Cleaning **U**p the **R**io Grande **E**nvironment (CURE)

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Outline

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Mission Statement

The mission of CURE is to restore the natural flow of the Rio Grande as well as reduce pollution levels by 50% by 2050 to improve the overall conditions of the Texas-Mexico portion of the river basin. While the three problems highlighted in this report are not the only issues affecting this basin, by working on them, the overall quality of the Rio Grande Basin will hopefully improve.

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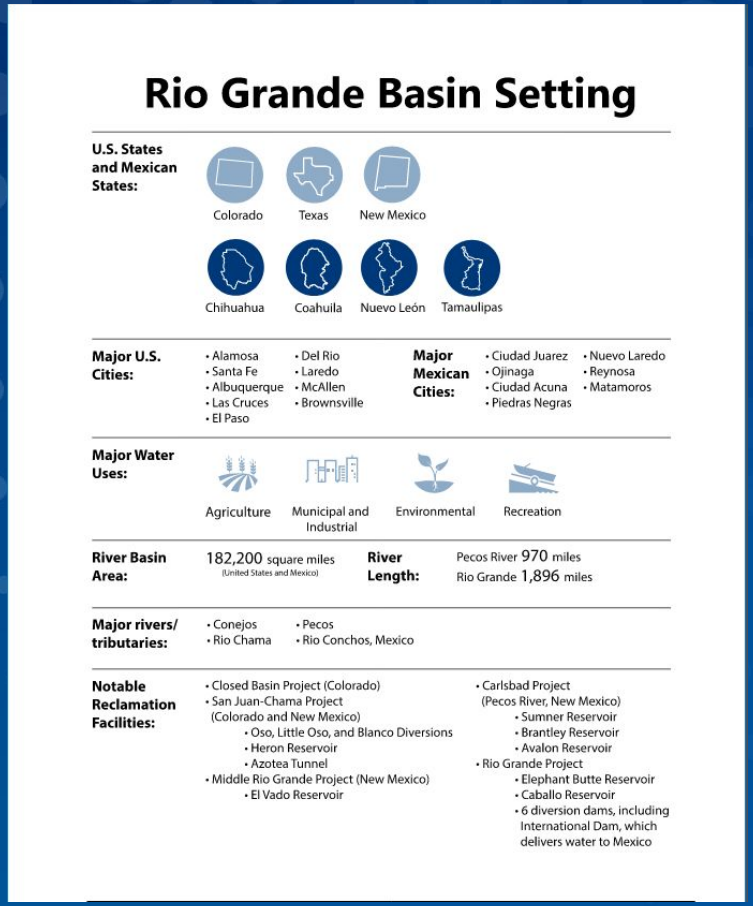
Background and History

- Rio Grande flows 1,900 square miles
- Drains 182,200 square miles in the US/Mexico
  - 3 US States
  - 4 Mexico States
- Headwaters in San Juan Mountains in CO
- Flows to the Gulf of Mexico



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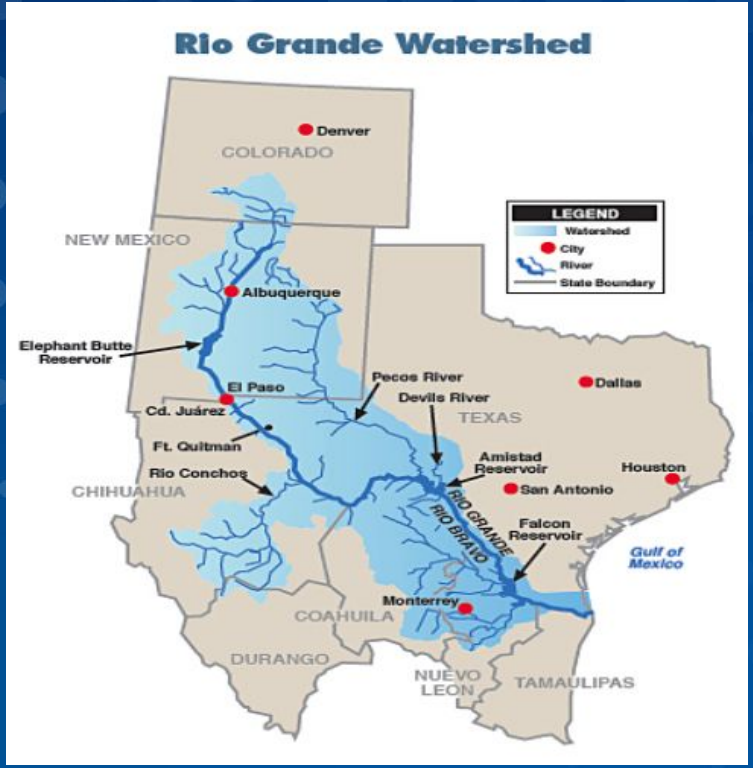
Background and History

The Rio Grande Basin is typically divided into 4 distinct reaches:

