# Region 8 - Lower Brazos
## Regional Flood Planning Group

**LOWER BRAZOS REGIONAL FLOOD PLANNING GROUP**

**January 28, 2021**

**10:00 AM**

**VIRTUAL MEETING**

# Region 8 - Lower Brazos
## Regional Flood Planning Group

1. **Call Meeting to Order**
2. **Attendance and Announcements**
3. **Approval of Minutes from the Previous Meeting**
4. **Public Input** ***(limited to 3 minutes each)***

# Region 8 - Lower Brazos
## Regional Flood Planning Group

**5. Report and possible discussion on report from Texas Water Development Board (TWDB) staff**

# Region 8 - Lower Brazos
## Regional Flood Planning Group

**6. Report and possible discussion on report by Regional Planning Sponsor**

# Region 8 - Lower Brazos
## Regional Flood Planning Group

**7. Presentation by Brazos River Authority staff**

**7.1 BRA 101**

**7.2 Lower Brazos Flood Protection Planning Study**

# Brazos River Authority

Aaron Abel

Water Services Manager

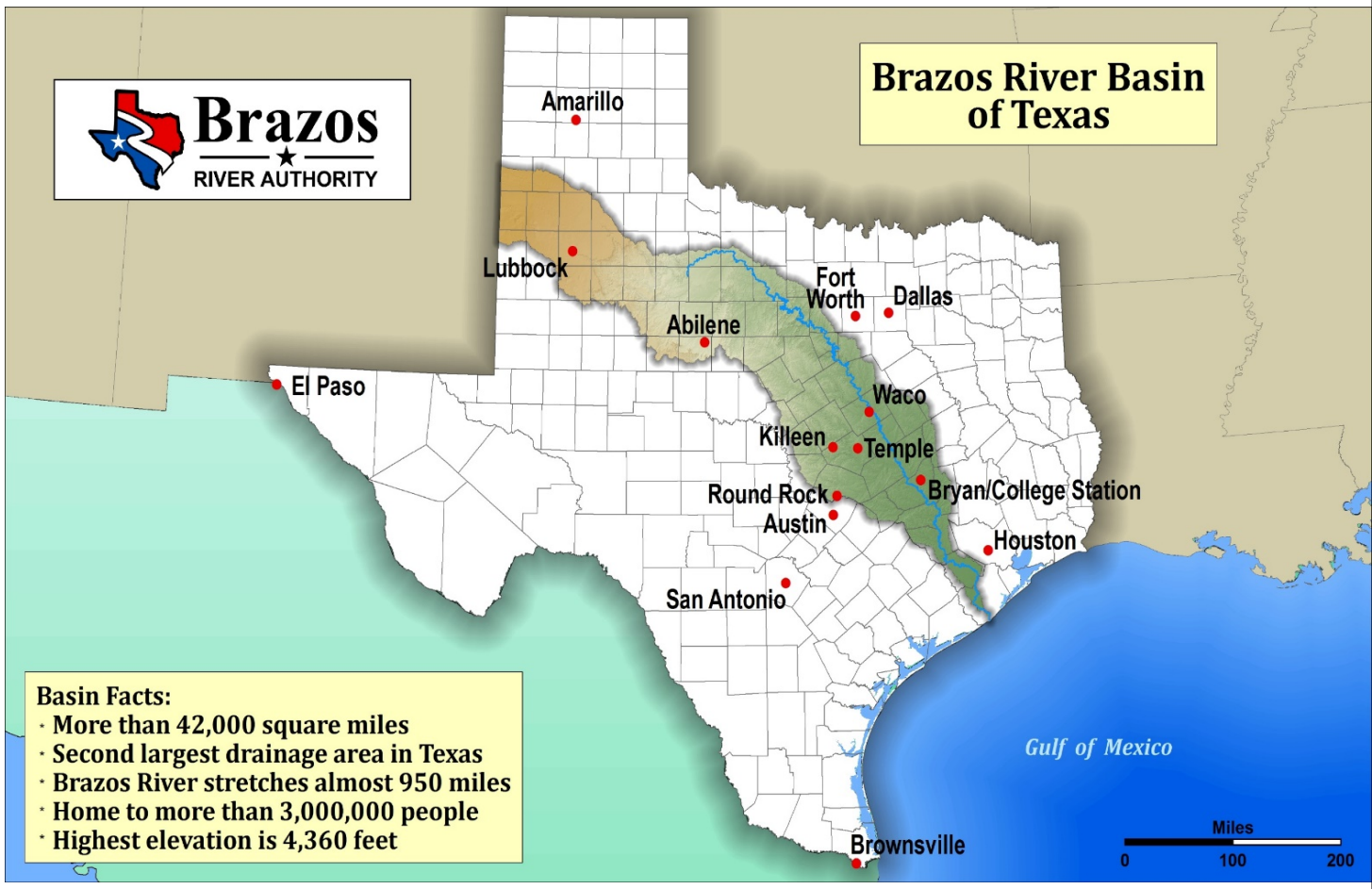
Brazos River Authority

# Brazos River Authority Overview

# Our Mission

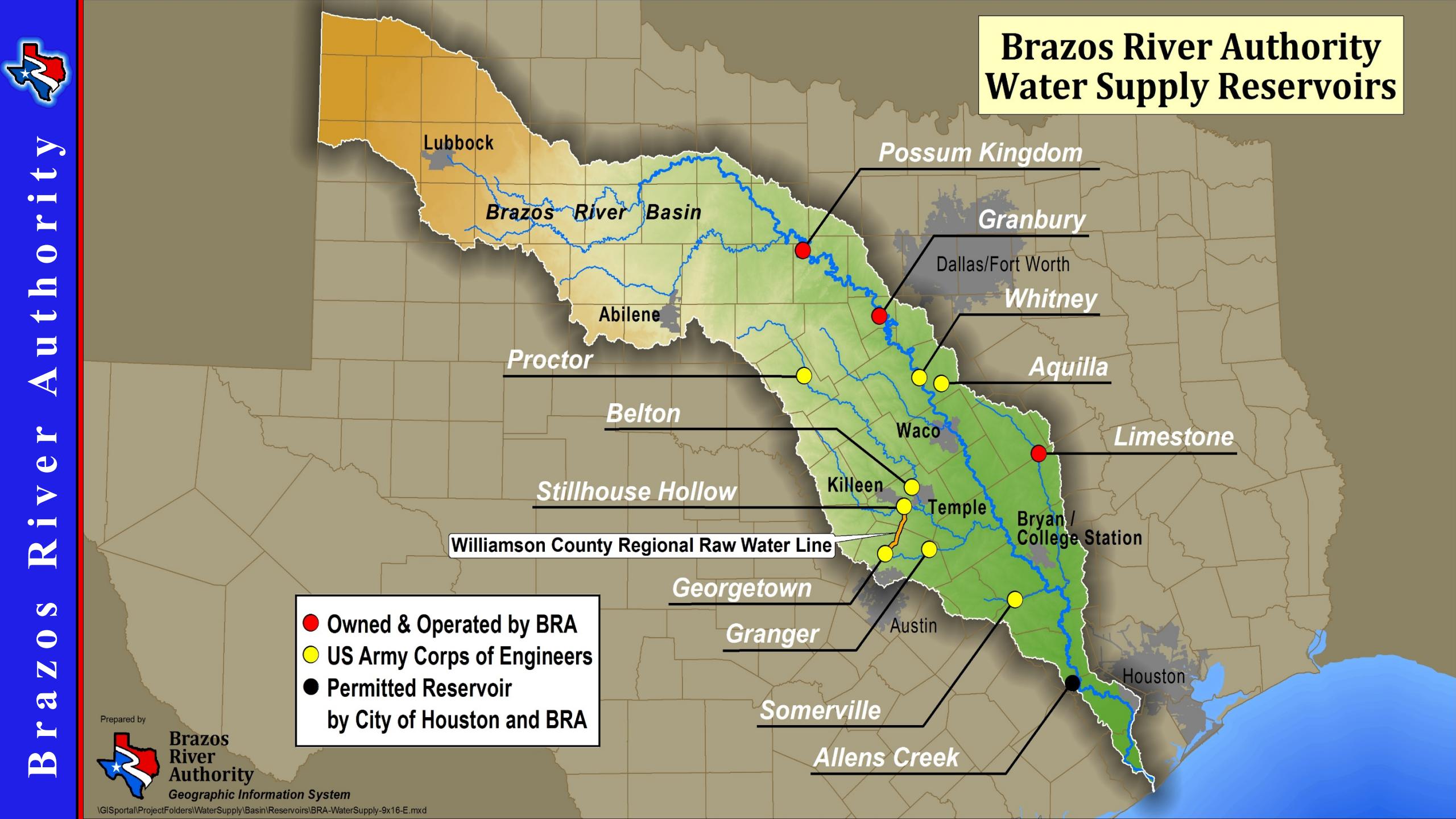
## To develop, manage, and protect the water resources of the Brazos River basin

- Oldest river authority in Texas
- Created by the Texas Legislature in 1929
- First entity of its kind in the nation
- Self-funded, do not levy or collect taxes
- 21 member Board



# Water Supply Reservoirs

- Built, own, and operate:
  - *Possum Kingdom Lake, Lake Granbury*, and *Lake Limestone*
- Contract with the US Army Corps of Engineers for storage at:
  - *Lake Whitney, Lake Belton, Lake Proctor, Lake Somerville, Lake Stillhouse-Hollow, Lake Granger, Lake Georgetown, & Lake Aquilla*


Brazos River Authority
Water Supply Reservoirs
Lubbock
Brazos River Basin
Abilene
Possum Kingdom
Granbury
Dallas/Fort Worth
Whitney
Aquilla
Proctor
Belton
Waco
Limestone
Killeen
Stillhouse Hollow
Temple
Bryan / College Station
Williamson County Regional Raw Water Line
Georgetown
Granger
Austin
Somerville
Houston
Allens Creek
Owned & Operated by BRA
US Army Corps of Engineers
Permitted Reservoir by City of Houston and BRA
Prepared by
Brazos River Authority
Geographic Information System
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Brazos River Authority

