.

### Aquatic studies field days-

During the past year, 862 students and 80 teachers from 33 school classes attended aquatic studies field days. The field day program gives

students an opportunity to collect living aquatic organisms from a creek on the Texas State campus and observe them under a microscope. Students also learn about the Edwards Aquifer and its biota, collect organisms from a flowing artesian well and view San Marcos Springs from a glass-bottom boat at Aquarena Center. The field day website can be found at <http://www.eardc.txstate.edu/aquaticfielddays.html>.

For information about the Aquatic Sciences Adventure Camp or to schedule a field day, contact the education center at (512) 245-3541 or e-mail <mailto:LG16@txstate.edu>.



Field day participants collecting aquatic organisms in Sessom Creek on the Texas State campus.

Other education center activities during the past year included partnering with the Edwards Aquifer Authority and the Texas State University River Systems Institute to host an

“Explore the Edwards Aquifer” teacher workshop at Texas State University’s Aquarena Center; presenting a class on aquatic invertebrate identification at the San Antonio Water System’s Student Water Action Team (SWAT) kick-off rally at Stevens High School in San Antonio; demonstrating a model of the Edwards Aquifer at the Make-A-Splash Home School Water Festival at Eisenhower Park in San Antonio; and giving presentations to six local elementary school classes to Aquarena Center’s annual Groundwater Festival.

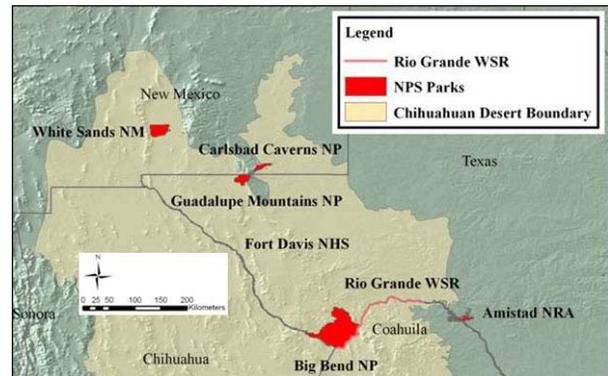


Lendon Gilpin at Groundwater Festival activities.

**Research Center/Data Center Activities:**

In January 2009 EARDC research staff completed a report for the National Park Service’s Chihuahuan Desert Network: “Historical Perspective of Surface Water and Groundwater Resources in the Chihuahuan Desert Network, National Park Service” by S.D. Porter, R.A. Barker, R.M. Slade, Jr., and G. Longley. The report describes long term trends of water quantity (100+ years) and quality (30+ years) in the Rio Grande between Presidio and Del Rio, Texas, and surface and groundwater conditions in Big Bend National Park, Rio Grande Wild & Scenic River, Amistad National Recreational Area, Guadalupe Mountains and Carlsbad Caverns National Parks, Fort Davis National Historic Site, and White Sands National Monument. This comprehensive report follows an earlier (April 2008) summary, by the same authors, entitled “Progress Statement on

Historical Data Summaries and Preliminary Trend Analysis.”



Location of Chihuahuan Desert Network of National Parks.

Copies of the latest report can be downloaded from the EARDC home page. Authors of the report continue to provide technical assistance to the Chihuahuan Desert Network relative to developing protocols for their “vital signs” environmental-monitoring program. Stephen Porter will be conducting research on benthic algae communities and processes in the Rio Grande and springs along the river corridor this year in collaboration with scientists from Big Bend National Park and the Texas Commission on Environmental Quality.



Rene Barker using coaxial cable device to measure depth to groundwater in water-supply well at Fort Davis National Historic Site, April 2008.

As part of continuing work with the National Park Service’s Southern Plains Network, Stephen Porter and Rene Barker have been

providing technical assistance with monitoring water resources at Lyndon B. Johnson National Historical Park in Stonewall, Texas. Rene demonstrated monitoring of water levels in several wells in the park and Stephen has been providing training in the collection and identification of aquatic macroinvertebrates in the reach of the Pedernales River that flows through the park, as well as assistance with documenting aquatic habitat structure in the river. EARDC research staff completed a report (“Review of and Recommendations for Hydrologic-Monitoring Activities in Southern Plains Network, National Park Service”) in October 2007. Copies of the report can be downloaded from the EARDC home page.

