Water Quality in the Lower Rio Grande
Annual Water Quality Update and Basin Advisory Meeting
Leslie Grijalva, USIBWC Texas Clean Rivers Program, April 18, 2012
What is the Texas Clean Rivers Program?

- State fee-funded program
- In every river basin in TX
- USIBWC collects water quality in the Rio Grande and Pecos rivers

- Water quality monitoring
- Assessment
- Public Outreach

Identify & Evaluate Water Quality Issues

Provide data so that corrective actions can be prioritized and implemented
Texas Clean Rivers Program History

1991: Texas Clean Rivers Act

1998: TCEQ-USIBWC partnership established

2012: Monitoring sites on the Rio Grande
- USIBWC CRP – 68 sites
- TCEQ – 35 sites
  - 9 duplicate
  - Total 91 stations
What Does CRP do?

Water Quality Monitoring

- Routine monitoring
- Special Studies
What Does CRP do?

Water Quality Assessment and Publications

- Annual Basin Highlights Report
- 5-year report
- Watershed characterizations
What Does CRP do?

Public Participation, Outreach, & Education
What kind of data does CRP collect?

**Routine parameters**
- Field data (pH, DO, EC, Temp)
- Conventionals (nutrients, salts, BOD)
- Bacteria

**Non-routine**
- Organics in sediment
- Metals
- Biological data
2012 Monitoring Stations

UPPER RIO GRANDE AND PECOS SUB-BASINS

MIDDLE RIO GRANDE SUB-BASIN

LOWER RIO GRANDE SUB-BASIN

2012 Monitoring Stations

Río Grande Basin in Texas
Rivers
Binational Río Grande Watershed
Upper Río Grande and Pecos Sub-basin Counties
Middle Río Grande Sub-basin Counties
Lower Río Grande Sub-basin Counties
Urban Areas
2012 Monitoring Stations – Lower Rio Grande

18 stations
Local Partnerships – Lower RG

HELP MONITOR, COLLECT, AND ANALYZE:

USIBWC MERCEDES
USIBWC FALCON
SABAL PALM SANCTUARY
UT BROWNSVILLE
US FISH & WILDLIFE
BROWNSVILLE PUB
USGS
TCEQ HARLINGEN
TCEQ CONTINUOUS WQ MONITORING
What happens to the data?

CRP and TCEQ regional offices collect and review data

Submit Data to TCEQ

TCEQ compares data to Standards

Segments not meeting standards are listed as impaired on the 303d List
# Texas Surface Water Quality Standards

For the Lower Rio Grande

<table>
<thead>
<tr>
<th>SEGMENT</th>
<th>USES</th>
<th>TDS (mg/l)</th>
<th>Bacteria (#/100 ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2301 – Tidal</td>
<td>• Primary Contact Recreation</td>
<td>--</td>
<td>35 Entero</td>
</tr>
<tr>
<td></td>
<td>• Excellent Aquatic Life</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2302 – Below Falcon</td>
<td>• Primary Contact Recreation</td>
<td>880</td>
<td>126 E. Coli</td>
</tr>
<tr>
<td></td>
<td>• High Aquatic Life</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Sole-source public drinking supply</td>
<td></td>
<td></td>
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<tr>
<td>2303 – Falcon Reservoir</td>
<td>• Primary Contact Recreation</td>
<td>1,000</td>
<td>126 E. Coli</td>
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<td></td>
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Integrated Report 303d List

**IMPAIRMENTS** ➔ don’t meet standards

**CONCERNS** ➔ almost don’t meet standards, or have high values of parameters for which there are no standards
2010 Impaired Waters in the Lower Rio Grande

- Ammonia
- Mercury in fish tissue
- Total Phosphorus, Ammonia, Nitrate, Orthophosphorus, Toxicity in Water (Falcon)
- Bacteria (Arroyo Los Olmos)
- Chlorophyll-a
- Bacteria
- Depressed DO
- Bacteria & Depressed DO
- Bacteria, Chlorophyll-a
Brownsville Bacteria Special Study

• To characterize bacteria impairment in Brownsville
  • Planning Phase 2008-2009
  • Sampling 2010
  • Final Report Summer 2011

• Study did not pick up historically high bacteria

• No one feature could be pointed to as a likely cause

• Wastewater infrastructure improvements likely cause of decrease bacteria

• Bacteria has remained low

• Final report can be found on the CRP website:
  • http://www.ibwc.gov/CRP/studies.htm
Lower RG Bacteria Summary

Decreasing bacteria
• Brownsville (impaired section) since the plant went online
• Most likely due to the first wastewater treatment plant in Matamoros, which went online in 2008.

→ improving bacteria in the RG

Increasing bacteria:
• Rio Grande City
• Hidalgo/McAllen
Salinity in the Lower RG

- High salinity was noticed in some water deliveries made to farmers by the Rio Grande Watermaster’s office.
- Salinity may lead to the need to increase water deliveries.
  - Higher volume of water is needed to dilute the salinity of the water.
- There were questions and concerns about salinity from local stakeholders and irrigators.
  - CRP looked at data from the routine monitoring stations in the area in response to the concerns.
  - Looked at trends in the data at our stations, both upstream and downstream of the area of concern.
TDS – Upstream of RG City

Roma
Station 13186

Los Olmos
Station 13103
TDS – Downstream of McAllen

Pharr
Station 15808

Progresso
Station 17247

TDS   –   Downstream of McAllen
What the data shows

• Data is inconclusive
  • Data is not consistently showing increasing salinity, as seen in the graphs.
  • Data does not indicate an impairment for salinity in the Lower RG Valley.
  • Currently meeting the standard.

• May be a non-point source problem rather than a point source.
  • Rainfall and storm water runoff may be contributing factors.

• CRP needs to look at additional possibilities.
  • Additional monitoring or stations.
  • Interested in possibly doing a special study on salinity in the area.

• Group at El Paso Community College is doing a nutrient study. A report will be out Summer/Fall 2012.
Projects in the Lower RG addressing bacteria and water quality

**TCEQ Continuous Water Quality Monitoring**

- Continuous Water Quality Monitoring (CWQM) stations monitor water quality parameters in selected watersheds throughout Texas on a 24-hour basis.
- Data is transmitted to the TCEQ and is reported at “near real time.”
- Evaluate TDS (salinity), but can monitor other parameters as well.
- 7 CWQM stations used by TCEQ RG Watermaster in the Lower RG area.
  - important for irrigation
Projects in the Lower RG addressing bacteria and water quality

USIBWC CRP Basin Summary Report

- 5-year report
- Will include watershed characterization and spatial analysis
- May review land use, discharges, hydrology, water quality, tributaries, and any other useful characteristics.
Projects in the Lower RG addressing bacteria and water quality

Lower RG Watershed Initiative

- Binational conceptual project
- Pilot project to address water quality problems and concerns in the Lower Rio Grande/Río Bravo below Falcon Reservoir (Segment 2302) through binational cooperation.
- Goal → is to develop a **binational watershed-based plan** for reducing bacteria levels in the southernmost stretch of the Rio Grande.
  - Additional water quality concerns may also be addressed (e.g. salinity and dissolved oxygen)
- Serve as an **institutional model** for addressing additional trans-boundary water quality issues in other portions of the Rio Grande.
Thank you!

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