



Improving Water Quality in the Arroyo Colorado Surveying Recreational Uses

In the freshwater portion of the Arroyo Colorado, upstream of tidal influence (Segment 2202), fecal bacteria levels are occasionally elevated. This poses a possible risk to people who swim or wade in the tidal area of the stream—activities referred to as “contact recreation use” in the Texas Surface Water Quality Standards.

Fecal bacteria are commonly found in the intestines of warm-blooded organisms such as humans, livestock, wildlife, and pets. Certain types of bacteria in water may indicate the presence of disease-causing microorganisms.

The Arroyo Colorado has been extensively modified to convey flood water, wastewater, and irrigation-return flows. Given these conditions, the stream may not be able to support certain recreational activities. In response to these conditions, the TCEQ initiated a project to survey the recreational uses of Segment 2202. During this project, personnel collected:

- Information about the presence or absence of water recreation activities, stream flow, and stream depth.
- Data about other physical conditions necessary for safe contact recreation.

The TCEQ Standards Team will use the data collected in this survey to complete a recreational use attainability analysis (RUAA). RUAA procedures are standardized to ensure that each analysis is based on sound and repeatable scientific methods.

If the results of the analysis indicate that the current contact recreation standards are inappropriate, the Standards Team will review and modify the use through its normal process for updating the Texas Surface Water Quality Standards.

If the results of the RUAA indicate that the currently assigned use is appropriate, the TCEQ will implement pollution mitigation measures, including, if necessary, developing a TMDL.

Learn more about standards, monitoring, and TMDLs by reading *Preserving and Improving Water Quality*, available on our website at www.tceq.texas.gov/goto/tmdl/.

Description of the Arroyo Colorado

The Arroyo Colorado, a distributary channel of the Rio



Grande, extends about 90 miles from Mission, Texas, to the Laguna Madre in the Lower Rio Grande Valley. The Arroyo Colorado is the major source of fresh water to the lower Laguna Madre, an economically and ecologically important resource to the region. The Laguna Atascosa National Wildlife Refuge and several county and city parks are located within the Arroyo Colorado watershed. One third of the stream also is used for shipping from the Gulf Intracoastal Waterway to the Port of Harlingen.

Flow in the Arroyo Colorado is sustained by wastewater discharges, agricultural irrigation return flows, urban runoff, and base flows from shallow groundwater. Although an integral part of a major floodway system, water is rarely directly diverted from the Rio Grande into the Arroyo Colorado; direct diversions occur only during major flood events.

The watershed, with 1,828 square kilometers, is part of the larger Nueces–Rio Grande Coastal Basin. The Arroyo watershed is a flat coastal plain that slopes gently toward the Gulf of Mexico. The fertile farmland, long growing season, and irrigation water from the Rio Grande make this region one of the most productive agricultural areas in the U.S. The mild climate, semi-tropical plants and animals, and many recreational opportunities draw large numbers of people to the Arroyo Colorado watershed.

Project Development

The Nueces River Authority (NRA) partnered with the TCEQ to conduct the survey. The study's sampling plan was shared with the public, and residents were given the opportunity to modify the sampling plan based on their local knowledge and expertise. This information sharing ensured that the study collected and assessed samples from the most appropriate sites.

The NRA conducted basic recreational use attainability surveys in May of 2010 and April 2011. In September of 2011, the NRA submitted its Comprehensive Recreational Use Attainability Analysis Report to the TCEQ. After reviewing the report and the information collected during the surveys, the TCEQ requested that the NRA collect additional information to support its decision on the most appropriate recreational use classification for the segment.

The Arroyo Colorado survey was finished when the final report was submitted to the TCEQ Standards Work Group in May 2012. The analysis is under review by the Standards Work Group, which expects to release the report for public comment in 2013.

Public Participation

Local participation is crucial in identifying the locations most used for contact recreation. Local water quality experts and users alike are asked to provide advice and feedback prior to and during the study.

For More Information

Visit our website:

<www.tceq.texas.gov/waterquality/tmdl/87-arroyobacteria.html>

Or contact:

Roger Miranda, TCEQ TMDL Program,
512-239-6278, roger.miranda@tceq.texas.gov

To learn more about RUAAs or the status of the use attainability analysis for the Arroyo, see our website at:

<www.tceq.texas.gov/waterquality/standards/ruaas/arroyocolorado2202>.

Or contact:

Joe Martin, TCEQ Standards Program
512-239-3163, joe.martin@tceq.texas.gov

Project Development Status

Start Date: May 2010

Projected End Date: August 2011

Survey: Percent Complete

	10	20	30	40	50	60	70	80	90	100
Sampling Plan										
Data Collection										
Report Preparation										

Project Highlights

- The TCEQ and the Nueces River Authority held a public meeting in April 2010 to introduce the project to regional stakeholders and ask their advice about the survey.
- The Nueces River Authority conducted basic recreational use attainability surveys in May 2010 and April 2011, conducted interviews of knowledgeable persons, and collected historical information about recreational activities in the Arroyo Colorado Above Tidal.
- The Nueces River Authority presented the results of the monitoring to stakeholders at public meetings in July 2010 and July 2011.
- In September 2011, the Nueces River Authority submitted a draft Comprehensive Recreational Use Attainability Analysis Report to the TCEQ. After reviewing the report and the information collected during the surveys, the TCEQ requested the Nueces River Authority collect additional information.
- The Nueces River Authority collected additional information in the fall of 2011 and spring of 2012.
- The Arroyo Colorado RUAA was finished in May 2012. The analysis is under review by the Standards Work Group, which expects to release its report for public comment in 2013.

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