2019 Rio Grande Basin Program Update

MAY 2019

USIBWC Clean Rivers Program

Introduction

The Rio Grande Basin and the Texas Clean Rivers Program

The Rio Grande Basin

The Rio Grande Basin is the largest basin in Texas by area, covering roughly 182,200 square miles, and encompassing three U.S. states and five Mexican States. The Rio Grande, which flows 1,254 miles between El Paso, TX and the Gulf of Mexico, forms the international border between the United States and Mexico and presents unique challenges for the administration of its waters. The Rio Grande Basin also encompasses the Pecos River, which runs 418 miles from the New Mexico-Texas state line through Texas before emptying into Amistad Reservoir; it is the Rio Grande's largest tributary. Due to the Rio Grande River's bi-national nature, only about 20% of the river's flows reach the Gulf of Mexico. The rest of its waters are taken to fulfill treaty obligations between the two countries, including irrigation and drinking water for the millions of people who live along the river on both sides of the border. For many of the border communities along the river, its waters provide 100% of the drinking water, making the river a priceless resource for the survival of all living things within the Chihuahuan Desert.

The U.S. International Boundary and Water Commission

The International Boundary and Water Commission (USIBWC) is a bi-national commission, established to apply boundary and water treaties and agreements between the United States (U.S.) and Mexico, and to settle disputes that arise in the application of these agreements. They are one of 15 partner agencies that collaborate with the Texas Commission on Environmental Quality (TCEQ) to administer the Texas Clean Rivers Program (CRP) in the 24 river and coastal basins in Texas. The USIBWC coordinates and conducts water quality monitoring, facilitates stakeholder outreach, and provides an assessment of the water quality data and water resources in the region. The fundamental goal of the partnership with the CRP is to maintain and improve surface water quality within the basin.

The Texas Clean Rivers Program

When the Texas Clean Rivers Program (CRP) was initiated in 1991, no river authority existed for the Rio Grande Basin in Texas; there continues to be no Rio Grande River Authority or Pecos River Authority. Matters were further complicated by the fact that two countries share the river. Due to the international nature of the watershed, the State of Texas, through the TCEQ, contracted with the United States Section, USIBWC in October 1998 to administer the CRP throughout the Texas portion of the Rio Grande Basin. To deal with a basin so large in territory, the USIBWC CRP splits the basin in Texas into four sub-basins: Upper, Middle, Lower, and the Pecos.

This Year's Highlights

in the Rio Grande Basin

New partner, RGISC

In August, USIBWC brought back a former partner to monitor stations in Laredo. The Rio Grande International Study Center's (RGISC) goal is to preserve and protect the Rio Grande watershed and environment and they do so through partnerships and alliances with a diverse array of groups and agencies. Volunteers form the heart of the RGISC mission, and their voluntary involvement with the CRP is a great asset to the program.

Sampling Resumes in the Rio Grande Tidal Segment

Water sampling has resumed in the Rio Grande Tidal segment In Brownsville, TX. The University of Texas Rio Grande Valley- Edinburg, a CRP partner, volunteered to collect routine monitoring of these important stations in 2018. This allows the program to collect water quality data for the only two tidal stations in the entire basin.

Delisting/New Listings

The Draft 2016 303(d) List describes new as well as delisted water quality impairments within the Rio Grande Basin. Chloride and Sulfate were newly listed impairments in Red Bluff Reservoir, but Amistad reservoir is no longer impaired for Chloride and Total Dissolved Solids. The Rio Grande River above Amistad Reservoir is also no longer impaired for Chloride. In addition, the Rio Grande below Falcon Reservoir is no longer impaired for bacteria (recreation use). The draft Integrated Report may be found at: https://www.tceq.texas.gov/waterquality/assessment/16twqi/16txir.

Santa Elena Canyon, Big Bend National Park

This Year's Highlights

in the Rio Grande Basin

TecH$_2$O Partner of the Year

The TecH$_2$O center is owned and managed by El Paso Water to foster an understanding and appreciation of total water management in the Chihuahuan Desert. The USIBWC CRP partners with the TecH$_2$O center during many outreach events throughout the year, teaching both children and adults about local water and science topics. In 2017, the TecH$_2$O center formally recognized the USIBWC CRP as their partner of the year due to the CRP's continued commitment to environmental outreach. The TecH2O center presented the program with a beautiful award that is proudly displayed in the lobby of the USIBWC Headquarters in El Paso.