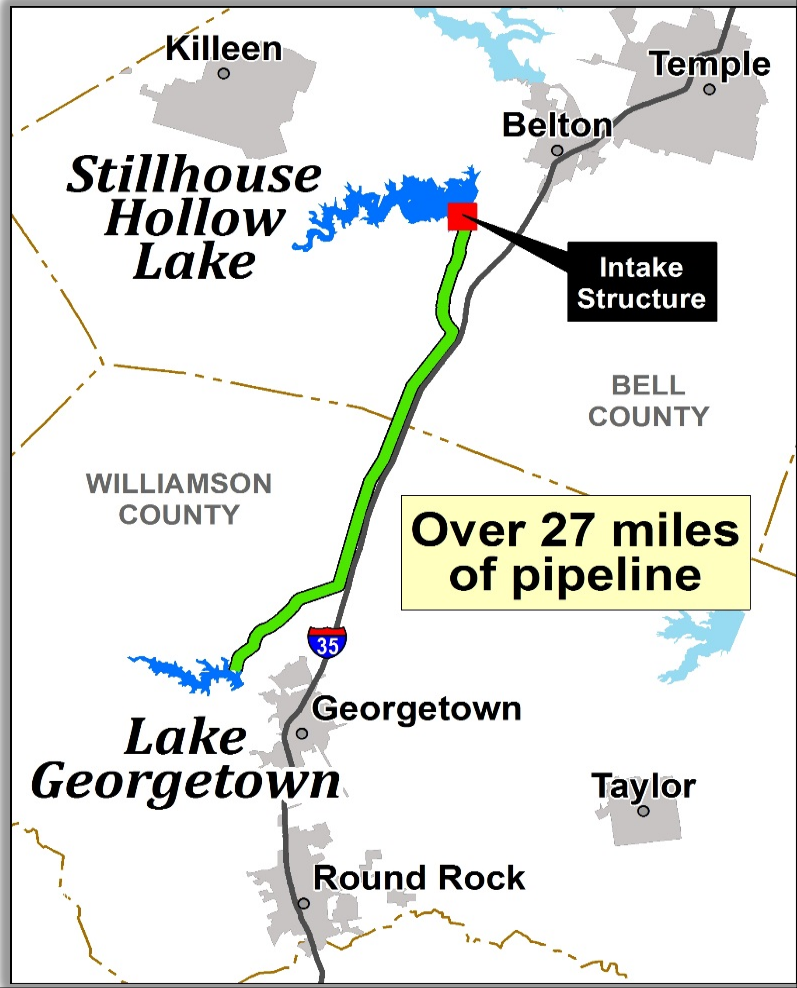
# Treatment Operations

- Own and operate drinking water treatment system in East Williamson County
- Operate regional wastewater systems for the Cities of Temple and Belton, and the Cities of Clute and Richwood
- Operate wastewater treatment plants for the Cities of Hutto and Sugar Land
- Operate water treatment plant for the City of Leander

## Brazos River Authority Overview

# Water Conveyance

- Own and operate the Williamson County Regional Raw Water Line
  - Roughly 28 mile pipeline
  - From Lake Stillhouse Hollow to Lake Georgetown
  - Supplies City of Round Rock, City of Georgetown, and Brushy Creek Municipal Utility District



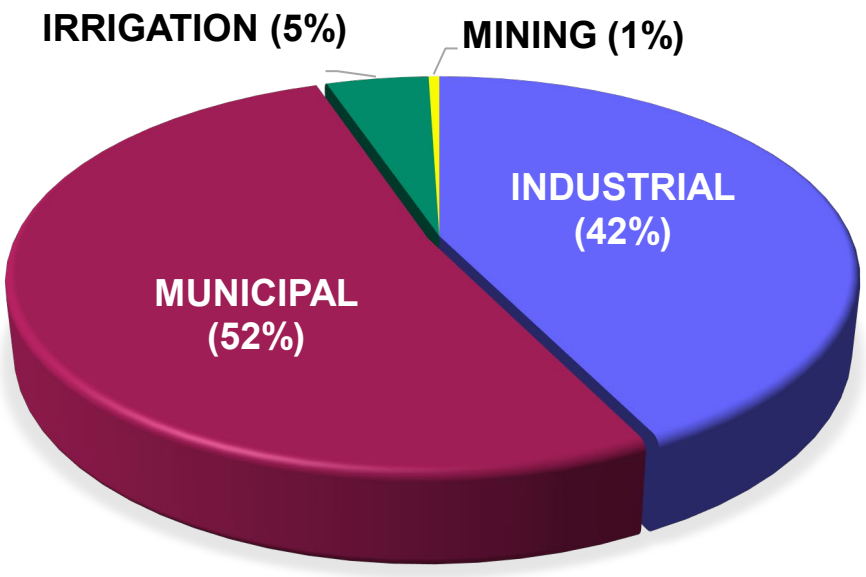
# Environmental Stewardship

- Lake and stream water quality and biological assessment
- NELAP accredited surface water laboratory
- Water quality protection and improvement projects
- Species-specific issues
- Environmental regulatory compliance and permitting

