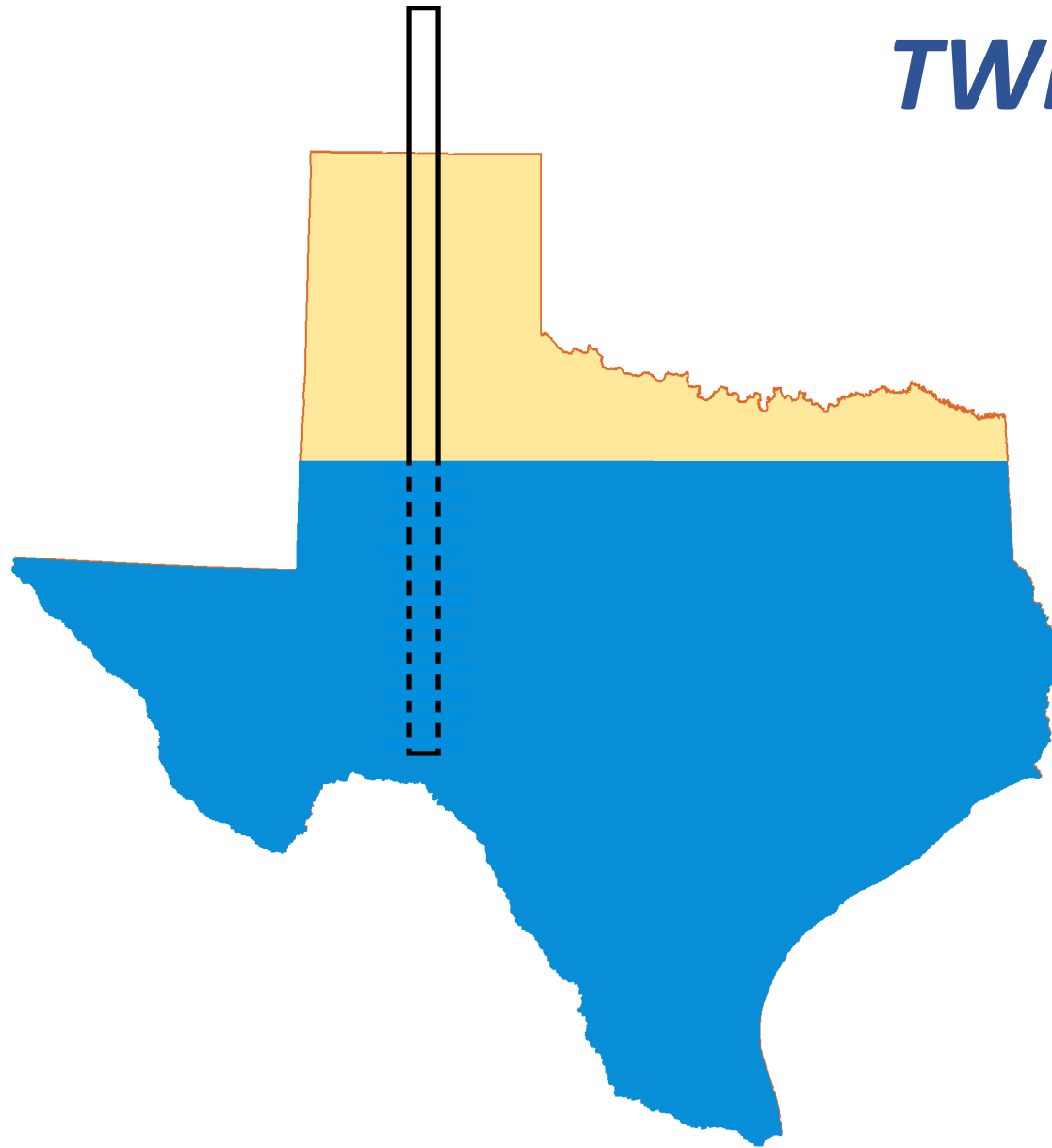


TWDB Update: Science, Infrastructure, and Support

**19th Annual
Bell County Symposium**

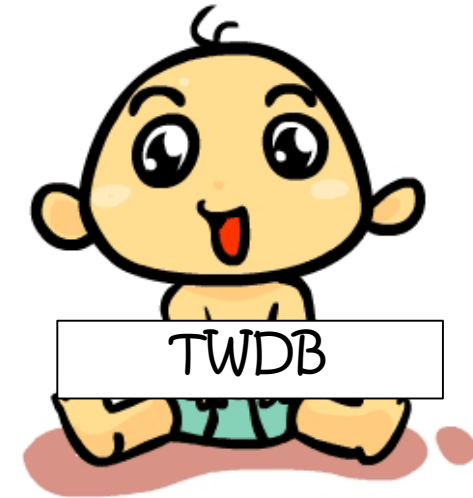
John T. Dupnik, P.G.

November 6, 2019

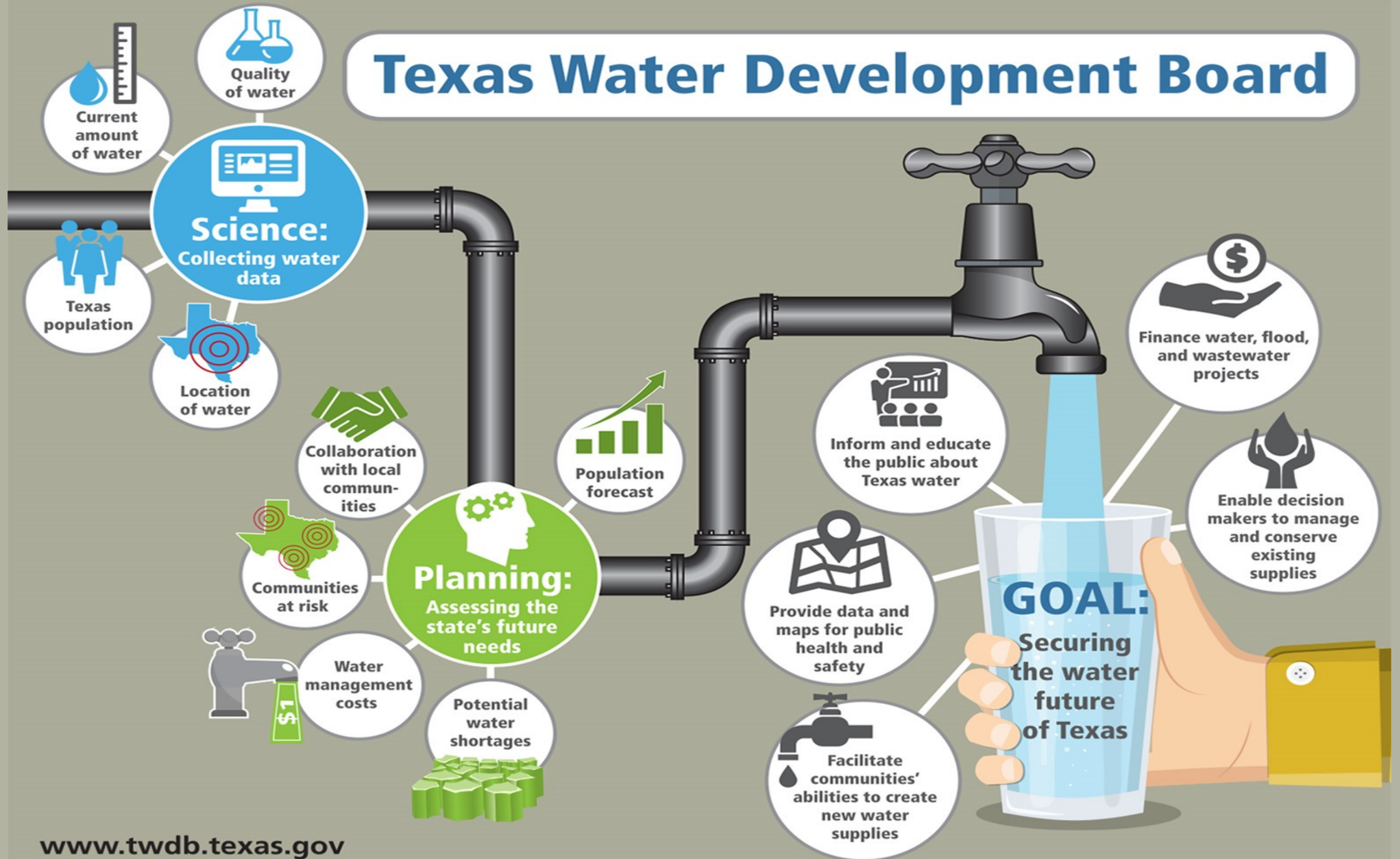


TWDB Update

- TWDB – Overview
- TWDB - Water Science and Data
- 86th Legislative Session
- Future Outlook



Texas Water Development Board



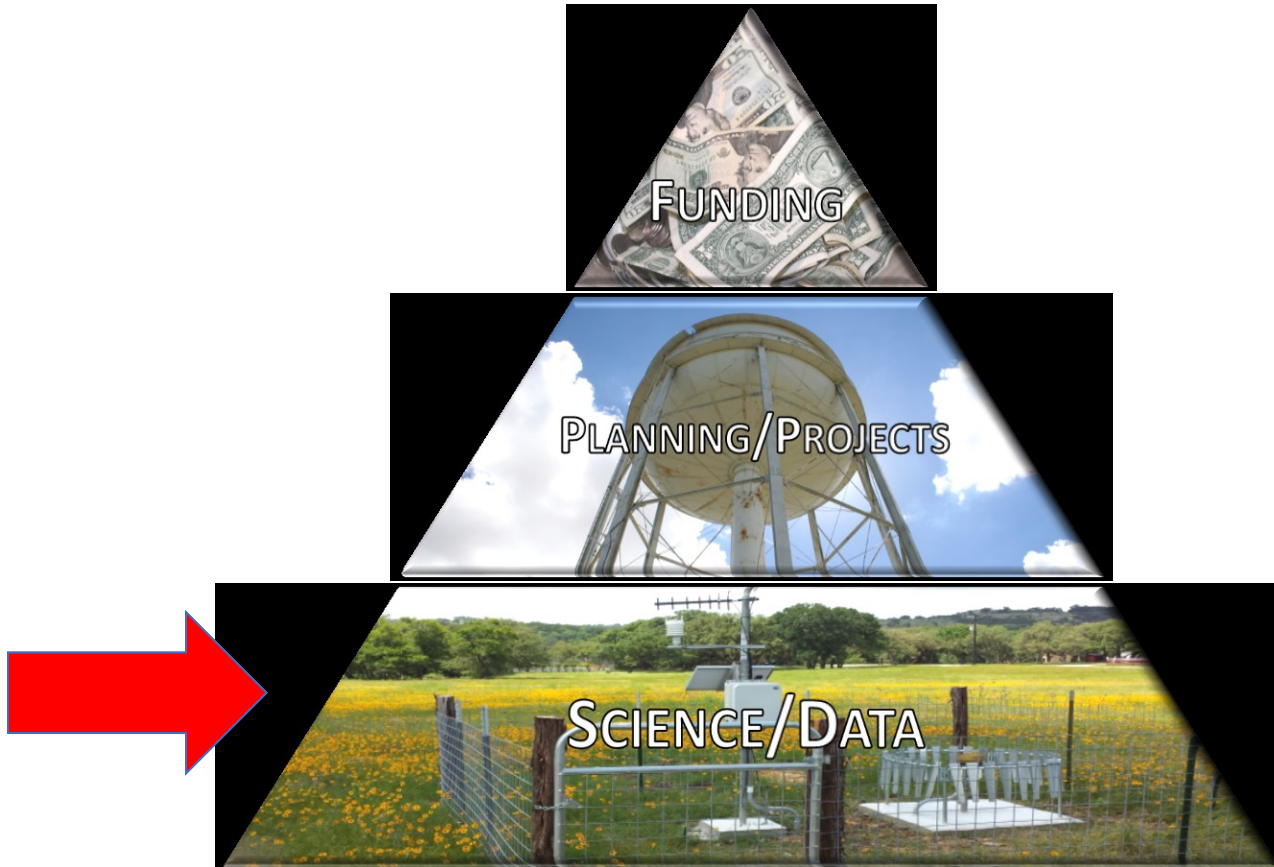
WATER SCIENCE & CONSERVATION

MISSION:

*To provide leadership, information, education, and support for planning, financial assistance, and outreach for the conservation and responsible **development of water** for Texas.*

“The better the data, the better the science. The better the science, the better the policy.”