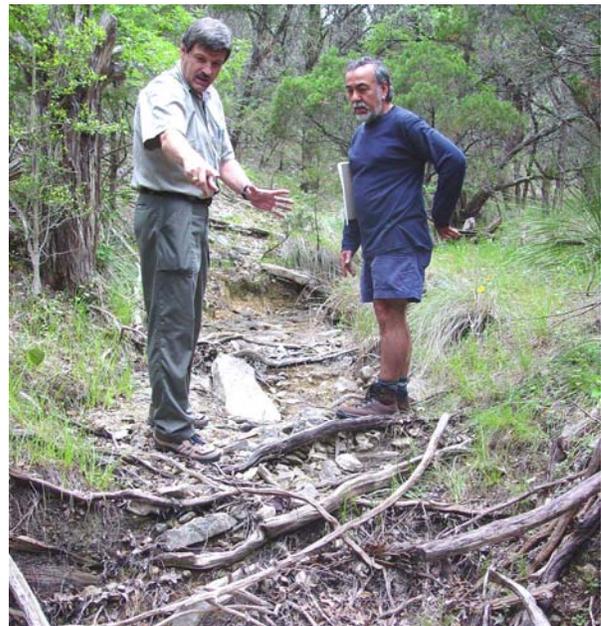


Stephen Porter examines benthic algae in McKittrick Creek, Guadalupe Mountains NP

Stephen Porter assisted a local industry (CFAN) with identification of a nuisance algal species that was contaminating process water used for ultrasonic examination of their products. The algae were identified as an undescribed species of *Leptolyngbya*, a filamentous blue-green algal species that apparently requires only small amounts of nutrients and very low light

conditions. Options for control and treatment of the nuisance condition were discussed with the manufacturer.

Stephen Porter, Raymond Slade, and Rene Barker have maintained close working relationships and active dialogues with local, county, state, and federal water agencies. These agencies include the Hays Trinity Groundwater Conservation District (HTGCD), Texas Parks & Wildlife, U.S. Fish and Wildlife Service, Barton Springs/Edwards Aquifer Conservation District, Texas Water Development Board, Wimberley Valley Watershed Association, and Hill Country Alliance—as well as the Austin- and San Antonio-based offices of the U.S. Geological Survey. Rene continued to assist the HTGCD with their review of state-mandated groundwater availability studies and the analyses of aquifer tests associated with application for new groundwater withdrawals within the district.



Raymond Slade (l) and Dr. Vicente Lopes (r), Texas State Professor of Aquatic Resources, discussing installation of trapezoidal weir in Pollard Watershed, two miles southwest of Wimberley, Texas.

During the past year, Stephen, Raymond, and Rene assisted with research- and thesis-related endeavors of several Texas State graduate

students and environmental team leaders and participants, including Jaimie Maher, Justin Kirk, Eric Mendelman (Texas Watch), and Nicholas Lochman (Texas Stream Team). Collaborative associations were also developed or maintained with several Texas State professors, including Dr. Alberto Giordano (Geography), Dr. Vincent Lopes (Biology), Dr. Walter Rast (Biology), and Dr. Alan Groeger (Biology).

Rene Barker and EARDC Director Dr. Glenn Longley, serve as members of the the Edwards Aquifer Area Expert Science Subcommittee of the Edwards Aquifer Recovery Implementation Program (EARIP)—a collaborative, consensus-based stakeholder process with the specific purpose of formulating guidelines to protect endangered species associated with the Edwards Aquifer while managing the aquifer for the benefit of all citizens. To aid with the effective management of the local Trinity Aquifer, Raymond and Rene recently participated as members of an expert panel assembled by the Hays County Commissioner’s Court to evaluate appropriate lot sizes associated with proposed regulations for new real estate development.



TEXAS STATE UNIVERSITY  
SAN MARCOS

To contact EARDC:  
Phone (512) 245-2329  
FAX (512) 245-2669  
Website: <http://www.eardc.txstate.edu/>