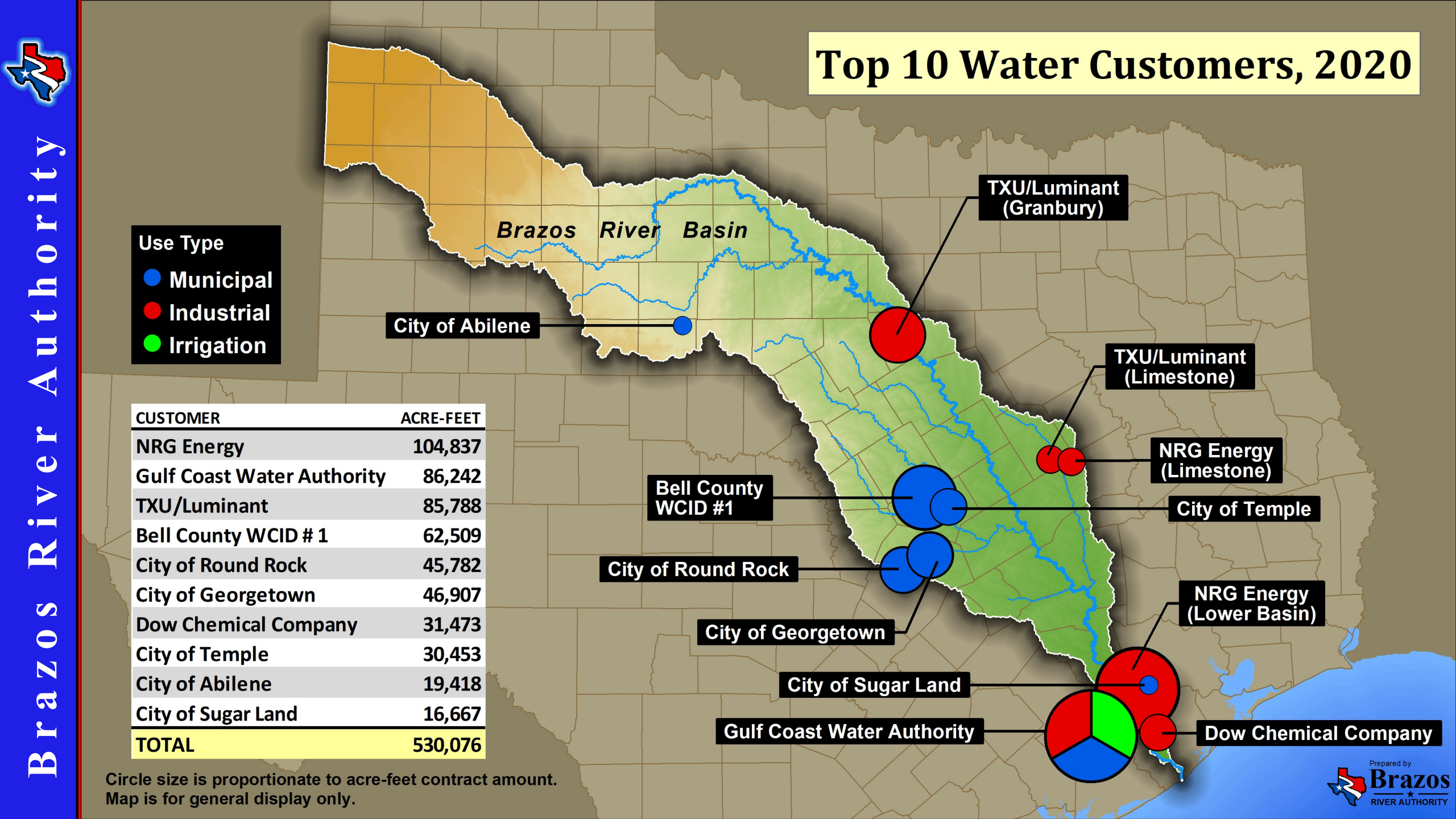
# Water Contracts

## Long Term Agreements

- About 160
- Contracts & commitments total about 742,000 acre-feet/yr
- Some lakeside
- Some downstream of reservoirs



# Top 10 Water Customers, 2020




| CUSTOMER | ACRE-FEET |
|---|---|
| NRG Energy | 104,837 |
| Gulf Coast Water Authority | 86,242 |
| TXU/Luminant | 85,788 |
| Bell County WCID # 1 | 62,509 |
| City of Round Rock | 45,782 |
| City of Georgetown | 46,907 |
| Dow Chemical Company | 31,473 |
| City of Temple | 30,453 |
| City of Abilene | 19,418 |
| City of Sugar Land | 16,667 |
| TOTAL | 530,076 |

Circle size is proportionate to acre-feet contract amount.
Map is for general display only.

Prepared by Brazos River Authority

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# Flood Operations

- BRA reservoirs contain no flood storage space
- What comes in must go out real-time

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# BRA Reservoir Operating Rules During Floods

- Don't release based on weather forecasts
- Don't make flooding worse downstream than it would have been without the reservoir being present
- Prevent water overtopping flood gates
- Attempt to minimize flood potential on upper end of lakes
- Ensure good communication
  - BRA Central Office and Lake Office staff
  - Downstream Call Lists
  - West Gulf River Forecast Center, USACE, and Other Entities
  - Emergency Management Officials
  - General Public
  - Media

Morris Sheppard Dam at Possum Kingdom Lake

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# Possum Kingdom Lake

Created by: Morris Shepard Dam
Built in: 1941
Location: Young, Palo Pinto, Stephens and Jack Counties
Total Storage: 538,000 acre feet