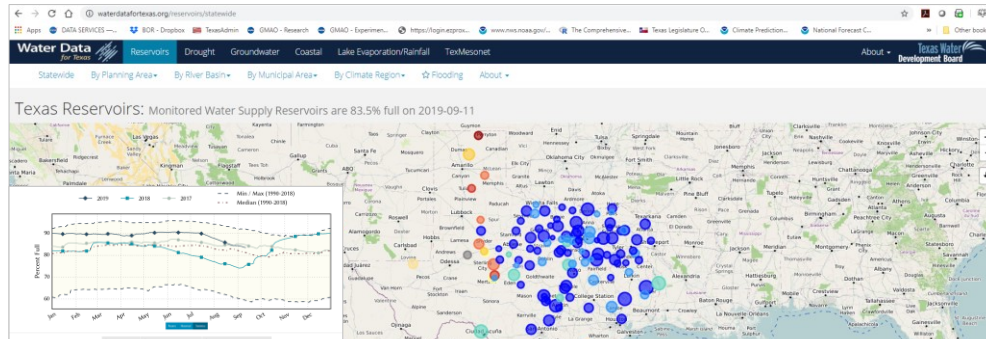
Director Kathleen Jackson



Water Data for Texas

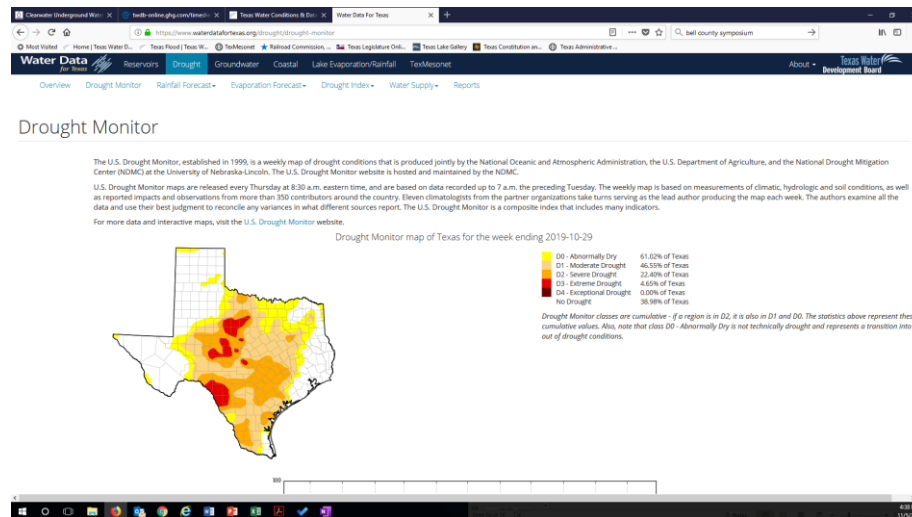


- *reservoirs
- *drought resources
- *recorder wells



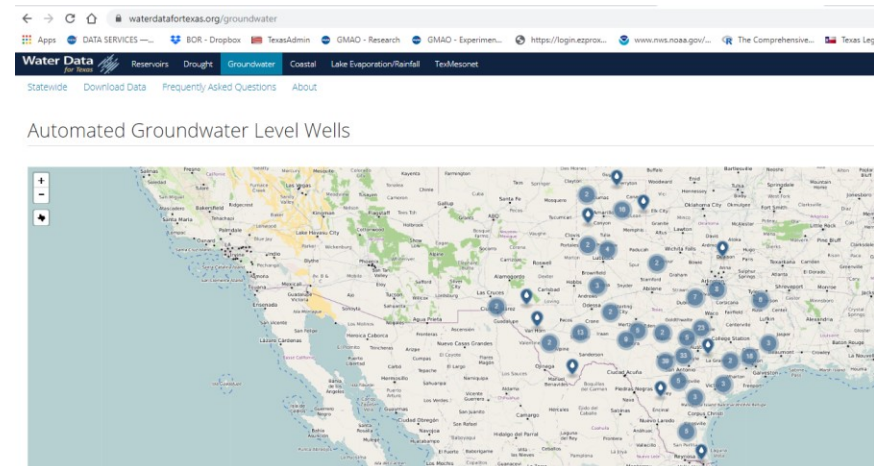
Reservoir storage information

<https://waterdatafortexas.org/reservoirs/statewide>



Drought Monitor

<https://www.waterdatafortexas.org/drought/drought-monitor>



Groundwater data viewer

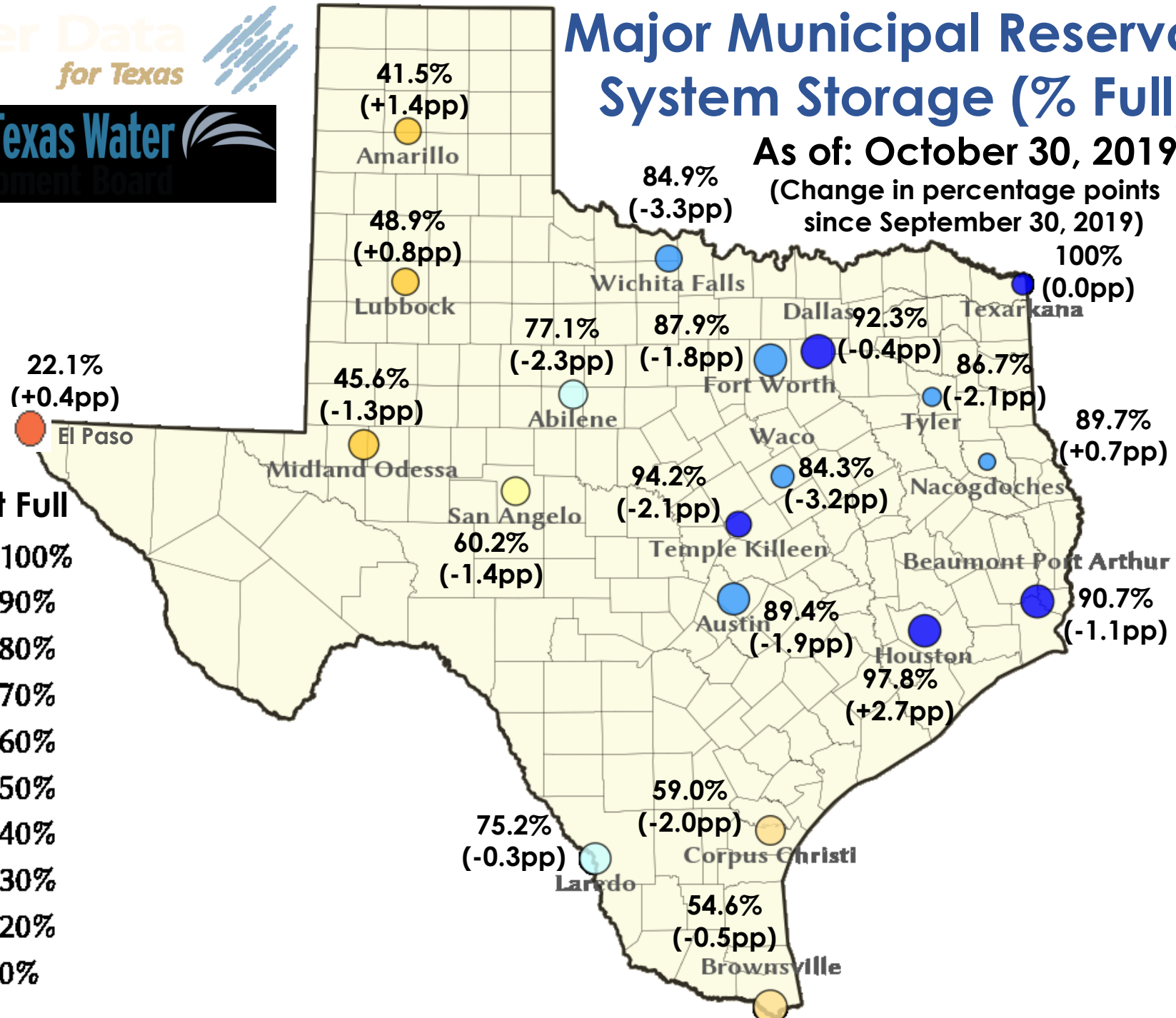
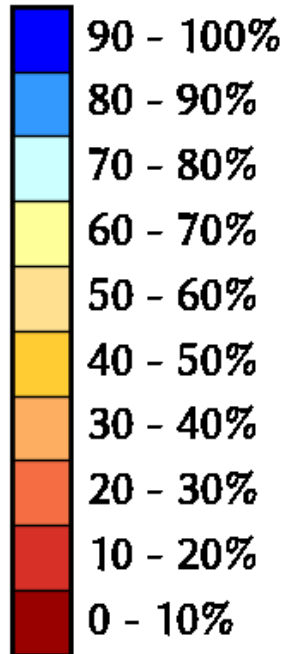
<https://waterdatafortexas.org/groundwater>

Major Municipal Reservoir System Storage (% Full)

As of: October 30, 2019

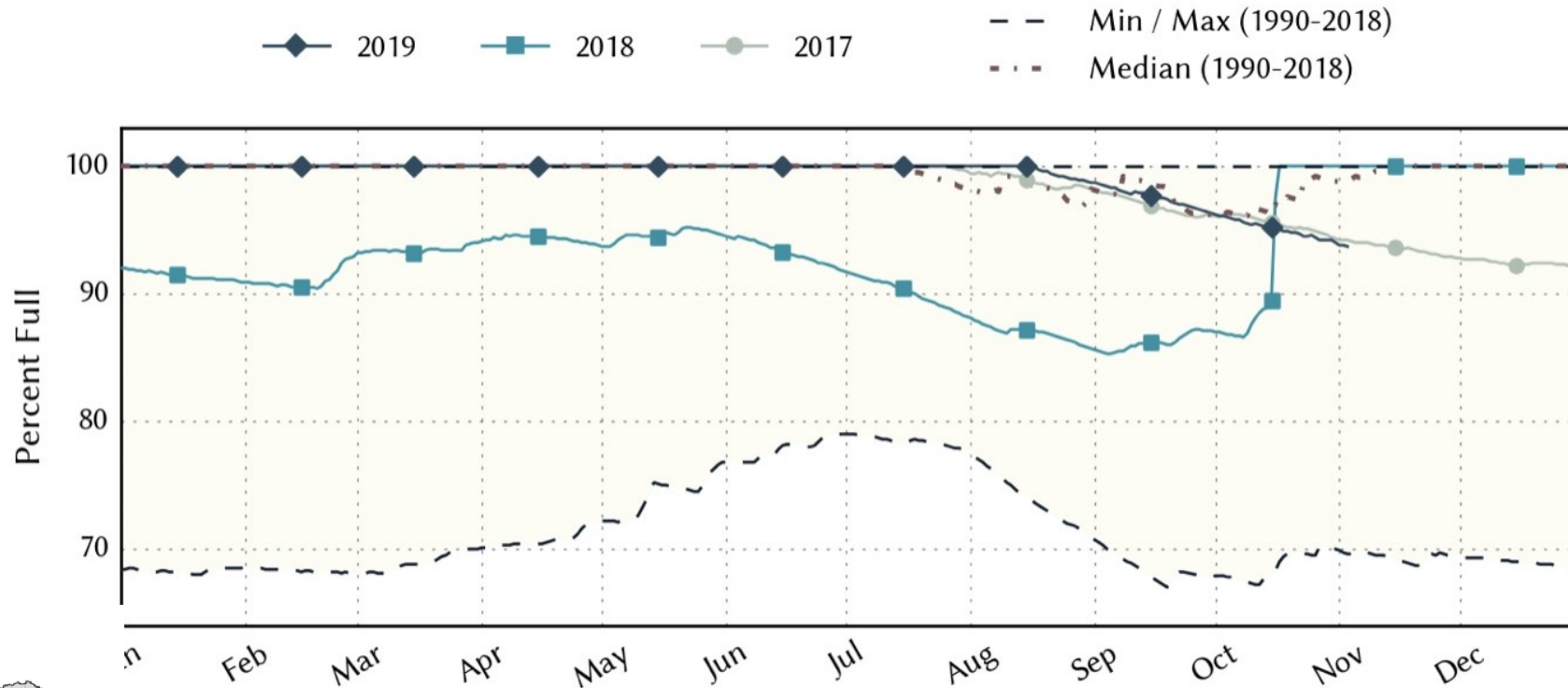
(Change in percentage points
since September 30, 2019)

Percent Full



Water Data For Texas – Reservoir Storage

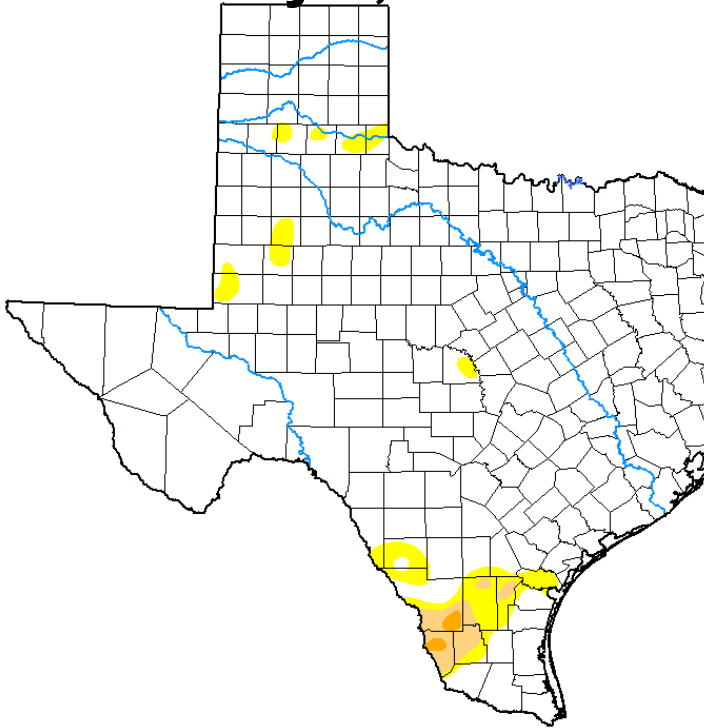
Belton Lake: 93.7% full as of 2019-11-03