Drought

Drought continues to be a concern in the Upper Rio Grande Basin. The Rio Grande near El Paso, TX, relies upon reservoir storage water levels, and these levels have been impacted by long-term drought and precipitation deficits. Water obligations to Mexico further enhance concerns over limited supply. With New Mexico reservoirs just upstream of El Paso frequently below 10% capacity, there are worries that we may be looking at conditions similar to the recent past heading into 2019.

Flooding

While the Upper Rio Grande Basin dealt with severe drought, the Lower Rio Grande, from Laredo, TX down to the areas of McAllen and Harlingen, TX, experienced severe flooding. Tropical depressions in the months of June and September 2018 caused periods of extended significant rainfall, leading to widespread flash flooding and significant river flooding. After the event in September, nearly all on-going drought conditions were eliminated.

Partner of the year award given to the USIBWC Clean Rivers Program

Public Outreach

The Rio Grande Basin Texas Clean Rivers Program

River Cleanups

Trash is a big problem in the Rio Grande Basin, and is a significant contributor to the pollution of the Rio Grande and the Pecos River. River cleanups are a great way to get the public involved with the river. Throughout the basin, the USIBWC CRP often helps other agencies, such as Texas Parks and Wildlife in Big Bend Ranch State Park, and non-profit organizations like the Rio Grande International Study Center (RGISC), promote their river cleanups. In the El Paso area, the USIBWC CRP runs the Adopt-a-River Program where interested groups adopt a section of the river and commit to doing cleanups throughout the year; 12 groups participate and a total of 26.23 miles of river are cleaned. This was modeled after the Adopt-a-Highway program.

Environmental Education

The USIBWC CRP is an avid proponent of environmental education and has therefore visited multiple school districts within the El Paso area, as well as partnered with an environmental education center. Curriculums the USIBWC CRP has available are environmental in nature and are geared towards all students, grades K-12. Hands on activities are a fantastic way to engage younger generations and get them interested in science and the environment!

Rio Research Roundup, RGISC

The USIBWC CRP and the Rio Grande International Study Center (RGISC) team up every year to do the Rio Research Roundup. The event is meant to show that we are all part of the same watershed. As part of a contest, high schools from all three U.S. states (Colorado, New Mexico and Texas) and schools across the border in Mexico collect water samples at the river on the same day. They perform basic water quality experiments using kits, write essays about the river, do a public service announcement and submit them. The winning school is chosen by the RGISC. Last year's Best of Country was Alamosa High School, in Alamosa, CO, and Best in Country for Mexico was CBTis 128, Cd. Juarez, Chihuahua.

More News from the Rio Grande Basin

and the Texas Clean Rivers Program

TPWD Texas Waters Curriculum

In 2018, El Paso Water collaborated with Texas Parks and Wildlife to bring an educational lecture series to the El Paso region to educate citizens on the challenges that Texas faces concerning water. They reached out to Leslie Grijalva, the USIBWC CRP Program Manager, to present at two of the seven scheduled lectures. Her first lecture focused on discussing the ecological significance of natural flow regimes, and the second lecture focused on natural and man-made instruments of watershed change. Between all seven presentations, this inaugural lecture series had over 200 people attend; hopefully it will return in 2019!

Midland College

USIBWC CRP partners with Midland College to monitor stations in the Pecos River. Associate Professor Greg Larson took two of his research students, Susan Aina and Angwafo Lum, out to the field to collect water samples to examine the effect of the Independence Creek convergence on the water quality of the Pecos River; through their research they determined that Independence Creek significantly dilutes the Pecos River, enhancing its water quality. Exposing students to programs such as the CRP allows them to develop skills and gain experience in the environmental field, preparing the youth of today to become tomorrow's scientific leaders.

Water Quality Monitoring

Monitoring Stations in the Rio Grande Basin

Routine water quality monitoring is conducted through an extensive network of volunteer partners and the regional offices of the TCEQ. Seventy-two stations are monitored by the USIBWC CRP partners, including five USIBWC field offices, four universities, three municipalities, the National Park Service, Texas Parks and Wildlife, and a non-profit organization. All data is collected under a TCEQ-approved Quality Assurance Project Plan. All laboratories used are accredited by the National Environmental Laboratory Accreditation Program (NELAP). Partners meet annually at Coordinated Monitoring Meetings to discuss sampling sites, monitoring schedules, and any issues in their regions.