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# Lake Granbury

Created by: DeCordova Bend Dam
Built in: 1969
Location: Hood County
Total Storage: 134,000 acre feet

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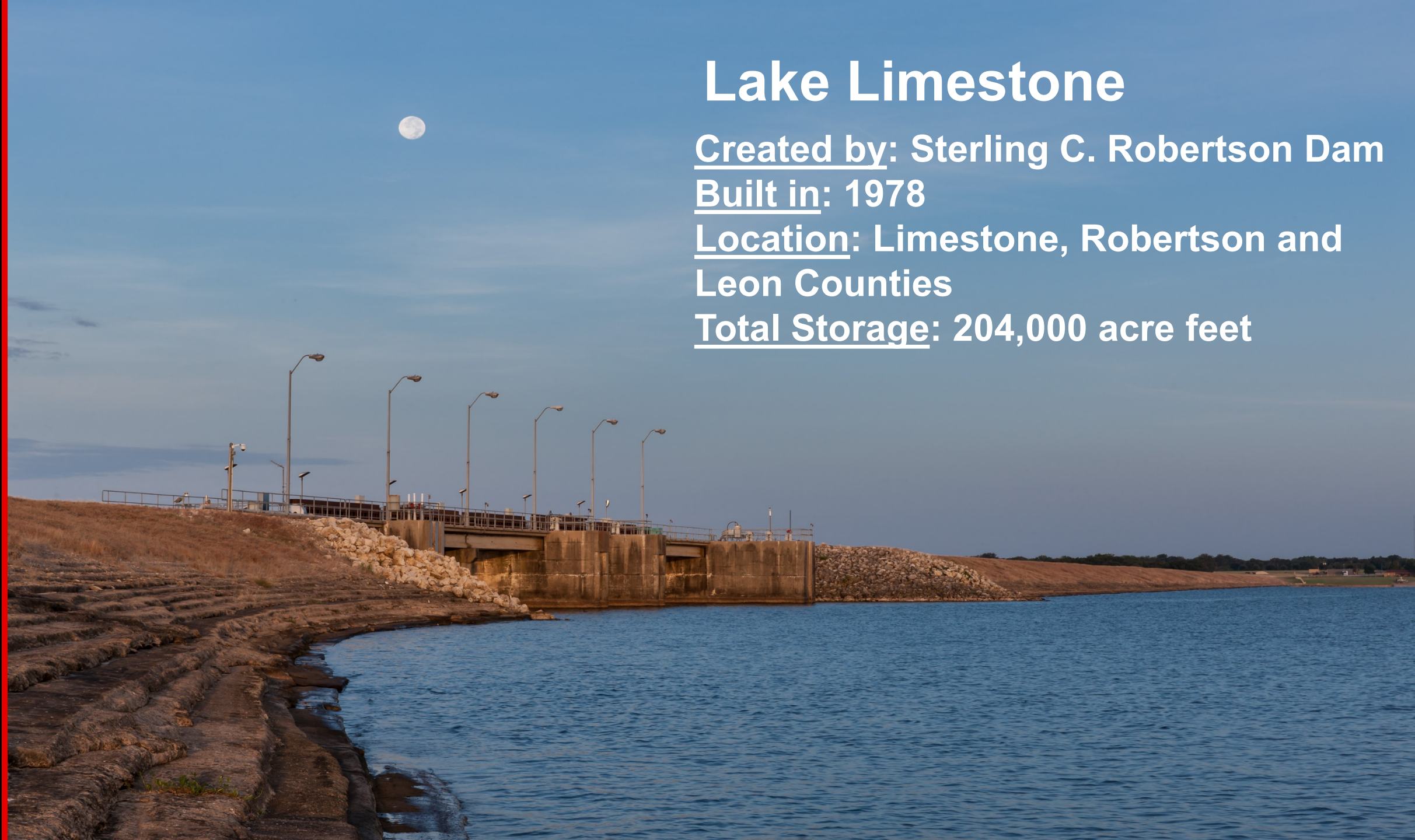
# Lake Limestone

**Created by**: Sterling C. Robertson Dam
**Built in**: 1978
**Location**: Limestone, Robertson and Leon Counties
**Total Storage**: 204,000 acre feet