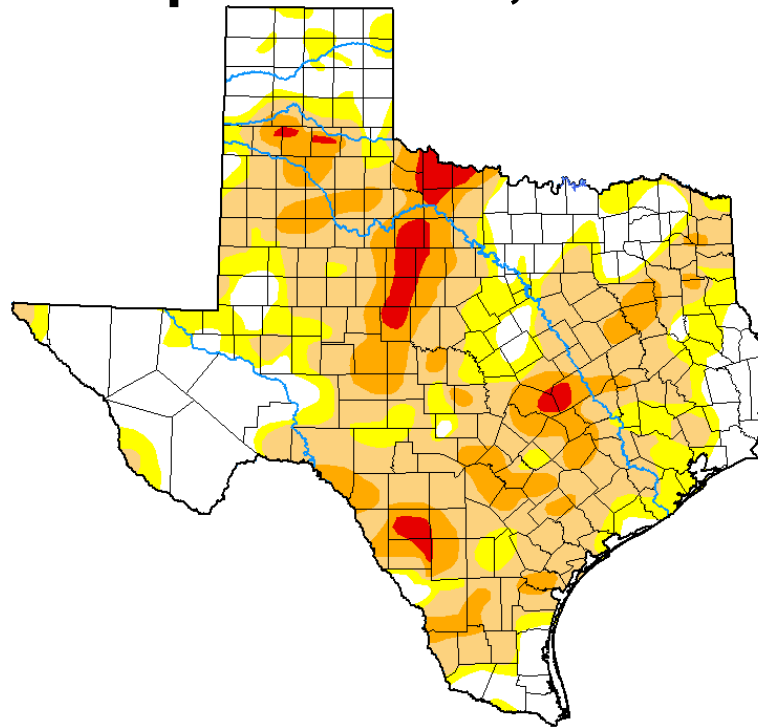
***“Texas is a land of perennial drought broken by the occasional devastating flood.”
- National Weather Service, 1927***

Drought Monitor

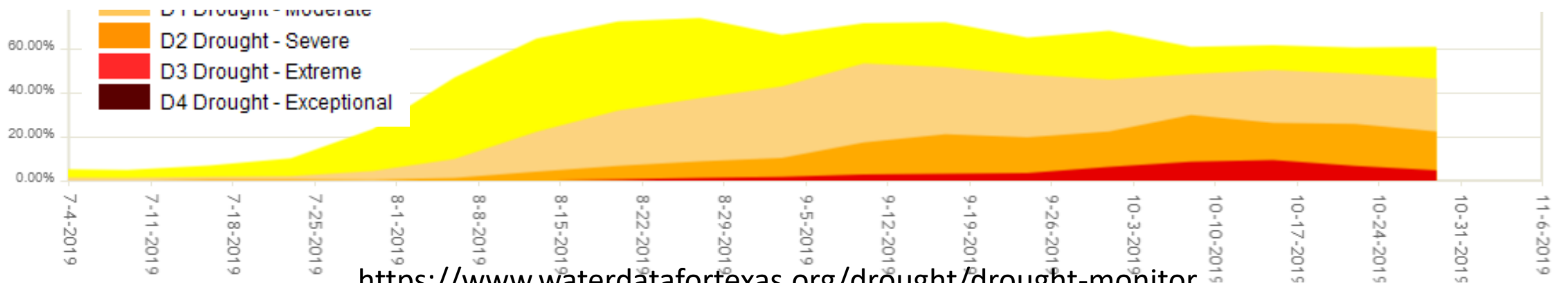
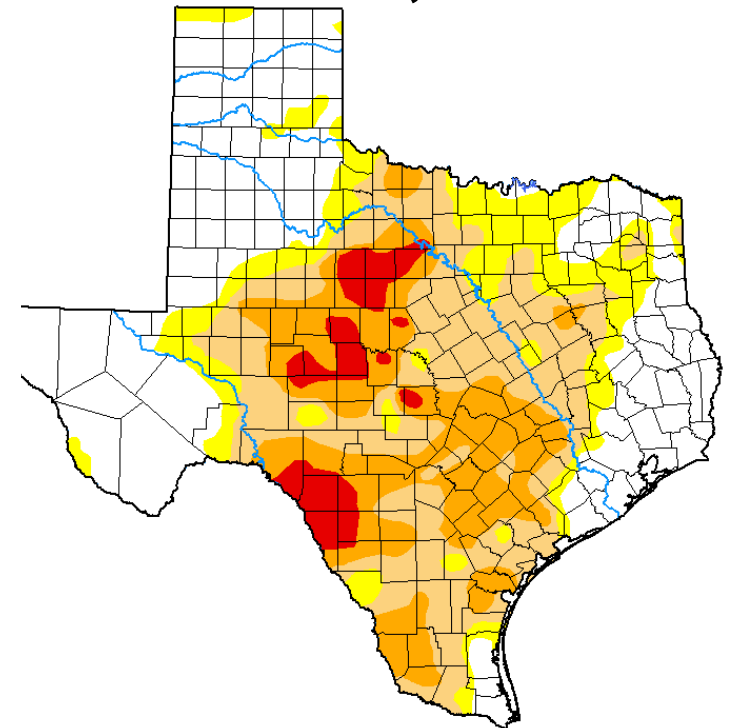
July 9, 2019