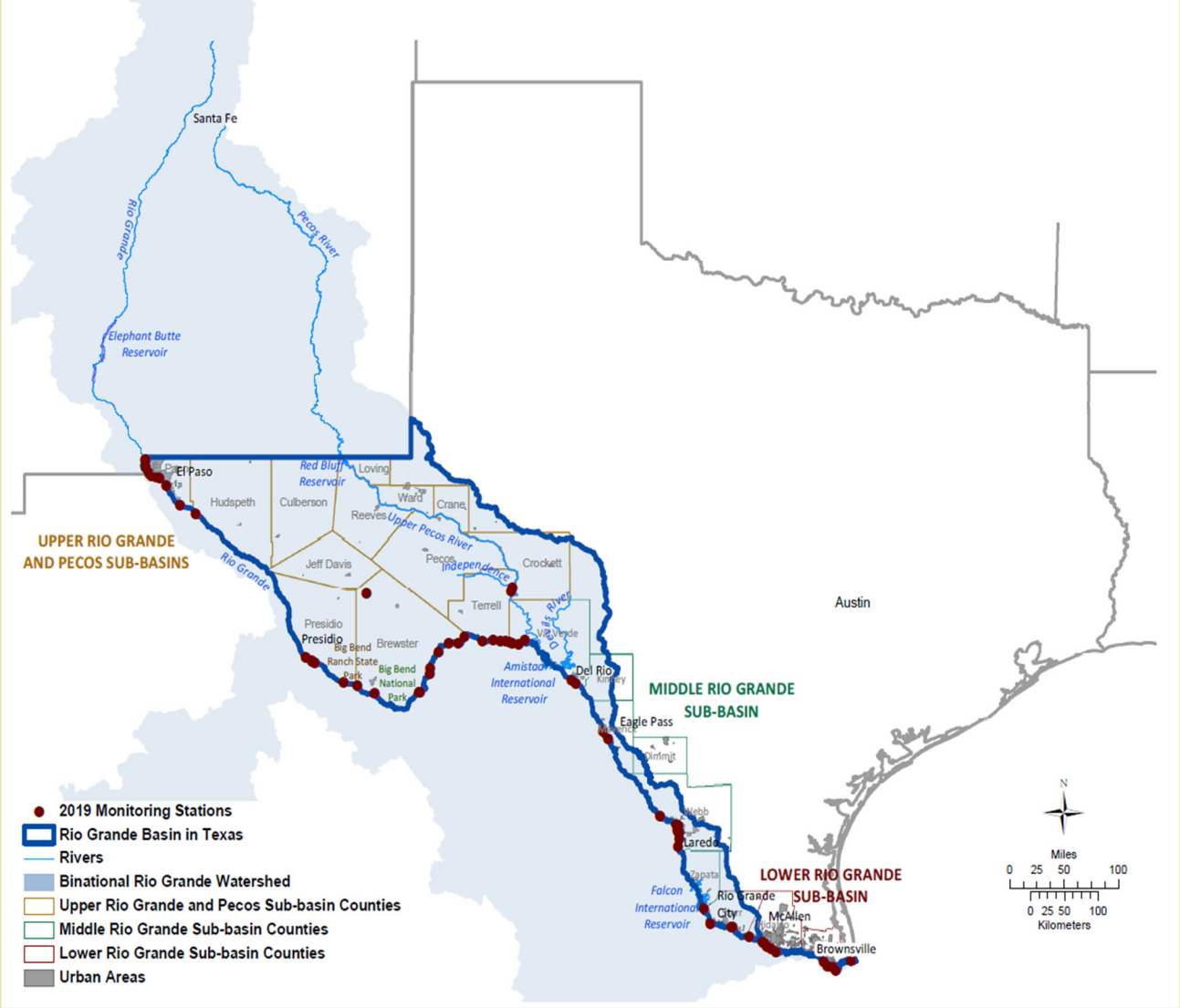

Figure 1. Monitoring stations within the Rio Grande Basin

Table of Water Quality Impairments and Concerns from the Draft 2016 305(b) Texas Water Quality Inventory and 303(d) List of Impaired Waterbodies*

Segment Number	Area	Parameter of Impairment	Parameter of Concern
2301	Rio Grande Tidal		Bacteria, Chlorophyll-a, DO
2302	Rio Grande Below Falcon Reservoir		Ammonia, Chlorophyll-a, DO
2302A	Arroyo Los Olmos	Bacteria	Chlorophyll-a
2303	International Falcon Reservoir		Toxicity in Water
2304	Rio Grande Below Amistad Reservoir	Bacteria	Ammonia, Toxicity in Water
2304B	Manadas Creek		Ammonia, Antimony in Sediment, Bacteria, Chlorophyll-a, Nitrate, Total Phosphorus
2306	Rio Grande Above Amistad Reservoir	Sulfate, TDS	Chlorophyll-a, Fish Kills
2307	Rio Grande Below Riverside Diversion Dam	Bacteria, Chloride, TDS	Ammonia, Chlorophyll-a, DO, Nitrate, Total Phosphorus
2308	Rio Grande Below International Dam	Bacteria	Ammonia, Chlorophyll-a, Total Phosphorus
2310	Lower Pecos		Algal Bloom/Golden Alga
2311	Upper Pecos River	DO	Bacteria, Chlorophyll-a, DO, Algal Bloom/Golden Alga
2312	Red Bluff Reservoir	Chloride[2], Sulfate[2]	DO, Algal Bloom/Golden Alga
2313	San Felipe Creek	Bacteria	
2314	Rio Grande Above International Dam	Bacteria	Ammonia, Chlorophyll-a, Nitrate