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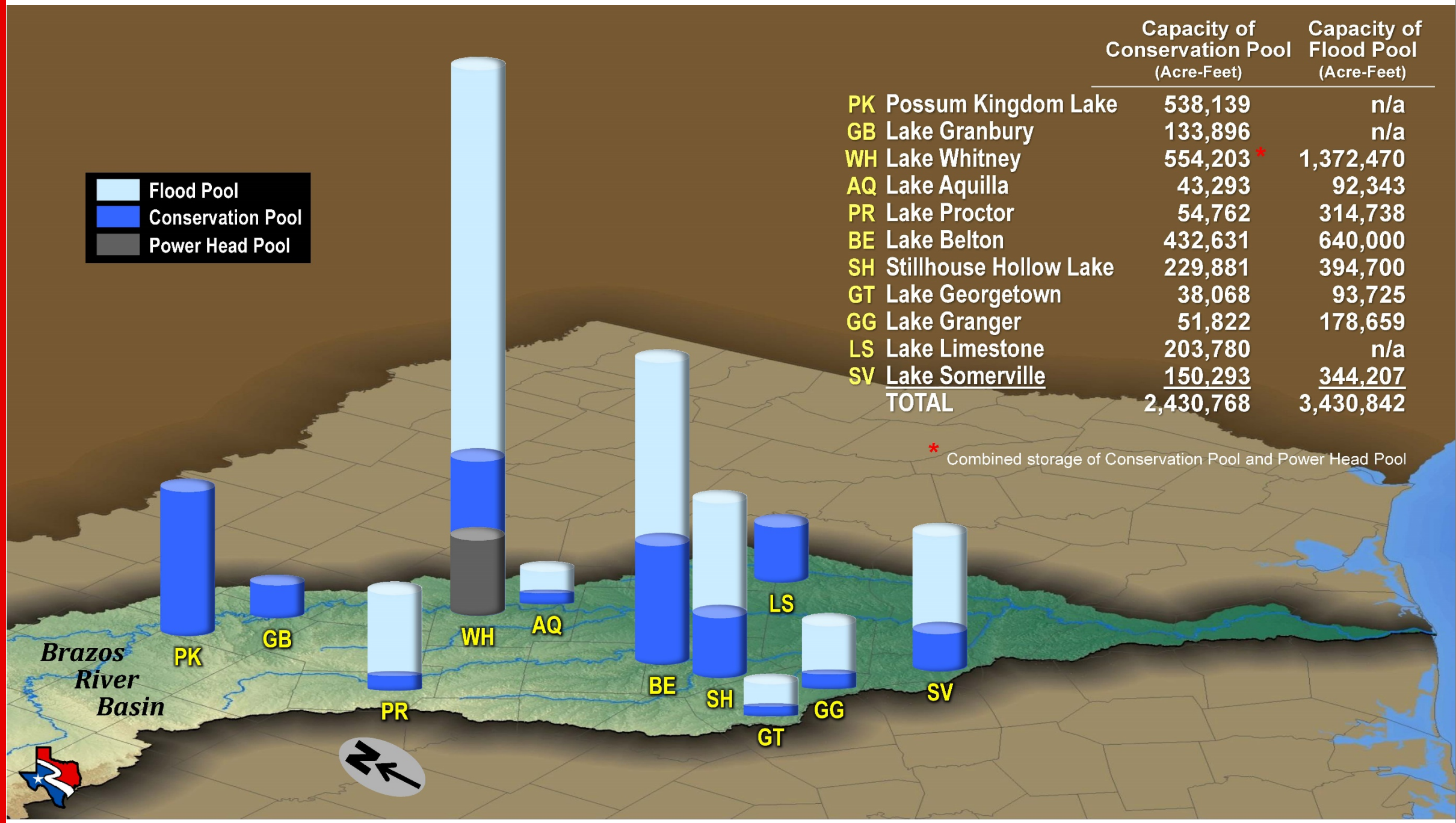


| | | Capacity of Conservation Pool (Acre-Feet) | Capacity of Flood Pool (Acre-Feet) |
|---|---|---|---|
| PK | Possum Kingdom Lake | 538,139 | n/a |
| GB | Lake Granbury | 133,896 | n/a |
| WH | Lake Whitney | 554,203 * | 1,372,470 |
| AQ | Lake Aquilla | 43,293 | 92,343 |
| PR | Lake Proctor | 54,762 | 314,738 |
| BE | Lake Belton | 432,631 | 640,000 |
| SH | Stillhouse Hollow Lake | 229,881 | 394,700 |
| GT | Lake Georgetown | 38,068 | 93,725 |
| GG | Lake Granger | 51,822 | 178,659 |
| LS | Lake Limestone | 203,780 | n/a |
| SV | Lake Somerville | 150,293 | 344,207 |
| | TOTAL | 2,430,768 | 3,430,842 |

* Combined storage of Conservation Pool and Power Head Pool

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# Brazos River Authority

Brazos River Authority

# *Lower Brazos Flood Protection Planning Study*

Presentation to:
Lower Brazos Regional Flood Planning Group
January 28, 2021 - Pam Hannemann

