

Power of the people

RESTORING IMPAIRED WATER BODIES WITH STAKEHOLDER-DRIVEN WPPS

Watershed protection plans (WPPs) are one of the approaches stakeholders are using to protect and restore water bodies and watersheds in Texas. WPPs are voluntary and actively involve local landowners as opposed to regulatory approaches that require compliance with specific regulations.

Texas Water Resources Institute (TWRI) is involved in several projects implementing WPPs. In particular, two of these plans are the Buck Creek WPP and the Pecos River Basin WPP.

TWRI is currently managing two projects to improve the water quality of Buck Creek, a small creek in the Texas Panhandle's Red River Basin. Both of these projects are funded by the Texas State Soil and Water Conservation Board (TSSWCB) through a Clean Water Act Nonpoint Source Grant from the U.S. Environmental Protection Agency (EPA). Through the *Watershed Protection Plan Development for Buck Creek*, the project team has identified specific sources of *E. coli* in the creek using bacterial source tracking. These bacteria may indicate the presence of

pathogens that can cause disease and make the creek unsafe for recreation. Project members are also evaluating potential management alternatives for restoring the water body and educating landowners on the benefits and usefulness of certain best management practices.

“Developing landowner- and stakeholder-driven plans to restore water quality is a great approach to addressing water quality impairments,” said Lucas Gregory, TWRI project manager. “Not only do landowners and stakeholders know what key sources of water quality impairments are, they also have excellent ideas about how to correct the impairments and are more likely to participate in implementing WPPs that they helped develop.”

A supplemental project, *Modeling Support for Buck Creek Watershed Protection Plan Development*, is providing additional information on the magnitude and distribution of bacteria levels in the watershed. Stakeholders will use this information to determine which best management practices to include in the Buck Creek WPP, Gregory said.

To date, Buck Creek project members have completed three years of intensive monitoring that better describes potential concerns in the watershed, submitted water quality data to the Texas Commission for Environmental Quality (TCEQ) for use in its biannual water quality assessment in 2010, and completed the draft of the Buck Creek WPP.

Phyllis Dyer, Buck Creek watershed coordinator, said the TSSWCB is currently reviewing and commenting on the WPP. “We will address those comments and present the edited version to Buck Creek Watershed stakeholders and allow them to provide comments on the plan,” she said. “Once final stakeholder comments have been received and addressed, we will resubmit the plan to TSSWCB and EPA.”

Gregory estimated that the projects related to Buck Creek will continue for five or six more years, with the stakeholder effort to restore water quality continuing much longer.

TWRI is also involved in a WPP for the Texas portion of the Pecos River. Winding more than 900 miles through eastern New Mexico and West Texas, the river ⇨



PHYLLIS DYER ISOLATES COLONIES OF *E. COLI* BACTERIA FROM A WATER SAMPLE.
PHOTO BY KAY LEDBETTER

is crucial to many communities for irrigation, recreation, and environmental uses as well as recharging underlying aquifers. It provides about 9.5 percent of the annual inflows to the international Amistad Reservoir while contributing 26 percent of its salt loading. The reservoir provides a major source of drinking and irrigation waters for the Lower Rio Grande Valley and its millions of residents.

“Today, the river has dwindled to a trickle in some areas,” said Gary Bryant, Pecos River Watershed coordinator and AgriLife Extension program specialist. “The expansion of water demand throughout the watershed coupled with the spread of non-native saltcedar, inefficient irrigation systems, and recurring droughts have depleted the water supply and

led to deteriorating water quality in portions of the river.”

In Texas, the river’s salinity is so high in some locations that the water can be harmful for irrigation and livestock watering and is not used for human consumption, Bryant said. This salinity stems from natural saline deposits—remnants of the shallow Permian Sea that once covered the area—in soils and rocks.

Dissolved oxygen (DO) levels in portions of the river do not meet Texas’ water quality standards. As a result, several portions of the river are listed as impaired on the *2006 Texas Water Quality Inventory and 303(d) List*. “The reduced quality and quantity of the river, paired with other watershed influences, has reduced the river basin’s biodiversity,” he said.

In 2004, TWRI began working with Texas AgriLife Research and Extension on the *Watershed Protection Plan Development for the Pecos River* project. The WPP, published in October 2008, addresses watershed concerns, impairments, and resource management issues. The WPP was developed using scientific data gathered throughout the course of the project, along with information and guidance from watershed landowners, Bryant said.

TWRI is now working on two projects to implement portions of the Pecos WPP that are funded by TSSWCB through a Clean Water Act Section 319 grant from EPA. The first project, *Implementing the Pecos River Watershed Protection Plan through Invasive Species Control (Saltcedar) and by Providing Technical and*



GARY BRYANT WORKS WITH LANDOWNERS AND OTHERS TO IMPLEMENT THE ELEMENTS WITHIN THE PLAN.
PHOTO BY DANIELLE SUPERCINSKI



THE U.S. HIGHWAY 90 PECOS RIVER BRIDGE SPANS THE PECOS RIVER A FEW MILES NORTH OF ITS CONFLUENCE WITH THE RIO GRANDE.
PHOTO BY LUCAS GREGORY

Financial Assistance to Reduce Agricultural Nonpoint Source Pollution, is implementing some of the highest-priority practices recommended in the WPP.

Major objectives of this project are to treat saltcedar chemically along the riparian corridor in areas not previously treated, to promote the use of biological control mechanisms in areas near and away from the river channel, and to assist landowners in removing saltcedar debris from earlier treatments using controlled burns, Bryant said.

Working with landowners, soil and water conservation district staff members are developing at least 20 water quality management plans. The site-specific plans are designed to improve watershed management, enhance watershed health, and restore

water quality by providing technical and financial assistance to landowners so they can carry out management practices, Bryant said.

Project members are also providing educational programs for watershed landowners and residents to increase awareness about watershed management and stewardship.

“We are continuing to develop working relationships with watershed landowners and to establish long-term restoration efforts that lead to the sustainability of the WPP implementation effort,” he said.

Through *Implementing the Pecos River Watershed Protection Plan through Continuous Water Quality Monitoring and Dissolved Oxygen Modeling*, project members are installing a new real-time water quality monitoring station near

Girvin that will be incorporated into TCEQ’s continuous water quality monitoring network. Project members are also developing a computer-based watershed model to evaluate DO levels in the river. This will help identify potential sources of pollutants contributing to the limited DO levels and potential management measures that will decrease pollutant loadings and restore DO levels in the river, Bryant said.

“These two projects should go a long way in improving the quality of the Pecos River,” Bryant said.

The institute is involved in other WPP projects, including the Attoyac Bayou, Lake Granbury (see related story on page 10), and the Arroyo Colorado (see related story on page 18). For more information, visit twri.tamu.edu/txH2O. 