***Information obtained from the Draft 2016 Texas Integrated Report.** Information on how impairments and concerns are defined and determined can be found in the draft assessment guidance here: https://www.tceq.texas.gov/assets/public/waterquality/swqm/assess/16txir/2016_guidance.pdf.
DO = Dissolved Oxygen
[2] Newly listed impairments

Significant Findings

The primary water quality issue within the basin between 2006 and 2016 is high bacteria levels, and the issue is not only basin-wide, but border-wide. This stems from many factors, some of which are related to the rapid population growth that border communities have experienced in the past five to ten years. While the population has increased, infrastructure has not, and wastewater treatment plants on both sides of the border are not equipped to deal with the substantially increased sewage treatment demands. Many of the treatment plants for these communities are also aging rapidly and are in serious

need of upgrades and repairs in addition to expansion but lack the funds to make the needed changes. Along the border there are also many communities, termed *colonias,* that lack connections to city sewage and trash pickup systems. In the Middle Rio Grande sub-basin, near Laredo, TX, the bacteria concentration issues have worsened in the past 5 years due many of these issues.

Increasing dissolved solids concentrations (also expressed as salinity), especially during drought conditions, have become a major water quality issue for the Rio Grande Basin. Several areas of the basin, particularly the Lower Rio Grande Valley and the Pecos River, are highly saline. The Lower Rio Grande's salinity issue may be due to irrigation return flows and municipal wastewater returns from outside state and international boundaries. Sources of salinity in the Pecos are thought to be naturally- occurring salt deposits across the Permian Basin, as well as highly saline groundwater that might be feeding into the river. The Upper Rio Grande, Pecos and Lower Rio Grande sub-basins have seen increases in nutrient and chlorophyll-a levels and reports of algal blooms. The Pecos and Lower Rio Grande sub-basin also increasingly display depressed dissolved oxygen concentrations. The Lower Rio Grande Valley has excessive populations of invasive aquatic weeds in many areas, which may contribute to the depressed dissolved oxygen issues in this area. The Lower Rio Grande sub-basin also has a concern for toxicity in fish, although the exact cause of this is unknown. These issues continue to impact the health of fish and wildlife in the Rio Grande Basin.