Brazos River Authority

## Conducted in 2 Phases

## Phase 1 – $1,121,168

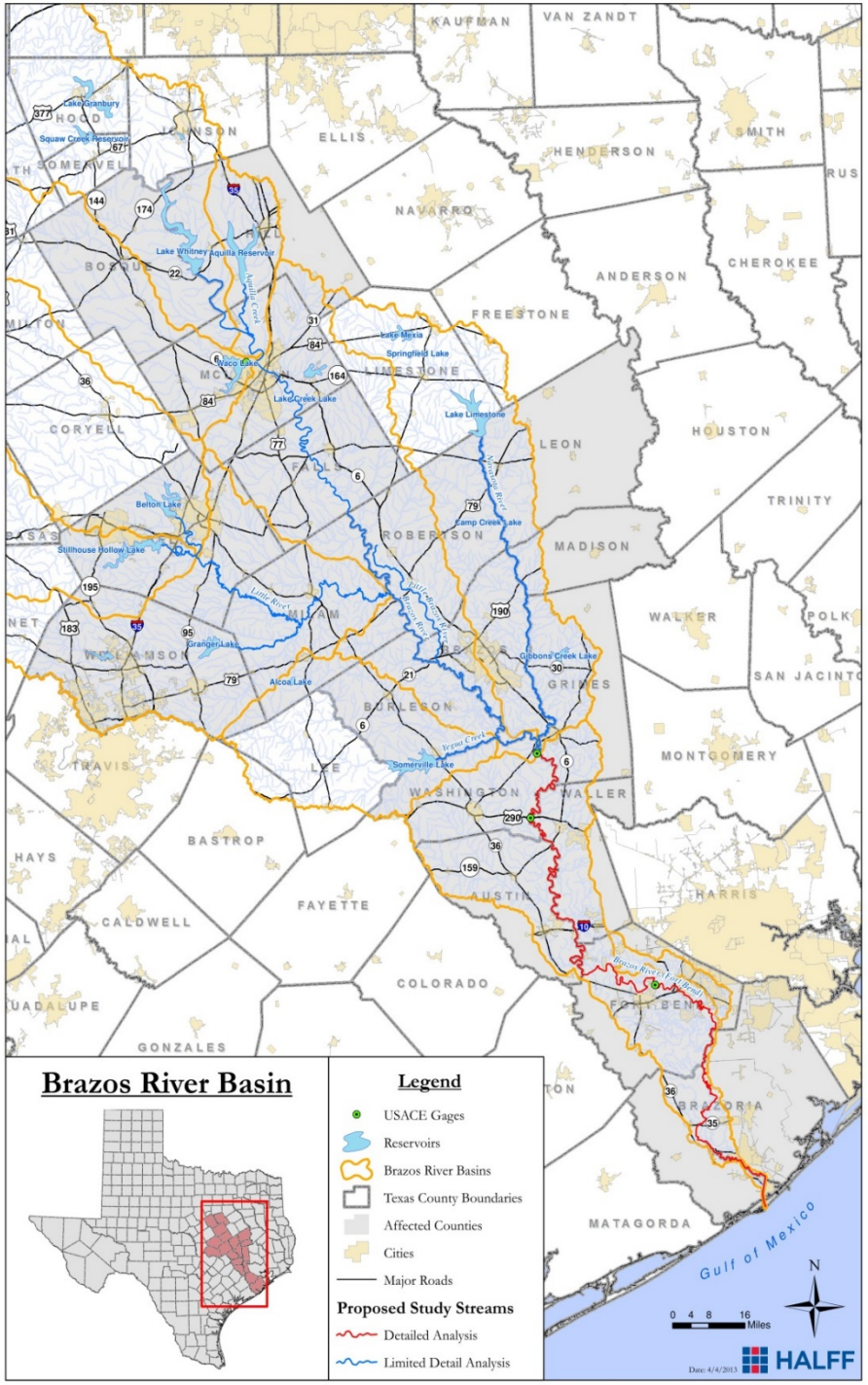
**Richmond gage to the Mouth of the Brazos**

## Phase 2 – $602,468

**above Hempstead gage to Richmond gage**

## Total Cost – $1,723,636

## Completed in 2019



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# *Study Participants*

- **TWDB – Flood Protection Grant (50% match funds)**
- **Eight (8) Local Stakeholders – Brazoria County, Fort Bend County, Waller County, Washington County, Lake Jackson, Sandy Point, Sugar Land, Velasco Drainage District, and Pecan Grove MUD**
- **Halff Associates – Technical Consultant**
- **Brazos River Authority – Grant Administrator Role**

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# *Reasons for the Study*

- One of the fastest growing areas in the country
- Hydrologic and hydraulic models/data are dated outside of Fort Bend County
- Need for consistent modeling methodology across county boundaries
- Need to assess lower Brazos watershed from a comprehensive basin-wide perspective (existing conditions and alternatives)
- 9,500 square miles of uncontrolled drainage area

