

Pecos River Basin Assessment Program
Texas Cooperative Extension and the Texas Water Resources Institute
FY04 CWA Section 319

Quarterly Report Number 2
Covering work accomplishments from January 15 through March 15, 2005

Task 1: Basin Assessment

Subtask 1.1—*Aerial Photography, Delineation, and Characterization*

- Saltcedar data sets were used to identify saltcedar acreages. Saltcedar acreages were overlaid on existing files to determine the area of saltcedar-infested acreage that had not been treated with herbicides through 2004. The analyses show that 1,827 acres of saltcedar have not been treated to-date.

(50% complete)

Subtask 1.2—*Historical Water Quality, Irrigation Delivery, Rainfall, Red Bluff Lake Levels, and Groundwater Monitoring*

- Work on this subtask has focused on obtaining background documents that provide historical information about the basin. Most of these reports will be posted on the project websites. These reports include the following:
 - Fisheries reports (published by TCEQ).
 - Biology and data on rare and threatened species of the Rio Grande border region (USGS).
 - Groundwater quality and hydrogeology reports (Texas Water Development Board)
 - Irrigation surveys (TWDB)
 - Data on Balmorhea Springs (Bureau of Reclamation)
 - List of impaired waters (EPA)
 - In addition, a map of the Pecos basin from its source waters to its confluence with the Rio Grande has been developed.

(25% complete)

Subtask 1.3—*Aquatic Life and Habitat Inventory*

- Initial discussions with personnel from the Texas Commission on Environmental Quality and the U.S. Geological Survey have focused on future efforts needed for this subtask. Substantial work on this subtask will not begin until 2006.

(5% complete)

Subtask 1.4—*Identify and Characterize the Volume and Quality of Tributaries and Springs*

- The first set of samples was collected at various sites in the Upper Pecos River basin, and was submitted for laboratory tests and chemical and isotope analyses.

(10% complete)

Subtask 1.5—*Identify and Characterize Saline Water Sources Entering the Pecos River*

- Analyses of U.S. Geological Survey flow and salinity data are nearly completed. Results show that most of the salt loading into the Pecos River occurs above Red Bluff Reservoir. Analyses of data from the Texas Clean Rivers Program is still ongoing. Preliminary analyses suggest that there is a considerable inflow of salts into the Pecos River downstream of the city of Pecos. The first set of water quality samples from the Pecos River has been collected and sent out for analyses.

(30% complete)

Subtask 1.6—*Simulate Flow and Salinity of the Pecos River for Evaluating River Management Options*

- U.S. Geological Survey data for flows and salinity were analyzed and compared to salinity and flow data recorded at the confluence of the Pecos and Rio Grande rivers near Langtry. Results show that salinity in the Lower Reach of the Pecos River is controlled to a large extent by salinity loadings near Girvin, Texas.

(10% complete)

Subtask 1.7—*Economic Modeling of the Pecos River Basin and Assessment of Saltcedar Control Activities*

- Data for irrigated and dryland crop production budgets are being collected. To-date, production budgets for dryland cotton, furrow-irrigated cotton, pivot-irrigated cotton and alfalfa; drip-irrigated cotton and pecans; and flood-irrigated pecans and alfalfa have been developed. Estimates of water use for these crops and irrigation practices are being obtained from agricultural producers in the basin. Data collected for subtask 1.2 will be used to develop a crop acreage allocation model.

(5% complete)

Task 2: Educational Programming

Subtask 2.1—*Publish Written Informational Materials to Educate Private Landowners, Stakeholders, and Policy Makers about the Pecos River basin and the effects of saltcedar*

- Initial work between project leaders and the Texas A&M University Agricultural Communications Department has been done to develop press releases about the project.
- An article about the Pecos Basin project was submitted to Ranch and Rural Living magazine. The article will be published soon on the project website.
- Draft text and a draft layout for a project brochure have been developed and approved by project leaders. The brochure will soon be designed and developed and will be ready to distribute to stakeholders and the public.
- Oral interviews were conducted on-site with several residents of the region to gain their understanding of how conditions in the Pecos Basin have changed over time. These interviews are being transcribed and member-checked. They will be used to develop a fact sheet that presents information about how water use and water quality in the basin have evolved since the beginning of Anglo-American settlement in the 1800s.

(25% complete)

Subtask 2.2—*Educational Meetings of Interested Parties for Input and Organizational Support*

- Texas Cooperative Extension personnel presented the project to ranchers at a Nature Conservancy meeting at Independence Creek, Texas.
- Texas Cooperative Extension personnel presented information about the project at a meeting of the Texas Clean Rivers Program. Participants included water resources professionals from several agencies and organizations.
- A survey and questionnaire have been developed to assess stakeholder awareness and to identify concerns of stakeholders about water issues in the basin. The questionnaire will be distributed at future project meetings.