September 10, 2019

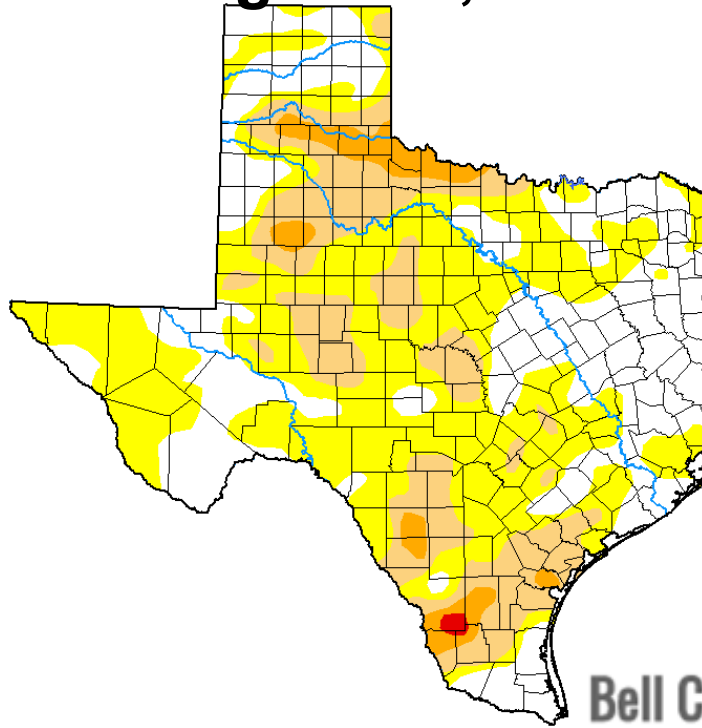


October 29, 2019

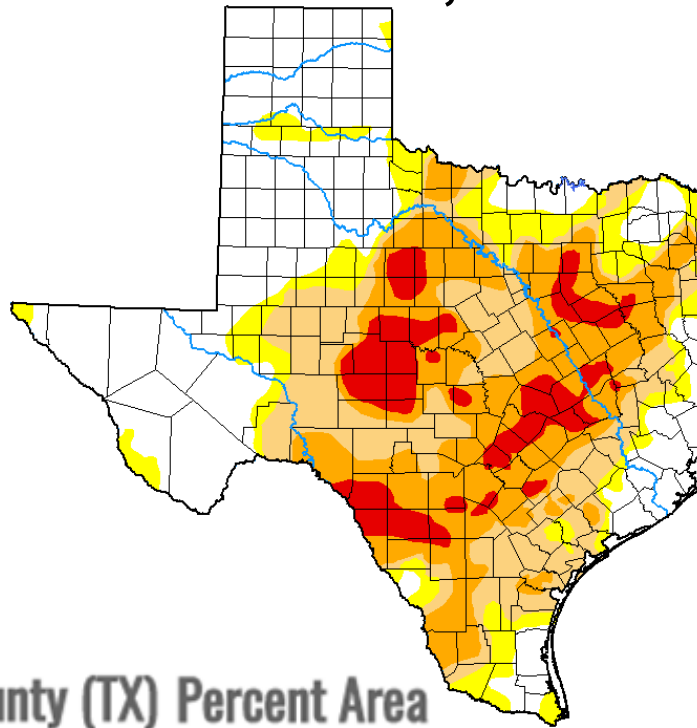


Drought Monitor

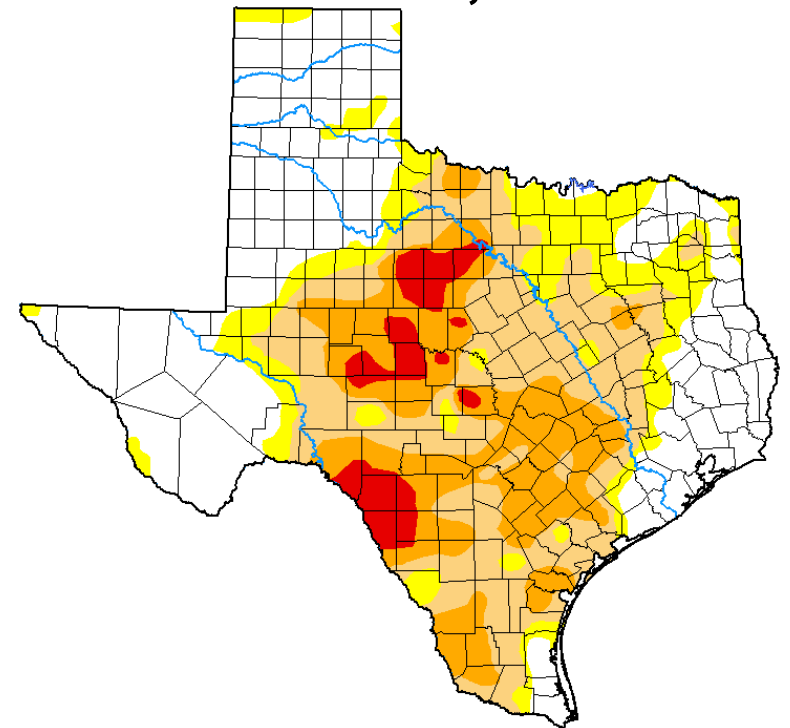
August 13, 2019



October 8, 2019

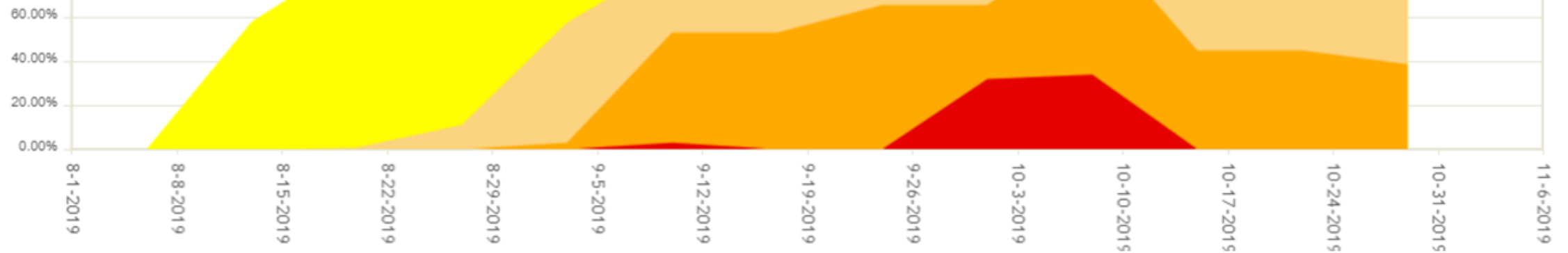


October 29, 2019

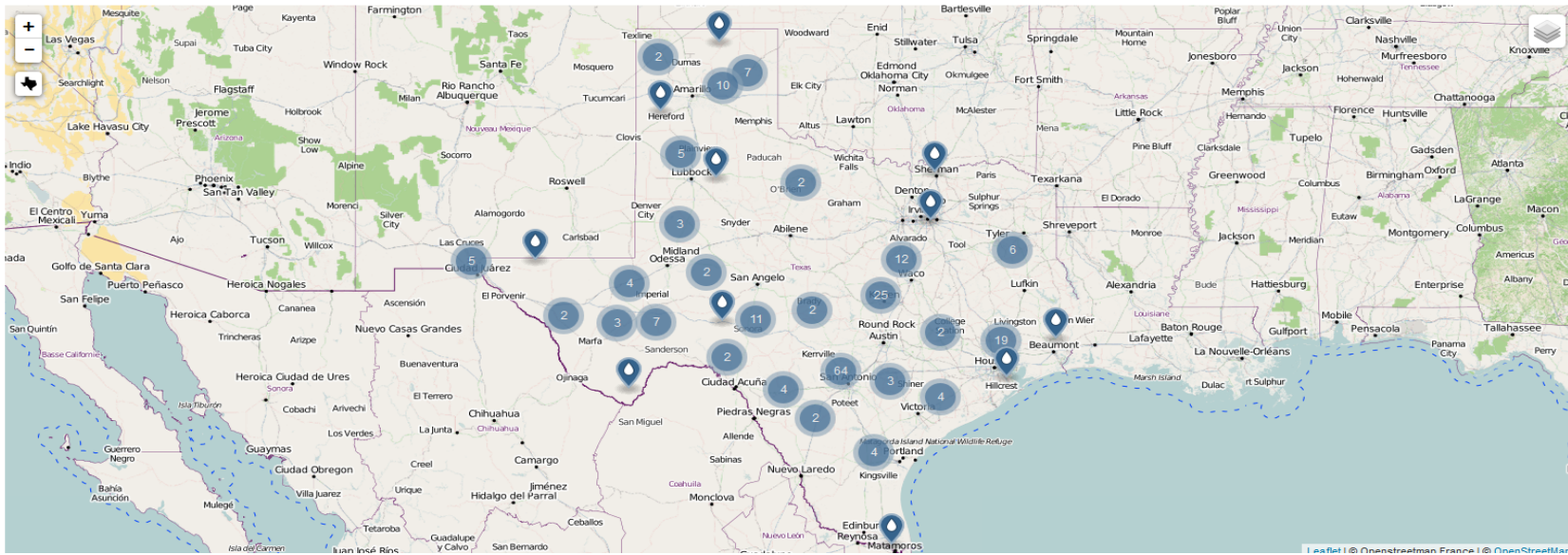


Bell County (TX) Percent Area

D4 Drought - Exceptional



Automated Groundwater Level Wells



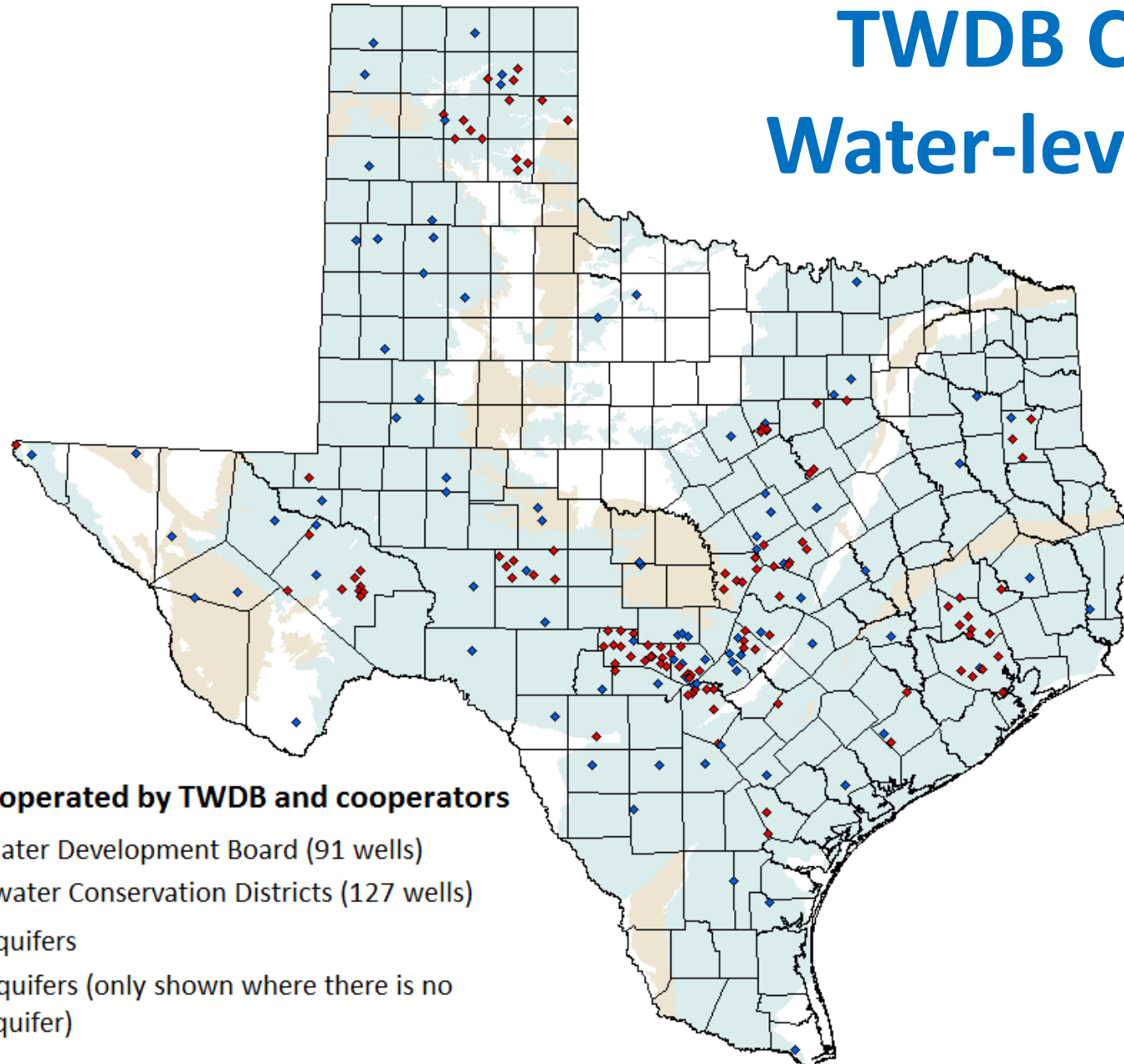
TWDB Continuous Water-level Recorders



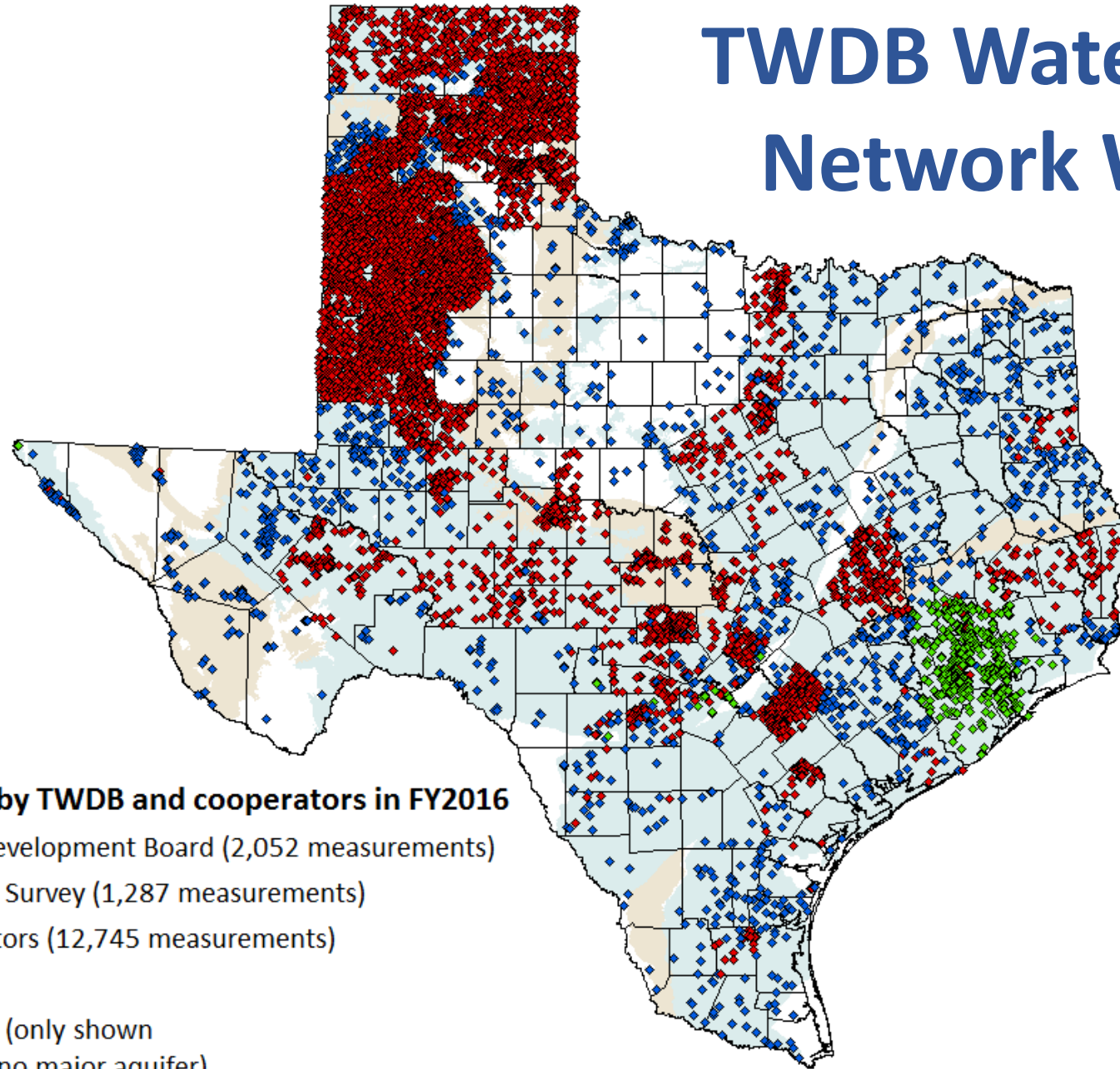
TWDB Continuous Water-level Recorders

Recorder sites operated by TWDB and cooperators

- ◆ Texas Water Development Board (91 wells)
- ◆ Groundwater Conservation Districts (127 wells)
- Major aquifers
- Minor aquifers (only shown where there is no major aquifer)



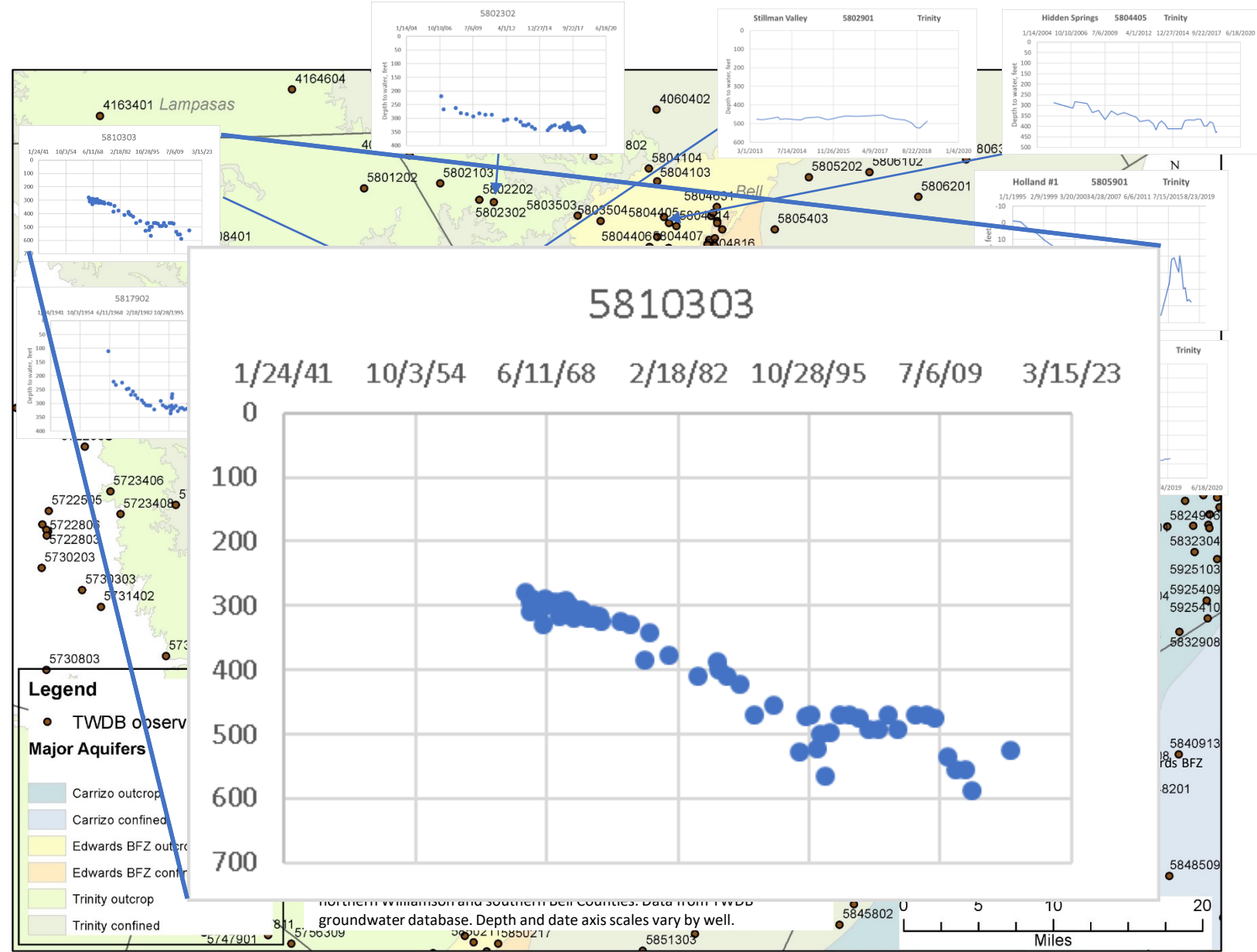
TWDB Water-level Network Wells



Wells measured by TWDB and cooperators in FY2016

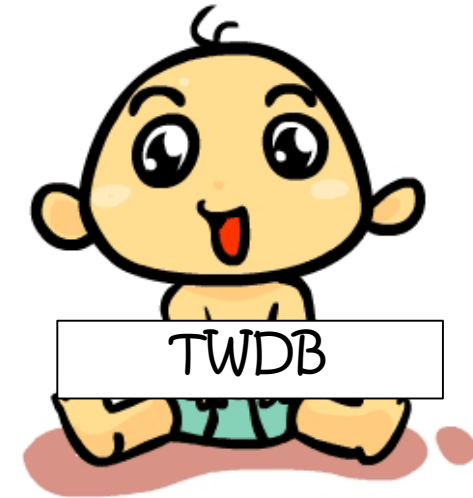
- ◆ Texas Water Development Board (2,052 measurements)
 - ◆ U.S. Geological Survey (1,287 measurements)
 - ◆ Other cooperators (12,745 measurements)
 - Major Aquifers
 - Minor Aquifers (only shown where there is no major aquifer)
- Total wells (6,983)