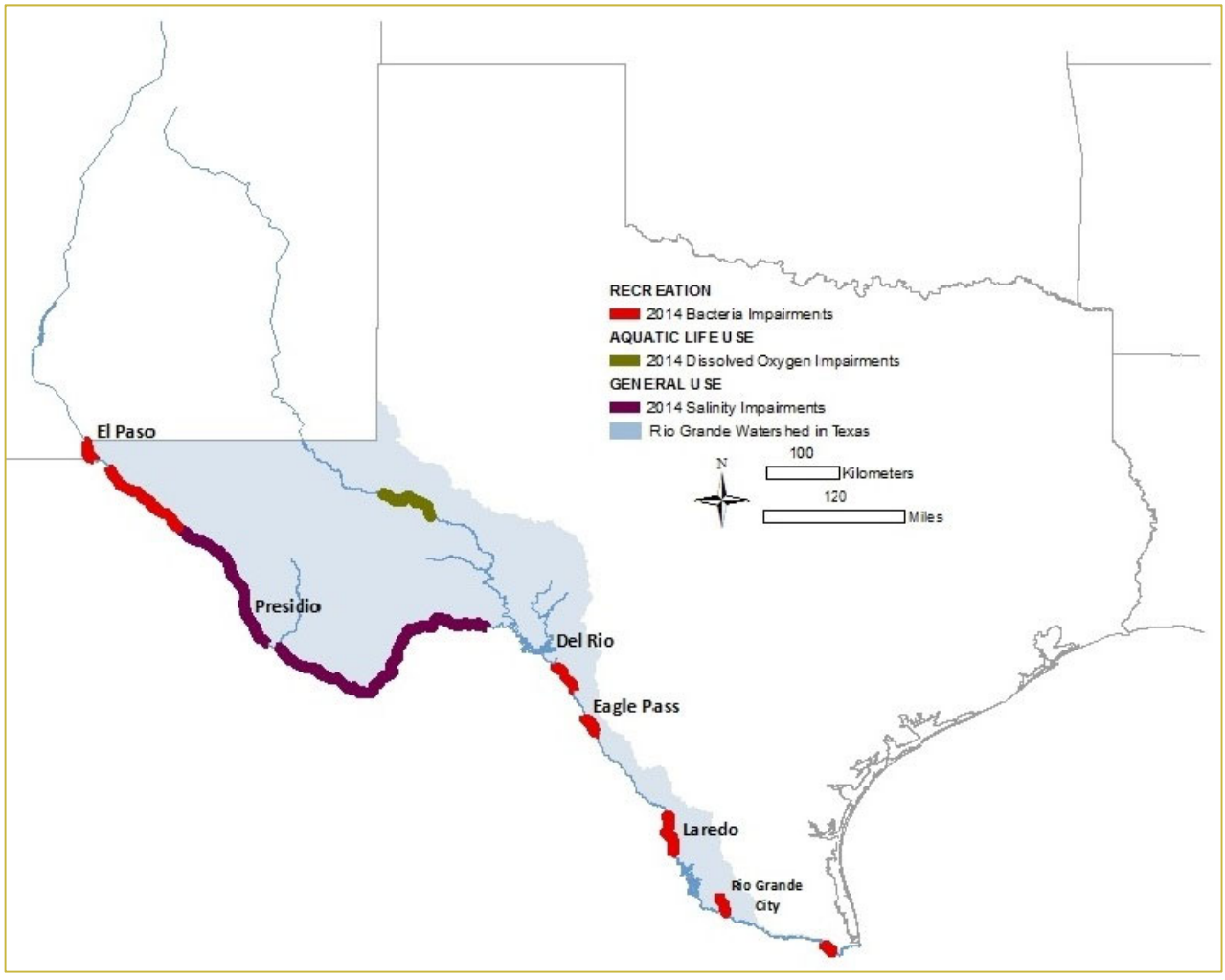

Figure 2. Water Quality impairments within the Rio Grande Basin

Recommendations

The Rio Grande Basin and the Texas Clean Rivers Program

The USIBWC, TCEQ, and other state and Federal entities are involved in multiple projects that are trying to address problems identified in the basin and deal directly with the issues mentioned in the section discussing significant findings, including:

- Biological control of salt cedar in areas such as Big Bend National Park and Presidio, and river cane in the Laredo area, as well as other invasive species, by the USIBWC, USDA and others;
- monitoring of metals in water by the USIBWC CRP at Manadas Creek in Laredo TX;
- monitoring for non-point sources of bacteria by the USIBWC CRP in multiple areas along the border;
- nutrient and total dissolved solids (TDS) loadings in the upper Rio Grande, including the Big Bend area;
- evaluation of salinity in the Upper and Lower Rio Grande and the Pecos by the USIBWC, with CRP assistance;
- creation of a watershed protection plan in the Rio Grande by the USIBWC, with CRP assistance;
- working with Texas Water Resources Institute to update the current watershed protection plan in the Pecos River;
- extensive aquatic life and habitat monitoring assessments in the Pecos River;
- Phase two bacteria special study and nutrient and heavy metals assessment in the middle Rio Grande; and
- monitoring and managing bacteria and TDS levels in the lower Rio Grande in response to agricultural concerns

Special studies, such as those mentioned above, backed by years of historical data for most stations, will help the USIBWC to gain a better understanding of where some of these issues come from, what needs to be done to address them, and what is the best course of action. Environmental education is also essential. Educational programs about river ecology, ecosystems, and environmentally responsible choices and actions are powerful tools utilized by the program in an attempt to encourage stakeholders and the general public to engage in environmentally responsible behavior.

Contact Us!

The Rio Grande Basin Texas Clean Rivers Program

U.S. International Boundary and Water Commission

Leslie Grijalva
USIBWC CRP Program Manager
915-832-4770
Leslie.Grijalva @ibwc.gov

Samantha Stiffler
USIBWC CRP Quality Assurance Officer
915-832-4779
Samantha.Stiffler@ibwc.gov

Texas Commission on Environmental Quality

Kelly Rodibaugh
TCEQ CRP Project Manager
512-239-1739
Kelly.Rodibaugh@tceq.texas.gov

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