Texas Commission on Environmental Quality

Continuous Water Quality Monitoring Program

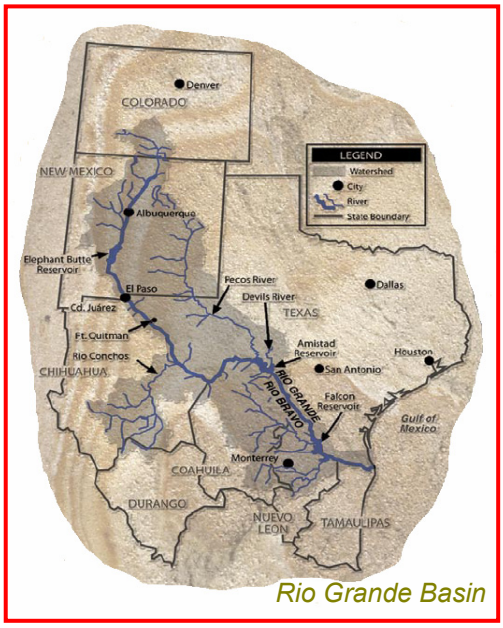
PROJECT SUMMARY — FEBRUARY 2008

MANAGING AGRICULTURAL WATER SUPPLIES ALONG THE TEXAS/MEXICO BORDER

Rio Grande Water Quality Issues

The water quality problems in the Rio Grande Basin are generally related to high levels of total dissolved solids (TDS) and too little water:

- In the upper reaches of the Rio Grande arid conditions, periods of drought, agricultural return flows increase TDS concentrations.
- In the Pecos River watershed, salt cedar (*Tamerisk sp.*) infestations remove vast quantities of water and concentrate TDS.
- In the lower reaches of the Rio Grande, agricultural return flows from Mexico have high TDS.



Rio Grande Basin

Addressing the Issues

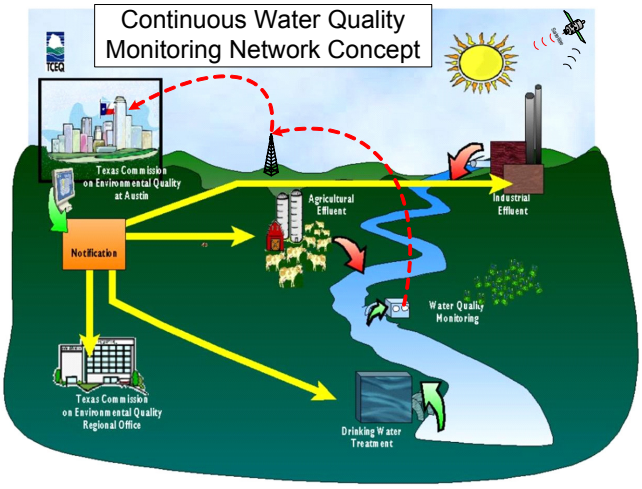
TCEQ and other state and federal entities are addressing the problems in the Rio Grande in multiple projects:

- Monitoring TDS loads in the upper Rio Grande.
- Managing salt cedar in the Pecos River.
- Monitoring and managing TDS in the lower Rio Grande watershed to mitigate high TDS agricultural return flows.

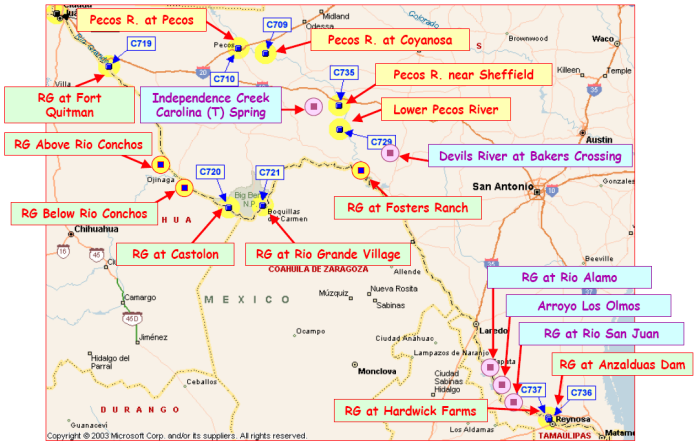
All of these efforts are being supported with data collected through a network of continuous water quality monitoring (CWQM) stations.

Continuous WQ Monitoring

CWQM stations in the Rio Grande Basin commonly measure temperature, pH, dissolved oxygen, and specific conductance using established multiparameter instrument technology, a data logger and communication/telemetry equipment. Most of the stations are associated with flow measurement by the USGS or the International Boundary and Water Commission (IBWC).



The first project in this network of Rio Grande CWQM stations started in 2004 on the Upper Pecos River and has been growing ever since. It has grown from two sites in 2004 to 12 sites in 2007 with five more scheduled for installation in 2008.



Rio Grande CWQMN Stations

(Stations in blue are scheduled for installation in 2008)

Using the Data

The first site installed in the Lower Rio Grande Valley, Anzalduas Reservoir at Hardwicke Farms, collects temperature, pH, dissolved oxygen and specific conductance data every 15 minutes. The site is operated and maintained by staff from TCEQ's Harlingen Regional Office.

The datalogger at the site converts specific conductance to TDS (SC * 0.65 = TDS) and reports it along with the data from the *in situ* multiprobe instrument.

Incoming data is scanned for concentrations above the "trigger" level set for the station. The trigger level is 1,000 mg/L. This trigger level is based on the adverse impact of irrigating crops with water containing high TDS concentrations. When the TDS is >1000 mg/L an email is sent to all subscribers, including the Rio Grande Watermaster.

Alerts received by the Rio Grande Watermaster are reviewed with prior and subsequent alerts. When necessary the Rio Grande Watermaster contacts the IBWC to verify the operation at El Morillo Drain (Mexico). The Rio Grande Watermaster also monitors water quality above the El Morillo Drain to rule out other upstream sources. To dilute the high TDS the Rio Grande Watermaster calls for increased releases from Falcon International Reservoir. This takes approximately 1.5 days. Data is checked to verify the reduction in TDS concentrations.

Other potential sources of high TDS agricultural return flows of concern to the Rio Grande Watermaster include Rio San Juan (Mexico) and Rio Alamo (Mexico) and Arroyo Los Olmos (US).

Future Plans

Coming in Spring 2008: Three additional sites are in the planning stage; (1) Downstream of the Rio Alamo (River Mile 255) near the City of Roma water plant intake, (2) Downstream of the Rio San Juan (River Mile 235) near the City of Rio Grande City water plant intake, and (3) Downstream of Arroyo Los Olmos (River Mile 231) near Rio Grande City, Texas.

For More Information

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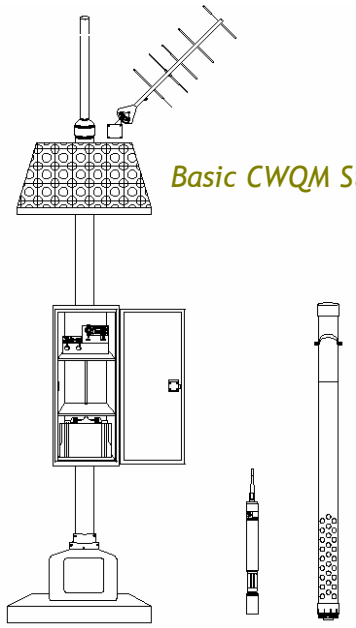

Basic CWQM Station Equipment

Data Access

To access Rio Grande Basin and other TCEQ CWQMN data online go to

<http://www.texaswaterdata.org>

Lower Rio Grande CWQM Web Page