(10% complete)

Subtask 2.3—*Develop a Website for Dissemination of Information*

- The project website, <http://pecosbasin.tamu.edu>, has been developed. It includes a user-friendly version of the project work plan, project documents, biographical sketches of project leaders, and links to related information. The website will be refined and expanded as more work is accomplished.

(75% complete)

Task 3: Establish a Monitoring Program to Gather Data About Water Quality and Water Supply Issues in the Basin, As Well As Information on How Saltcedar Affects the Hydrology of the Basin.

Subtask 3.1—*Develop a QAPP for Sampling Protocol*

- A draft of the QAPP has been developed and submitted. It is now under review by the U.S. Environmental Protection Agency and the Texas State Soil and Water Conservation Board.

(33% complete)

Subtask 3.2—*Water Quality Monitoring, including Total Dissolved Solids (TDS), Total Suspended Solids, Potential Hydrogen (pH), Dissolved Oxygen (DO), and Electrical Conductivity (EC)*

- A meeting was held to ensure that all parties agree on plans for routine monitoring that will begin in 2006.

(5% complete)

Subtask 3.3—*Quantity and Fate of Water Salvage as a Result of Saltcedar Control*

- Soil surface and piezometric measurements were collected in January and March 2005 and preliminary analyses of these data have been conducted. Soil permeability tests have been initiated. Two staff gauges were installed and water quality was measured in monitoring wells and the Pecos River in January 2005. In March 2005, flow measurements were conducted using a release of water from Red Bluff Reservoir. Literature review is ongoing.

(20% complete)

Task 4: Develop a Watershed Protection Plan for the Pecos River Basin that will Identify Strategies to Limit the Adverse Consequences of Issues Related to Saltcedar in the Basin

Subtask 4.1—*Develop Annual Reports and a Final Report Summarizing Basin Assessment, Educational Programming, and Monitoring*

(0% complete)

Subtask 4.2—*Produce the Final Watershed Protection Plan for Pecos River Segments 2312, 2311, and 2310*

(0% complete)

Activities Planned for the Next Quarter

Subtask 1.1—Imagery is being copied and will be supplied to other lead investigators in this study. The imagery will be used to help identify tributaries that will be sampled in subtasks 1.4 and 1.5.

Subtask 1.2—Work will continue to identify, acquire, and distribute additional documents about historical issues in the basin.

Subtask 1.3—No activities planned.

Subtask 1.4—More potential sites will be explored that may be used for future sampling. The initial set of samples that was collected will be analyzed. Future sampling dates and locations will be identified.

Subtask 1.5—Data analyses will continue using polymerase chain reaction (PCR) and other methods. The second trip to collect water quality samples is set for May or June. As soon as results are available, findings from the first data set will be interpreted.

Subtask 1.6—This task is being put on hold for the next quarter so that the project leaders can focus on gathering baseline data associated with subtask 1.5. As soon as subtask 1.5 moves forward, much more modeling work associated with subtask 1.6 will begin.

Subtask 1.7—Work will continue to refine existing production budgets and to develop production budgets for such other crops as cantaloupes, onions, grain and forage sorghum, and wheat. Historical trends for dryland and irrigated acreage will be summarized and drafts of survey instruments for rangeland owners and agricultural producers will be developed and reviewed.

Subtask 2.1—A project brochure will be designed and ready for distribution. A full outline of the fact sheet that describes historical conditions in the basin will be developed. More popular articles about the project will be developed. Project leaders will work with the Texas A&M Agricultural Communications Department to develop press releases about the project.

Subtask 2.2—Additional meetings with stakeholders will be carried out and information about the project will be presented at conferences and workshops. The survey questionnaire will be finalized and used, along with other means, to gauge information about public perceptions and concerns regarding water quality in the basin.

Subtask 2.3—Additional materials about this project and related efforts will be posted on the project website.

Subtask 3.1—Obtain approval for the final QAPP. When approved, distribute copies of the QAPP to project leaders and all other required parties.

Subtask 3.2—Routine water quality samples will be collected as part of monitoring activities.

Subtask 3.3—Additional soil permeability tests will be carried out. Three new boreholes will be developed to allow more detailed evaluations of the land and water surface profile. Water surface profiles and water quality data will be recorded after water is pumped from monitoring wells. Additional flow measurements will be coordinated with releases of water from Red Bluff Reservoir.