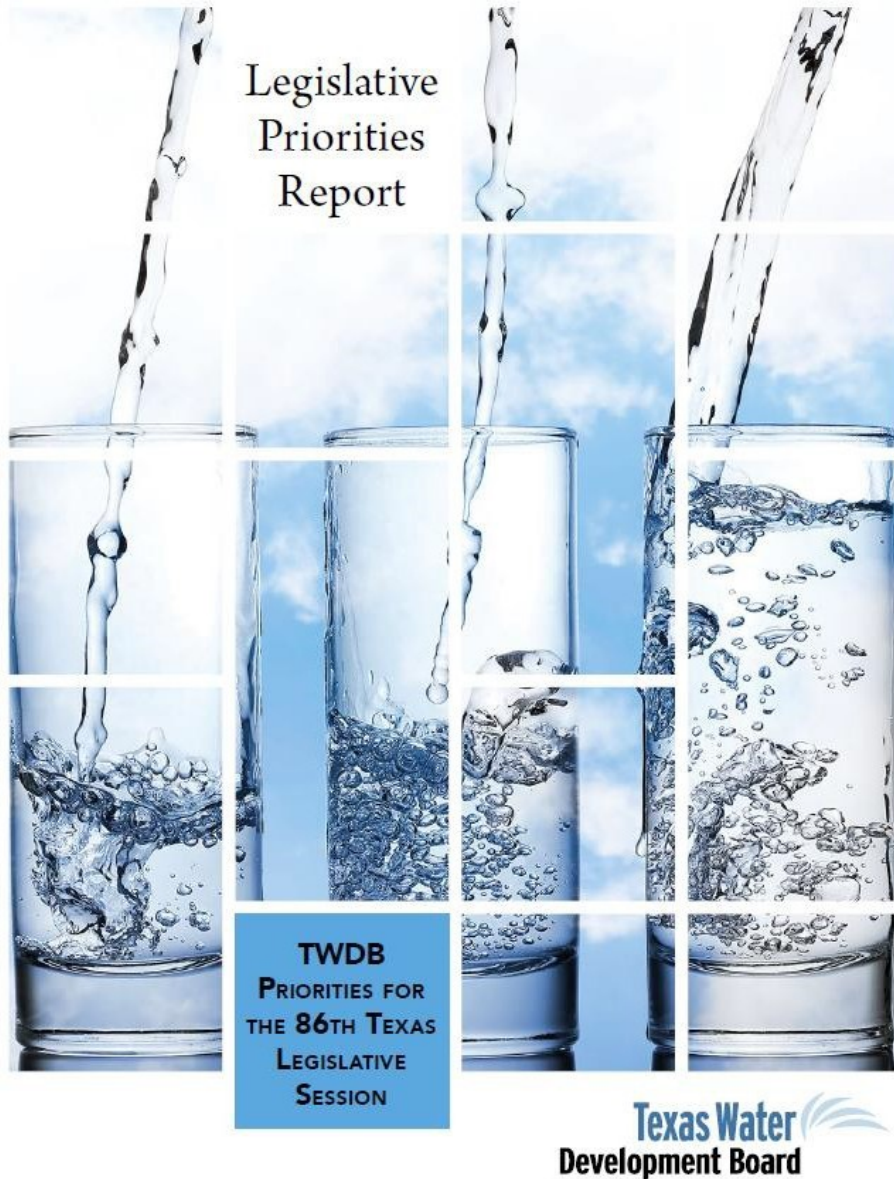
Water Data For Texas – Groundwater Levels



TWDB Update

- TWDB – Overview
- TWDB - Water Science and Data
- 86th Legislative Session
- Future Outlook





TWDB Priorities for 86th Legislative Session

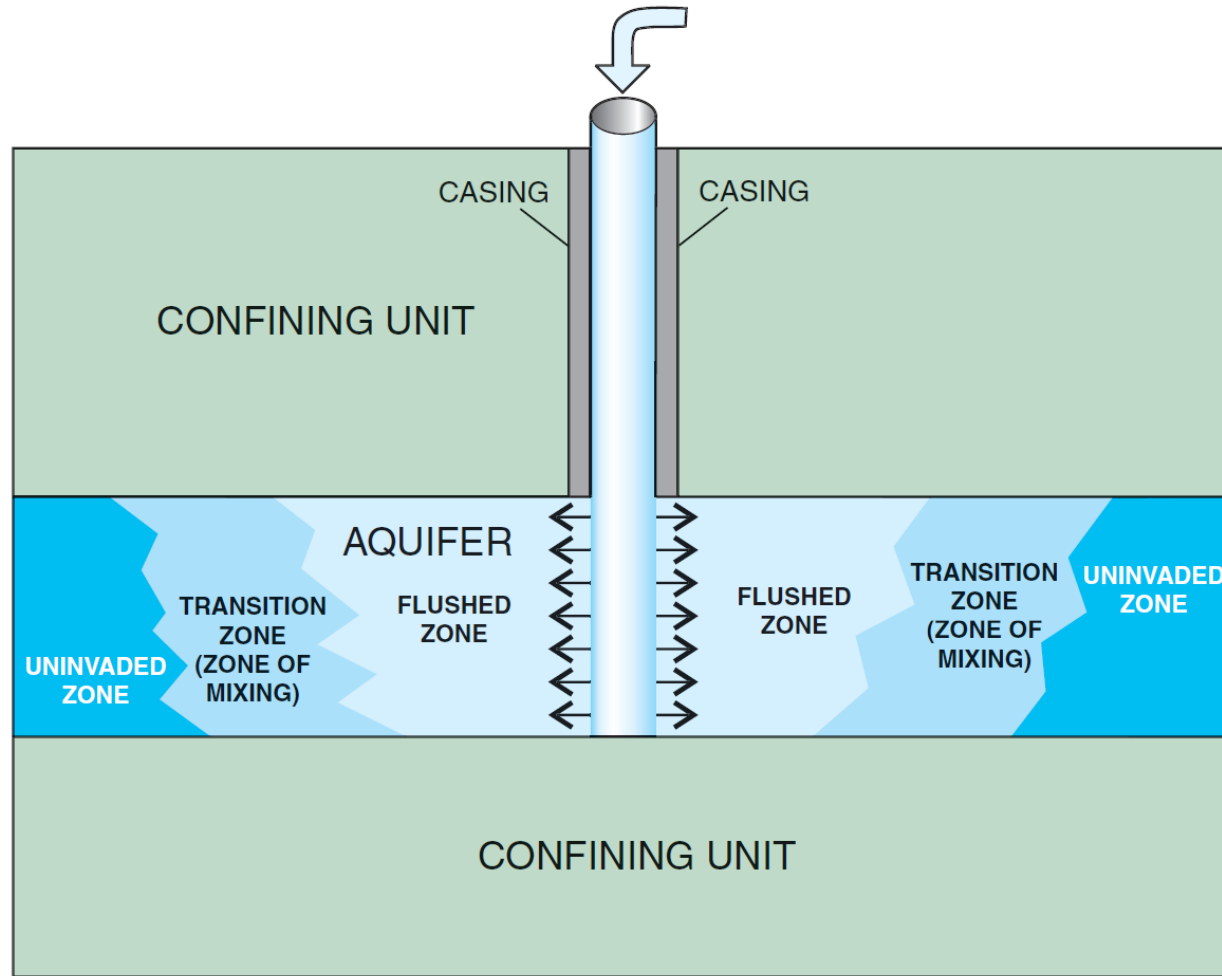
TWDB Legislative Recommendations

1. Flood Recommendations
2. Recreation of the Strategic Mapping Account
3. **Extension of House Bill (HB) 30 Brackish Resources Aquifers Characterization System (BRACS) Deadline**
4. Clean Water State Revolving Fund Statutory Update
5. Clean Up of Water Conservation Plan Requirements for Financial Assistance Applicants
6. Removal of Obsolete and Duplicative Requirements

LAR Exceptional Items

1. Flood Technical Package (\$4,448,000)
2. **Groundwater Funding Package (\$3,000,000)**
3. Strategic Mapping Program (\$3,000,000)
4. Data Center Consolidation (\$488,964)
5. Centralized Accounting and Payroll/Personnel System (CAPPS) Implementation (\$588,063)

Aquifer Storage and Recovery (ASR) and Aquifer Recharge



Storage of water in a suitable aquifer and recovery of that water during times of need for beneficial use

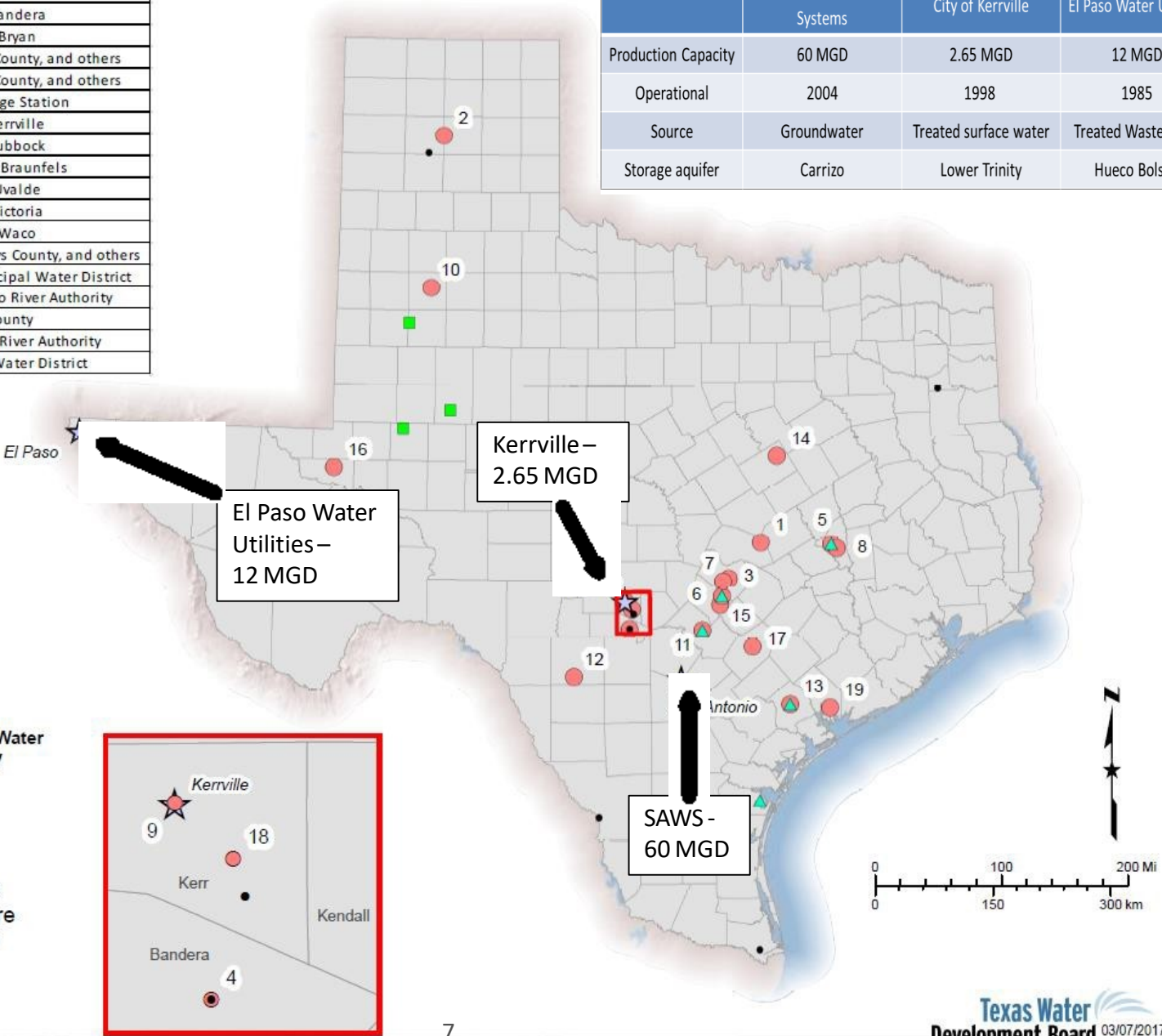
ASR in Texas – Current Capacity

ID	Project Sponsor
1	Brazos River Authority
2	Canadian River Municipal Authority
3	City of Austin
4	City of Bandera
5	City of Bryan
6	City of Buda, Hays County, and others
7	City of Buda, Hays County, and others
8	City of College Station
9	City of Kerrville
10	City of Lubbock
11	City of New Braunfels
12	City of Uvalde
13	City of Victoria
14	City of Waco
15	City of Wimberley, Hays County, and others
16	Colorado River Municipal Water District
17	Guadalupe-Blanco River Authority
18	Kerr County
19	Lavaca Navidad River Authority
20	Lower Valley Water District

	San Antonio Water Systems	City of Kerrville	El Paso Water Utilities
Production Capacity	60 MGD	2.65 MGD	12 MGD
Operational	2004	1998	1985
Source	Groundwater	Treated surface water	Treated Wastewater
Storage aquifer	Carrizo	Lower Trinity	Hueco Bolson

- ★ Operating Facilities
- Decommissioned Operations
- Completed Studies
- ▲ Ongoing Studies
- 2017 Recommended Water Management Strategy Projects
- ▭ Texas Counties

Ongoing studies are those funded by TWDB. There are other efforts not funded by TWDB.