- Upper Rio Grande
- The Forgotten Reach
- Lower Rio Grande
- The Pecos River



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Policies and Mandates

Agencies

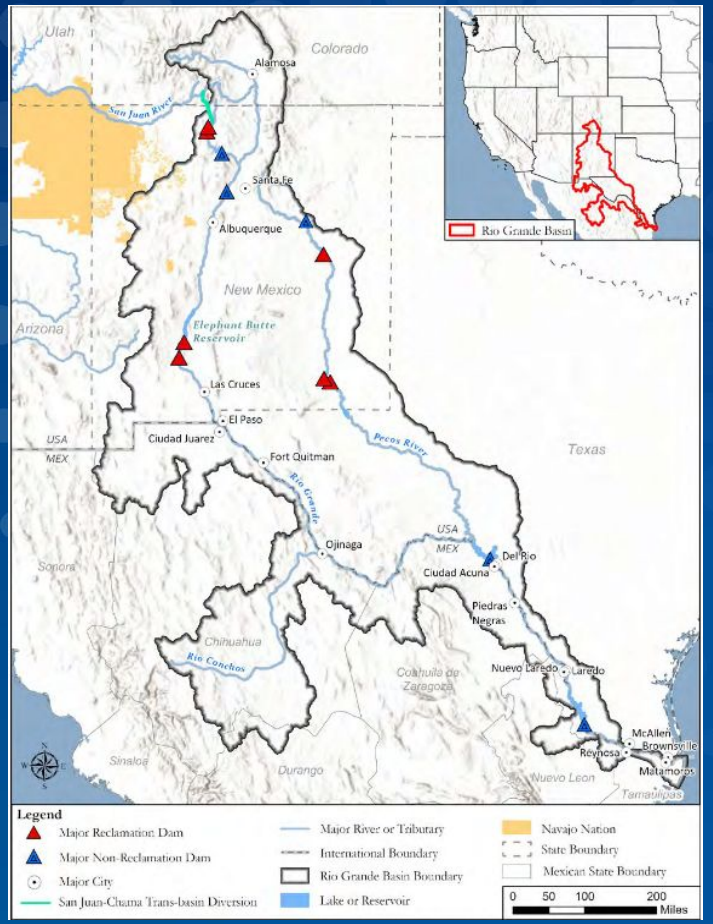
- Department of Interior Bureau of Reclamation
- International Boundary & Water Commision
- Environmental Protection Agency (EPA)
- Secretariat of Environment and Natural Resources (SEMARNAT)

Compacts, Agreements, and Legislation

- The 1906 Convention (US and Mexico)
- The 1944 Water Utilization Treaty
- The Rio Grande Compact
- The Upper Colorado River Compact
- Surface water and groundwater management

Current Reclamation Facilities

- Reclamation Dams
- Reservoirs (Elephant Butte, Amistad, Falcon)



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Problem 1: Water Over-Extraction

- The Rio Grande River currently provides water to over 6 million people. As population increases the drain on the river also increases.
- In the TX-MX region of the Rio Grande basin, over 80% of the water found in the river basin is used for irrigation for crops. Again, as population increases, agricultural needs will also increase which is harming the river basin.
- Regions of the river run dry for multiple months through the year and few methods have been implemented to prevent these dry periods.

GOALS: By 2050 improve the efficiency of water usage in the river basin to ensure that the river can support the population that relies on it.

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Proposed Water Over Extraction Solution

- Considering how many people heavily depend on the Rio Grande River for their water source it would be unrealistic to recommend cutting down on water extraction.
- Instead, we must work to ensure that all water extraction is being done in the most efficient way possible.
- In the TX-MX portion of the watershed, evaporation is a serious issue with large portions of the river being dry for months at a time. Installing reservoirs throughout the river system at points of high elevation could help reduce evaporation.

Problem 2: Pollution/Contamination

- 5-6 million gallons of raw sewage enters the Lower Rio Grande in Lerado, Texas each day
- This includes a combination of industrial, municipal, and agricultural waste
  - This leads to unpleasant smells and unsafe water activities on the rivers downstream
- Raw sewage contributes to nitrogen and phosphorus entering the waterways and leads to eutrophication
- Heavy metals are also contaminating the waters and get into the fish population which is harmful to the fish and any predators eating the fish
- There are limitations on what fish are able to be eaten

GOALS: By 2050 reduce the amount of waste being discharged into the Rio Grande watershed to prevent future algal blooms and reduce contamination in the fish population

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Proposed Pollution/Contamination Solution

- Plant native plant species and remove invasive species to help reduce the amount of nitrogen and phosphorus in the watershed
- Put new regulations for both Texas and Mexico on what can be released in the watershed to help reduce the contaminants
- Create a panel between the United States and Mexico to monitor the contaminant levels to ensure they are being followed and being reduced
  - Ensure that the Rio Grande is safe for all who want to enjoy it
- Promote community clean ups to get people involved and wanting to clean up the Rio Grande

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Problem 3: Salinity

- On average, water salinity in the Rio Grande is increasing at an annual rate of 15 to 18 mg/L
- Water removal, irrigation return flows, and agricultural processes are the causes for the increased salinity.
- This increase affects the local wildlife, marine life, and environment in the areas surrounding the TX-MX subbasin.
- Fish that are naturally found in Rio Grande are now dying or leaving.

GOALS: Reduce the Salinity to its natural levels by 2050, prevent overuse and misuses of the Rio Grande (TX-MX) subbasin for agricultural and industrial processes.

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Proposed Salinity Solution

- Combined effort from the EPA (USA) and the SEMARNAT (Mexico) to create laws for agricultural and industrial processes, that must be abided countries in reference to water salinity in the Rio Grande.
  - This alone would significantly reduce the rise in water salinity.
- Monitor groundwater levels and amount of salt in the land and water.
  - Can be done with a series of tests, and pumping wells if needed.
- Stop loss of deep rooted vegetation in high risk areas.
- Plant new vegetation, which promotes the reduction of salt in water.

Conclusions

- The Rio Grande serves communities along the Southern Border, and continuous misuse of the watersheds will be detrimental to all communities.
- The three problems presented earlier all interact with one another. To improve one, the others must also be improved.
- This will require efforts from both the EPA (USA) and SEMARNAT (Mexico) to ensure active recovery methods are being implemented.
- It’s not too late to remediate the damage that’s done and with continuous efforts, the Rio Grande will hopefully flow for generations to come.

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Questions?