Source : Halff Associates

Brazos River Authority

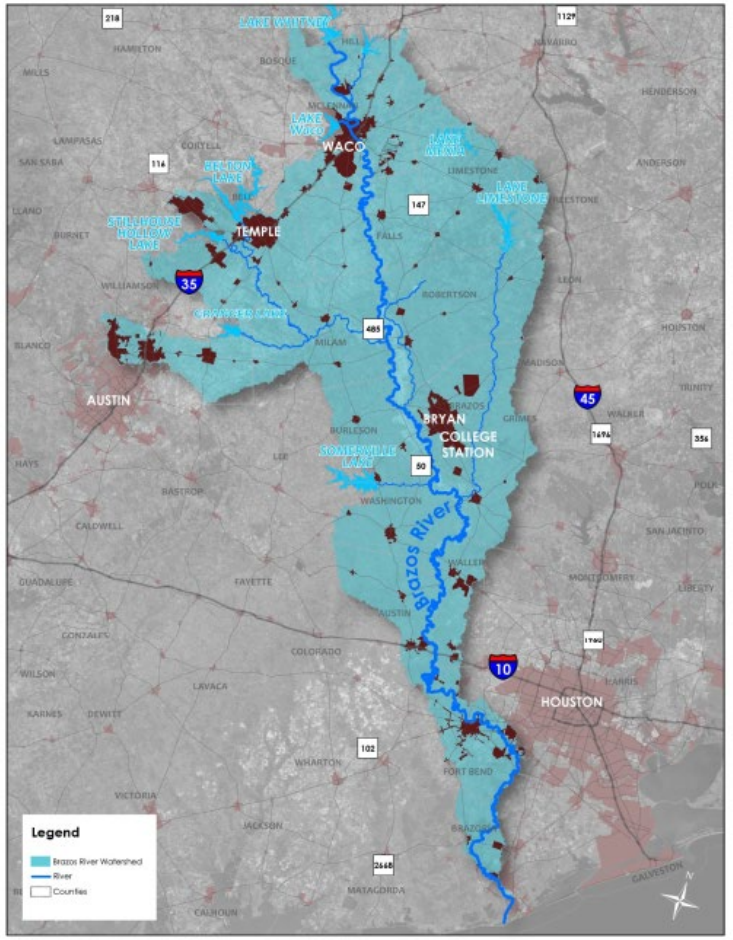
# *Goals of the Study*

- Quantify existing flooding issues and flood damage reduction alternatives
- Update hydrologic and hydraulic data for the lower Brazos River
- Calibrate new models to historical events and provide flood volumes, flood depths, and flood durations
- Facilitate land use planning, emergency response, and sound floodplain management

Source : Halff Associates

# Scope of Work

- Project Management
- Terrain Development
- Base Map Data Collection
- Hydrologic Analysis
- Field Survey
- Hydraulic Analysis
- Alternatives Formulation
- Flood Damage Analysis Modeling
- Environmental Constraints Analysis
- Documentation




Source : Halff Associates

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# *Study Results Summary*

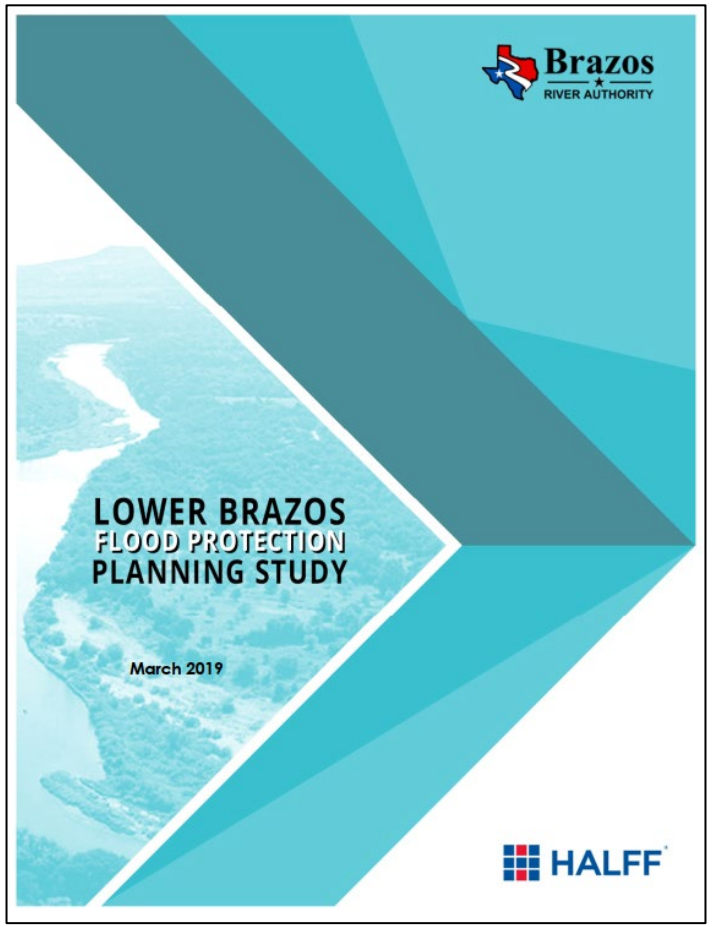
- Conducted stakeholder and public meetings throughout the watershed
- Developed a calibrated hydrologic model of over 9,500 square miles of the Lower Brazos
- Developed a calibrated hydraulic model of 220 river miles of the Brazos River
- Calculated 10%, 2%, 1% and 0.2% annual chance river flows and water surface elevations from Hempstead to the Gulf of Mexico
- Prepared 1% and 0.2% annual chance inundation maps
- Evaluated conceptual alternatives to reduce flood risk for the 1% annual chance event
- Identified NEXT STEPS to continue to improve flood protection planning and response

Source : Halff Associates

Brazos River Authority

# More Information

- Report is available at https://brazos.org/Projects/Lower-Brazos-Floodplain-Protection-Planning-Study



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**7. Presentation by Brazos River Authority staff**

**7.1 BRA 101**

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**8. Discussion and possible action regarding non-voting member liaisons designated by each RFPG to coordinate between all adjacent RFPG's and a Coastal Liaison (required per §361.11(f)(8)).**

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**9. Discussion on additional non-voting representatives from other agencies with interests related to regional flood planning.**

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**10. Discussion and possible action to select a sub-committee to review RFQ's**

# Region 8 - Lower Brazos
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**11. Report from Lower Brazos RFPG Chair**

# Region 8 - Lower Brazos
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**12. Discussion on new business to be considered at next meeting**

# Region 8 - Lower Brazos
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**13. Confirmation of next meeting date –**

**February 25, 2021**

# Region 8 - Lower Brazos
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**14. Adjourn**