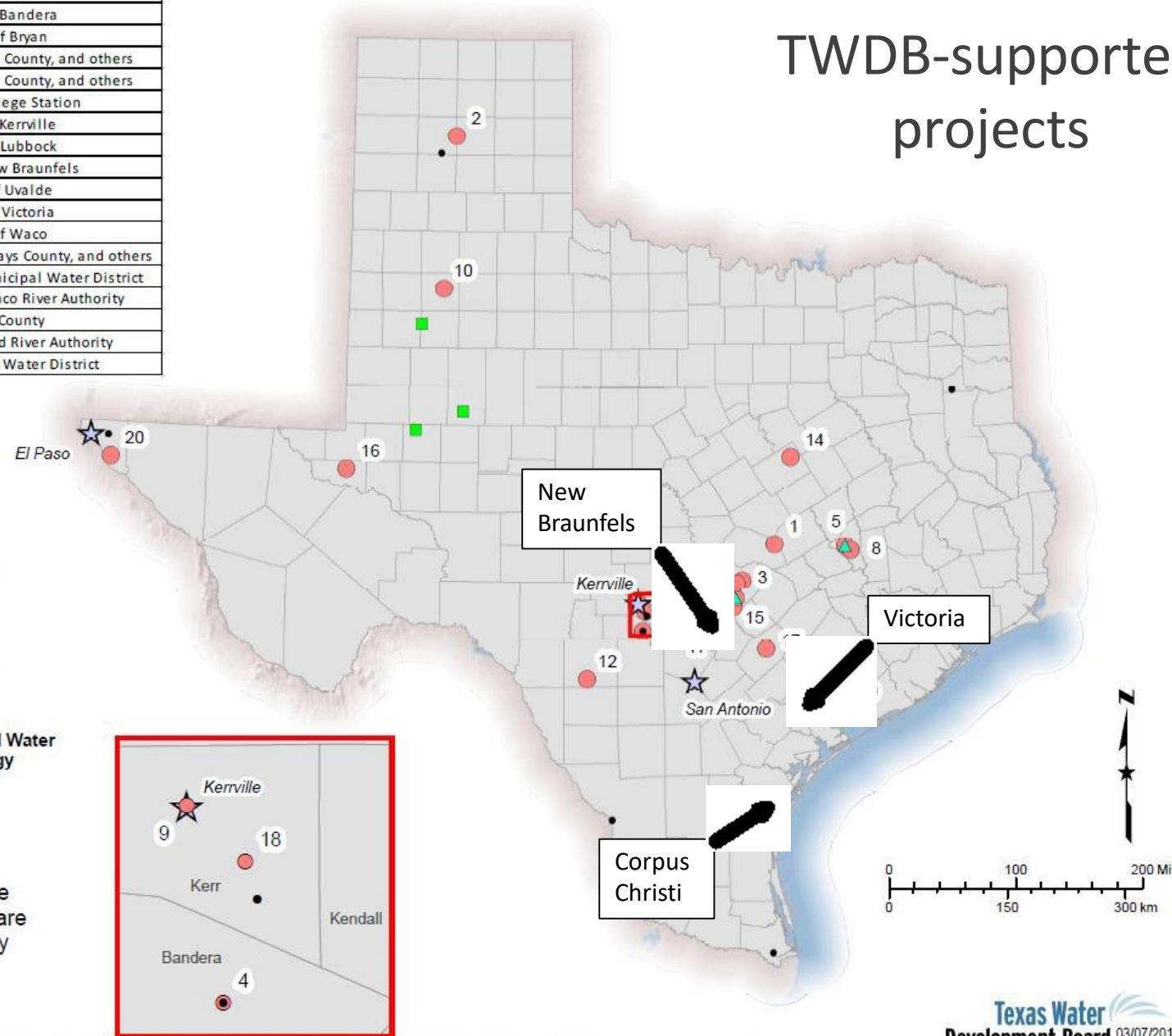
ASR in Texas

TWDB-supported projects

ID	Project Sponsor
1	Brazos River Authority
2	Canadian River Municipal Authority
3	City of Austin
4	City of Bandera
5	City of Bryan
6	City of Buda, Hays County, and others
7	City of Buda, Hays County, and others
8	City of College Station
9	City of Kerrville
10	City of Lubbock
11	City of New Braunfels
12	City of Uvalde
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16	Colorado River Municipal Water District
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- ★ Operating Facilities
- Decommissioned Operations
- Completed Studies
- ▲ Ongoing Studies
- 2017 Recommended Water Management Strategy Projects
- ▭ Texas Counties

Ongoing studies are those funded by TWDB. There are other efforts not funded by TWDB.



ASR Bills

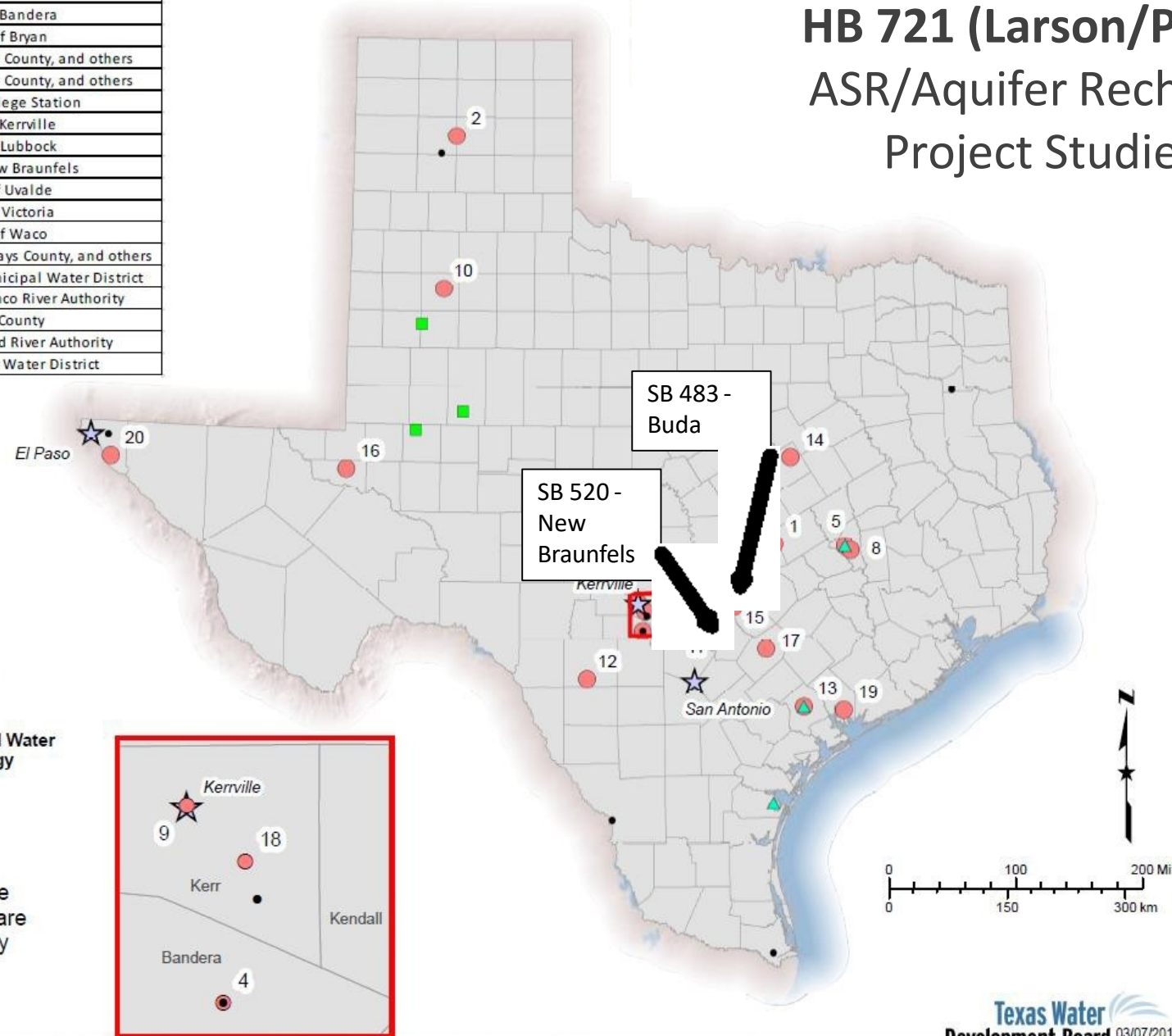
HB 721 (Larson/Perry)

ASR/Aquifer Recharge Project Studies

ID	Project Sponsor
1	Brazos River Authority
2	Canadian River Municipal Authority
3	City of Austin
4	City of Bandera
5	City of Bryan
6	City of Buda, Hays County, and others
7	City of Buda, Hays County, and others
8	City of College Station
9	City of Kerrville
10	City of Lubbock
11	City of New Braunfels
12	City of Uvalde
13	City of Victoria
14	City of Waco
15	City of Wimberley, Hays County, and others
16	Colorado River Municipal Water District
17	Guadalupe-Blanco River Authority
18	Kerr County
19	Lavaca Navidad River Authority
20	Lower Valley Water District

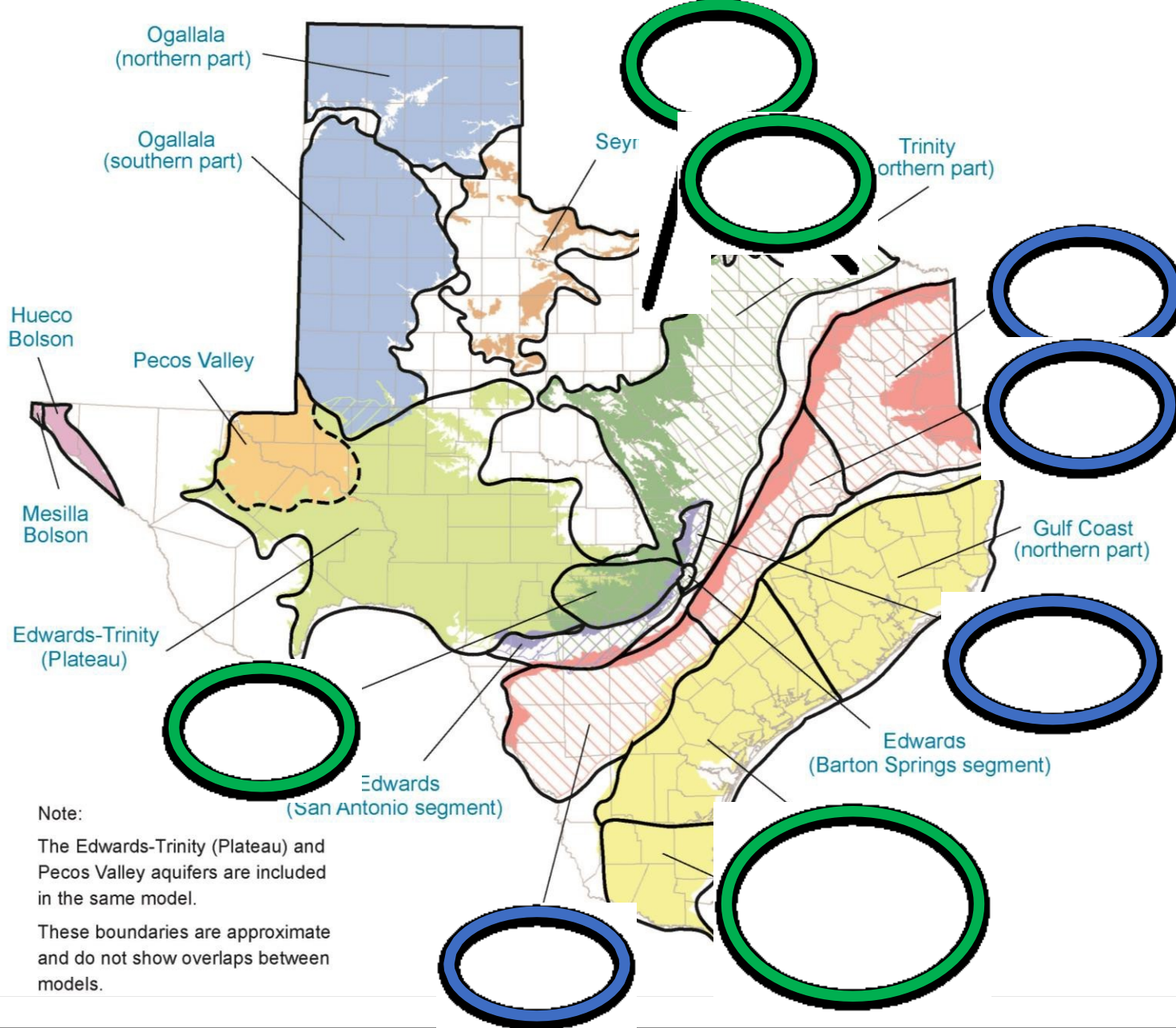
- ★ Operating Facilities
- Decommissioned Operations
- Completed Studies
- ▲ Ongoing Studies
- 2017 Recommended Water Management Strategy Projects
- ▭ Texas Counties

Ongoing studies are those funded by TWDB. There are other efforts not funded by TWDB.



