Pecos River Water Quality Coalition

September 24, 2014

The Pecos River is approximately 900 miles long extending from the Sangre de Cristo Mountains in north-central New Mexico southeast to the Rio Grande in Val Verde County, Texas. The Pecos River watershed comprises an area of approximately 44,000 square miles, and ranges in elevation from over 12,000 feet in its headwaters to approximately 1,100 feet at its confluence with the Rio Grande. The Pecos River is an important water resource for irrigation, livestock, recreation, drinking water, and wildlife habitat. Due to a growing demand for water and increasing climate variability, the flow of the Pecos River has decreased considerably in recent years, and now in some areas, no longer flows. Along with the decreased flow, the salinity (saltiness) of the Pecos River has increased. Both natural and anthropogenic salts are added to the river in its course to and through New Mexico and Texas. As a result, water entering Texas contains on average about 6,000 milligrams per liter (mg/L) of salts; downstream, at Girvin, Texas, salt concentrations have recently increased to as high as 25,000 mg/L in July of 2014.

Salinity in the Pecos River is derived from many sources, including but not limited to groundwater discharge to the river, agricultural and municipal return flows, and springs. Additionally, there are many factors that concentrate salts in the Pecos River such as reservoir evaporation, and reduced stream flows primarily attributable to drought. The region is underlain by formations such as the San Andres, Salado and Rustler which contain salt-bearing rocks that dissolve as groundwater migrates through them and subsequently discharges to the river.

High salinity limits full use of the Pecos River water resources and presents many problems, including environmental degradation, reduction of potable and reclaimed water supplies, damage to urban and rural distribution systems and appliances, increases in infrastructure costs, reductions in crop yields and profitability, deterioration in the quality of urban landscapes, loss of wildlife habitat, and soil and groundwater deterioration.

The concern for Texas includes the Rio Grande into which the Pecos River flows and, specifically, Amistad International Reservoir which is a major source of drinking water for Texas cities all the way to the Gulf of Mexico. The upper regulatory limit for salinity in drinking water in Texas is 1,000 mg/L, and salt concentrations in Amistad International Reservoir average about 600 mg/L with a range of 460 to 900 mg/L, briefly reaching the 1,000 mg/L level in 1988 and 1997. On average, the Pecos River accounts for nearly 30 percent of the salts entering Amistad International Reservoir, while comprising only about 10 percent of the inflow.

What do these numbers all mean? It means the Pecos River is a conduit for enormous quantities of salt that ultimately end up in Amistad International Reservoir. As the Pecos River enters Texas it is already carrying an average annual salt load of roughly 150,000 tons per year. As a result of additional salt loading between Grandfalls and Girvin, Texas, the total average annual salt load increases to 187,000 tons per year that enters Amistad International Reservoir resulting in significant adverse economic impacts to the Rio Grande Valley.

Reducing salt loads in the Pecos River is a complex challenge, but the most effective tool will likely prove to be interception of salinity in source areas before it impacts surface-water supplies. Additionally, there may be effective water-management alternatives that will reduce water-quality deterioration as water is put to beneficial use throughout the Pecos Basin. To achieve these goals, the Federal Government, and the States of Texas and New Mexico will likely need to combine resources.

At the request of the Pecos River Commission in late 2010, the U.S. Army Corps of Engineers (USACE) initiated an effort to assess salinity sources in the Pecos River watershed and evaluate the feasibility of developing an

integrated management approach to better control them. This effort is being carried out under the Section 729 of Water Resources Development Act of 1986 and consists of two parts.

The first part was to conduct an "Initial Watershed Assessment" of the river to determine if a Federal interest exists in conducting a more comprehensive "Watershed Assessment," and to prepare a report documenting the USACE's findings. This report was competed in April 2012. In short, this report concluded that there is a strong Federal interest in conducting a "Watershed Assessment" and that the primary areas of concern across the basin include: water quality, water quantity, loss of riparian and aquatic habitat and species, the lack of a comprehensive long-range management plan for the entire river, a lack of coordination among Federal, state, local and non-governmental agencies, as well as the lack of funding to address these concerns.

The second part of the study, the "Pecos River Watershed Assessment", began in May of 2014. The project includes collaboration between the Pecos River Water Quality Coalition, USACE, the Texas Water Development Board, the Texas Commission on Environmental Quality, the New Mexico Interstate Stream Commission, and the U.S. Geological Survey. The study area is the Pecos River watershed from Santa Rosa Lake near Santa Rosa, New Mexico, to the Pecos River – Rio Grande confluence in Texas, including Amistad International Reservoir, as shown in the study area map below. The project entails a comprehensive review of studies already completed in the basin, identification of data gaps, and recommendations for potential projects to reduce salinity. The Coalition envisions a phased program involving resources from Texas, New Mexico, and the Federal government to study, characterize, and ultimately intercept and neutralize key sources of salinity impacting the Pecos River.

The Pecos River Water Quality Coalition was formed to champion improving water quality in the two-state region and to provide guidance for that effort. The Coalition's goal is to reduce salt concentrations and their attendant impacts to increase usable water supplies for agricultural, municipal and industrial, and environmental purposes.

Pecos River Water Quality Coalition members
Texas State Senator Carlos I. Uresti
Texas State Representative Poncho Nevárez
Pecos River Commission
New Mexico Interstate Stream Commission
New Mexico Environment Department
Red Bluff Water Power Control District
Texas Water Development Board
Texas Commission on Environmental Quality
Texas State Soil and Water Conservation Board
Texas Water Resources Institute
International Boundary & Water Commission Clean Rivers Program
Texas A&M AgriLife Research and Extension Center