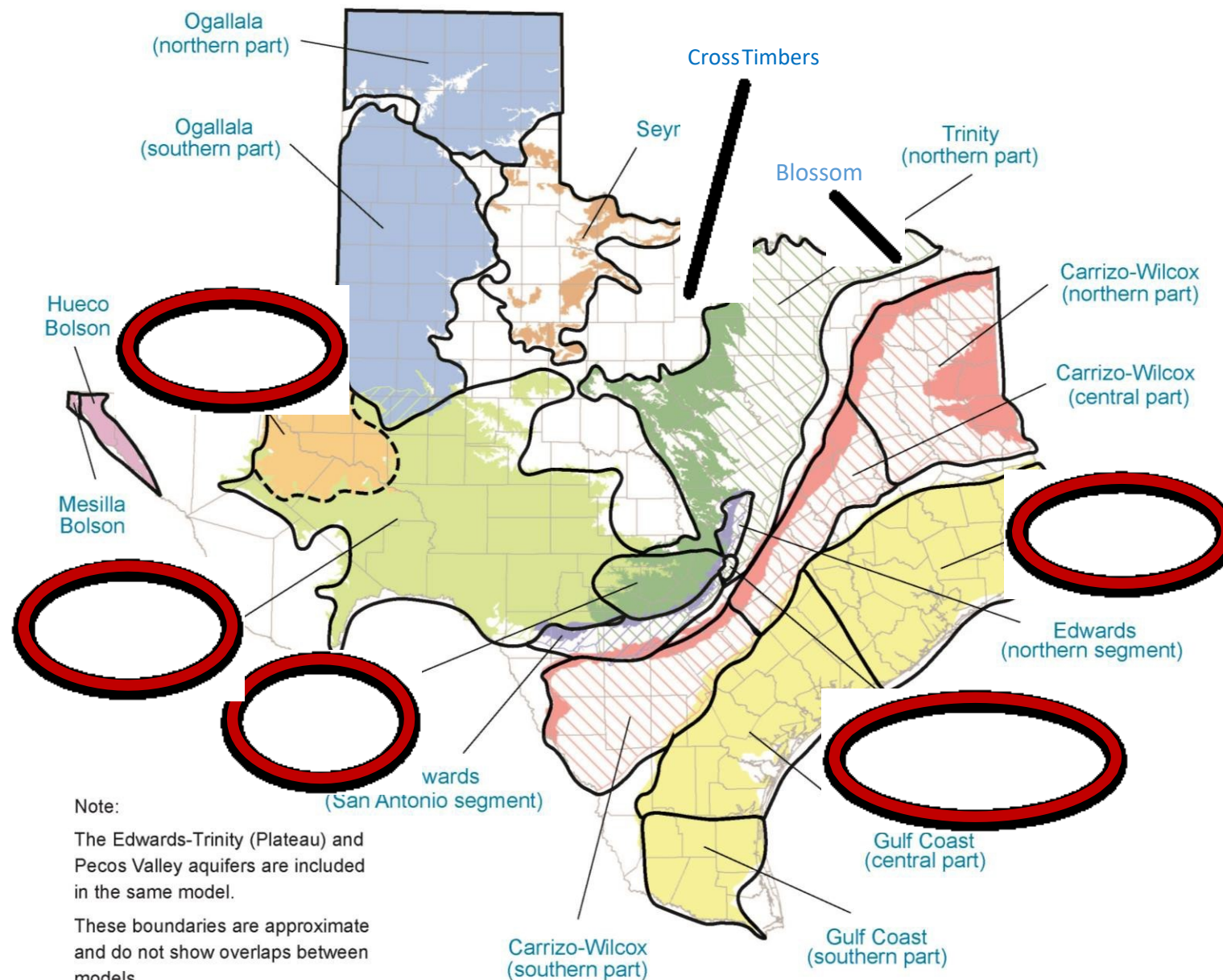
HB 1 General Appropriations Bill (LAR Exceptional Item)

Groundwater Availability Models



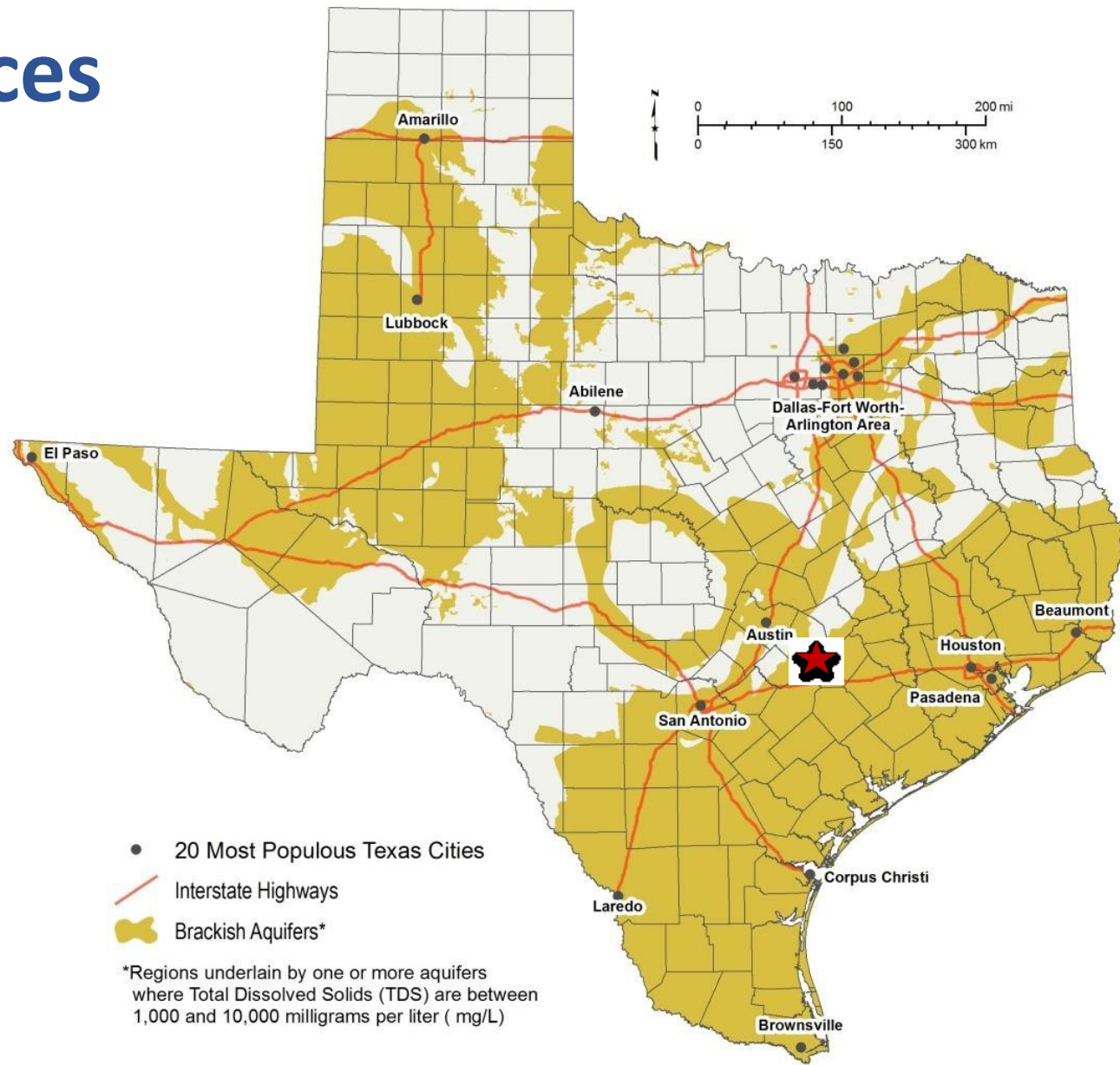
HB 1 General Appropriations Bill (LAR Exceptional Item)

Groundwater Availability Models

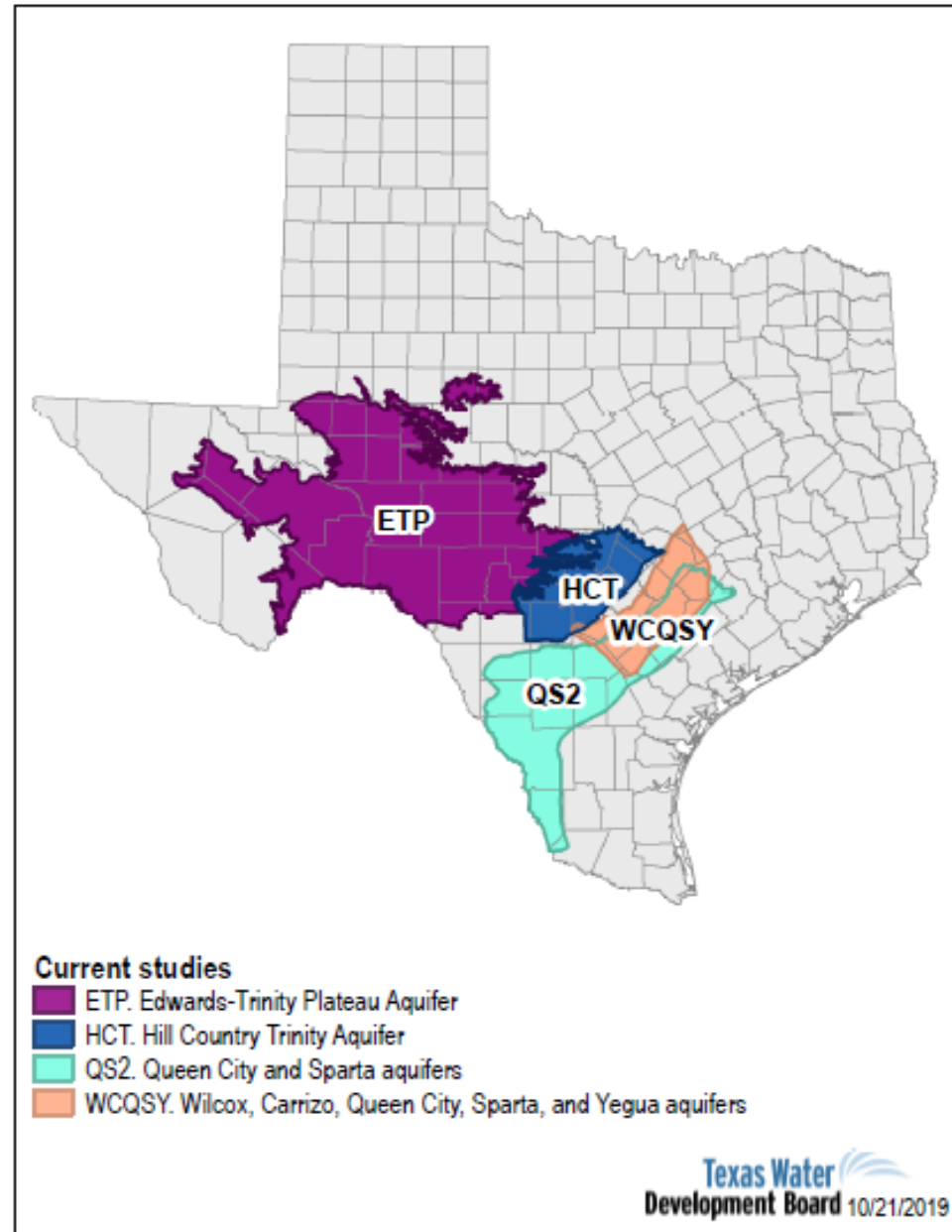
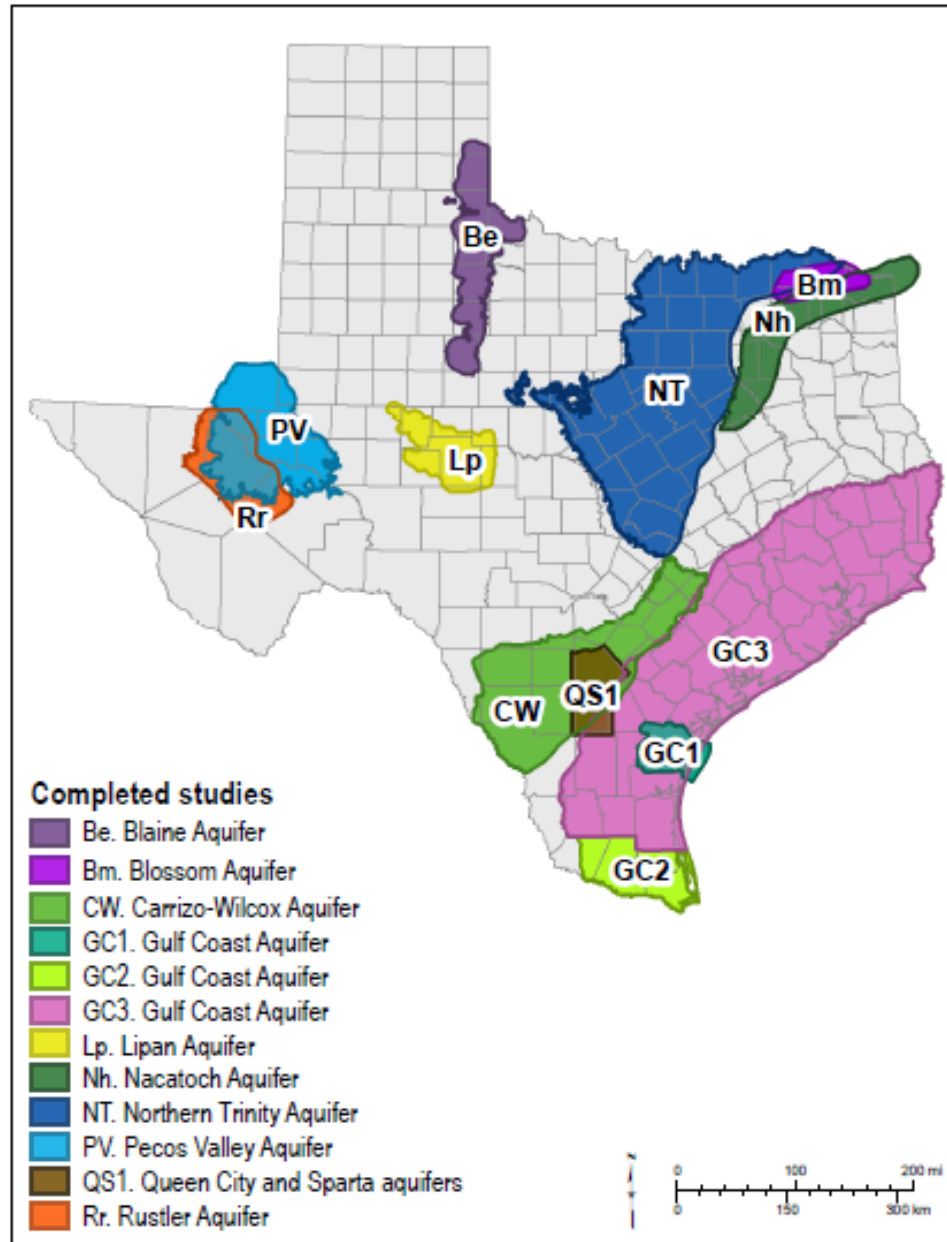


Brackish Resources Aquifer Characterization System (BRACS)

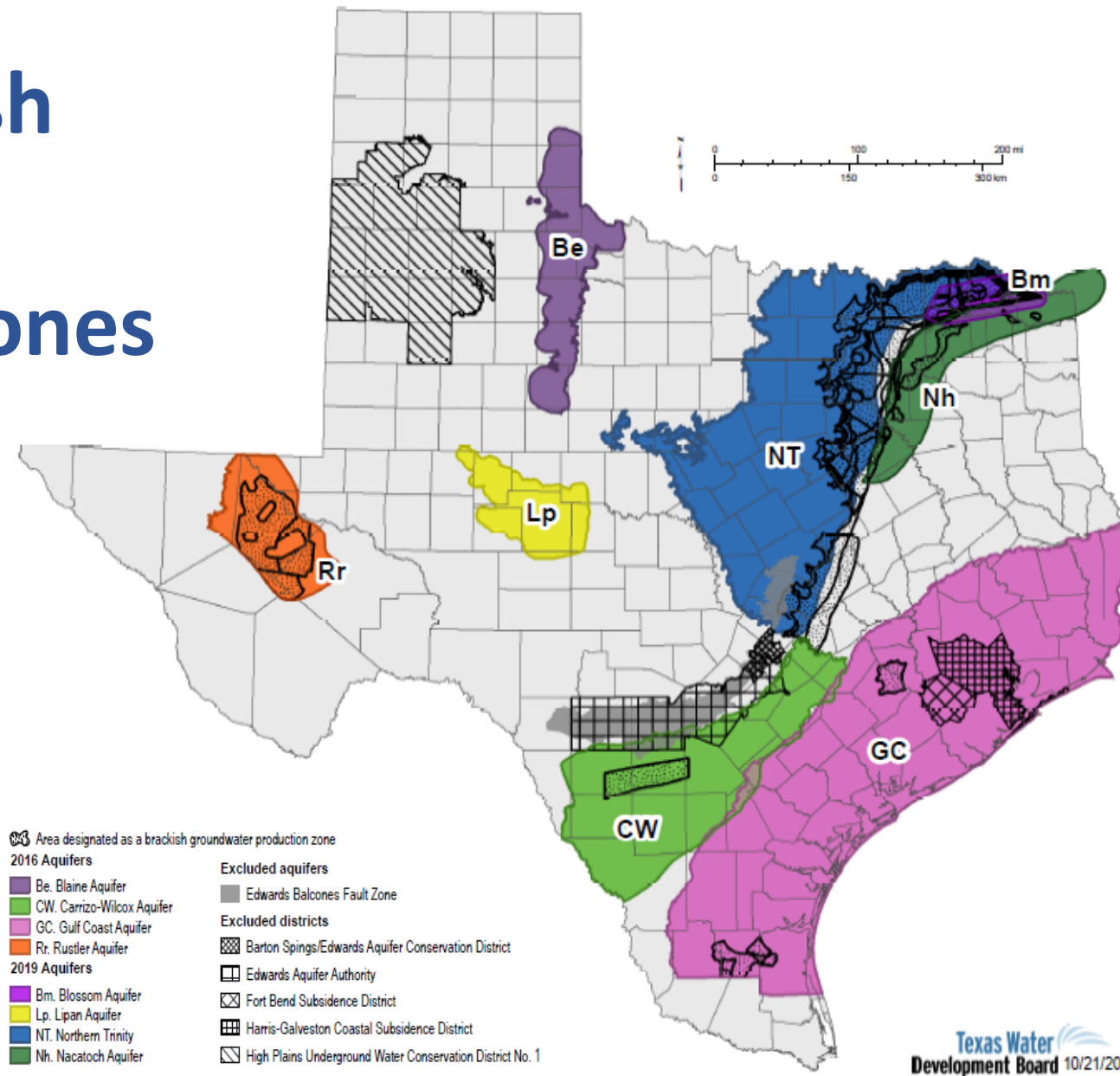
- ~2.7 billion acre-feet of brackish groundwater
- BRACS created in 2009
- Map and characterize brackish aquifers of the state



BRACS – Completed and Current Studies



HB 30 Brackish Groundwater Production Zones



Texas Water
Development Board 10/21/2019

Brackish Groundwater Bills

HB 722 (Larson/Perry)

GCD brackish permitting process

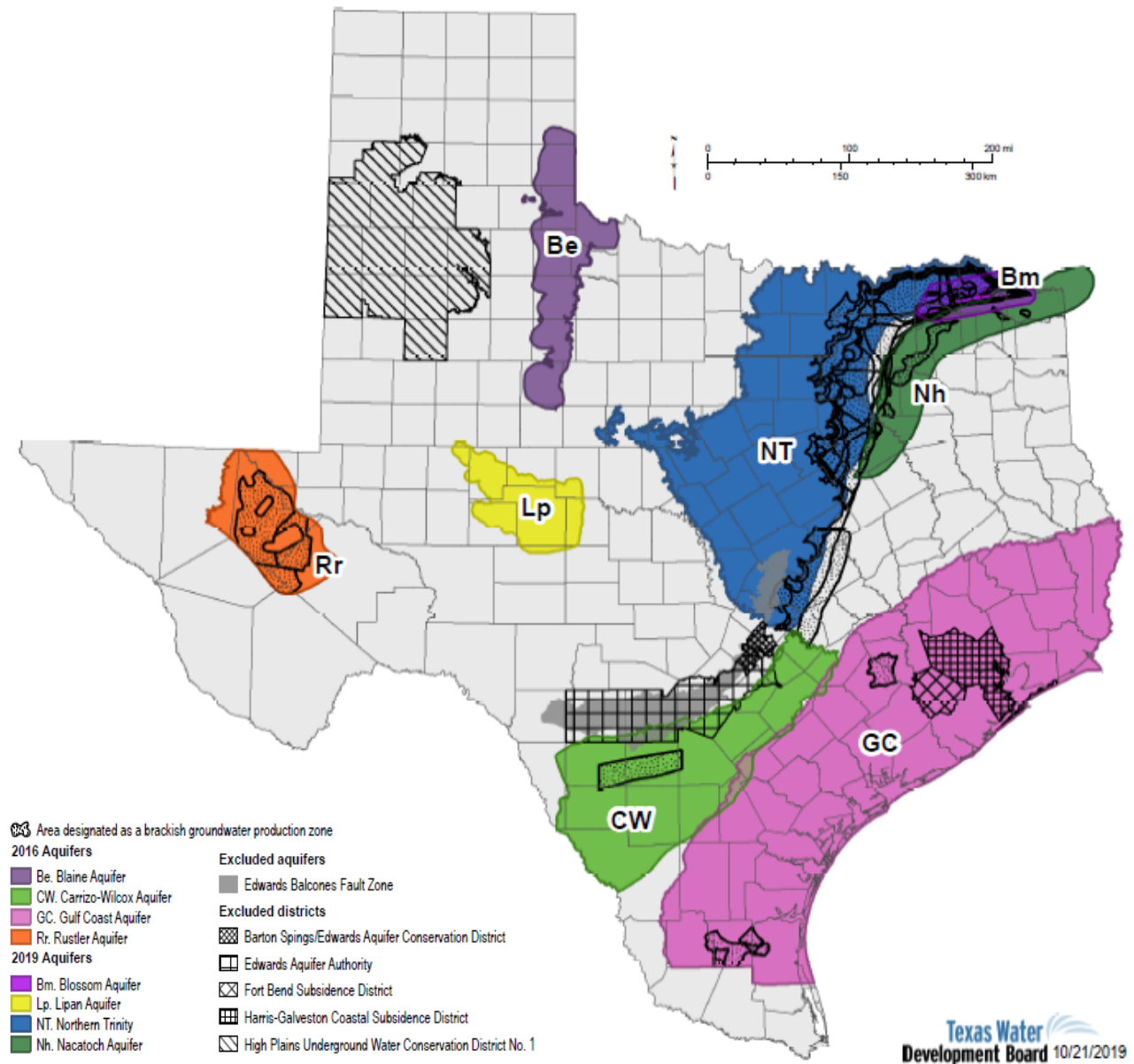
SB 1041 (Taylor/Larson)

extended HB30 deadline

HB 1 (Zerwas/Nelson)

Rider 24 (LAR Exceptional Item)

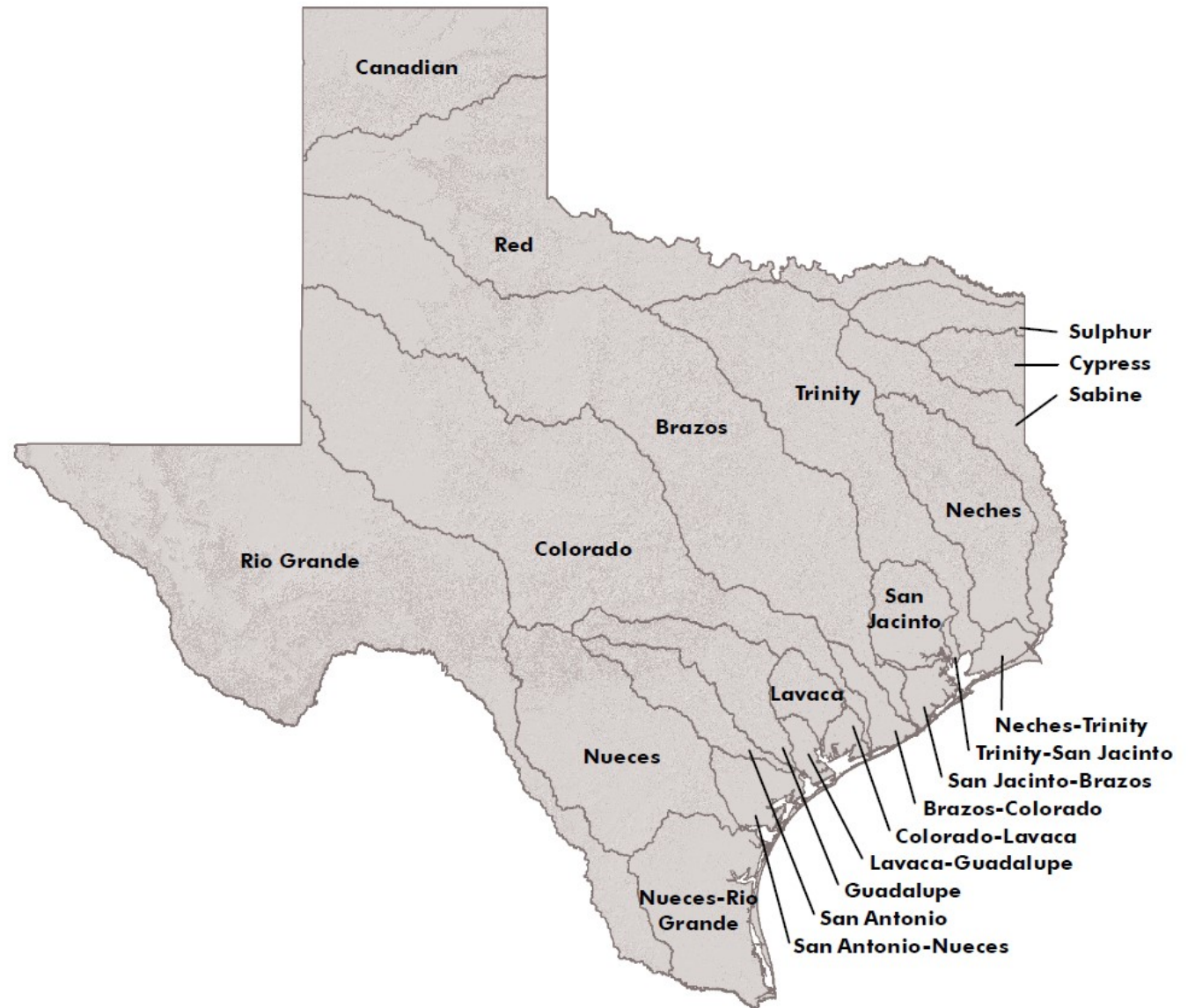
restored BRACS funding



SB 7/8

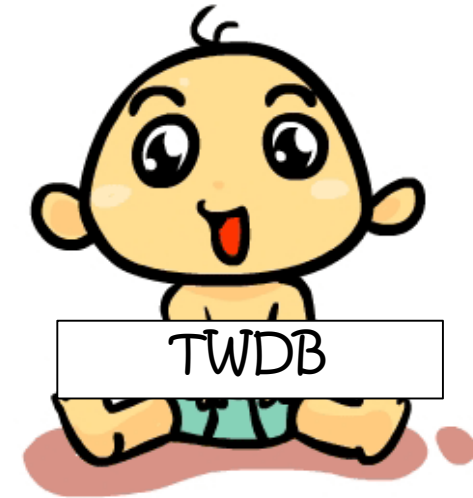
Flood Planning and Mitigation

- Water supply planning model
- Bottom-up process
- Watershed-based planning
- Data/science-driven
- Funding for mitigation



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Lieutenant Governor's 2019 Interim Charges

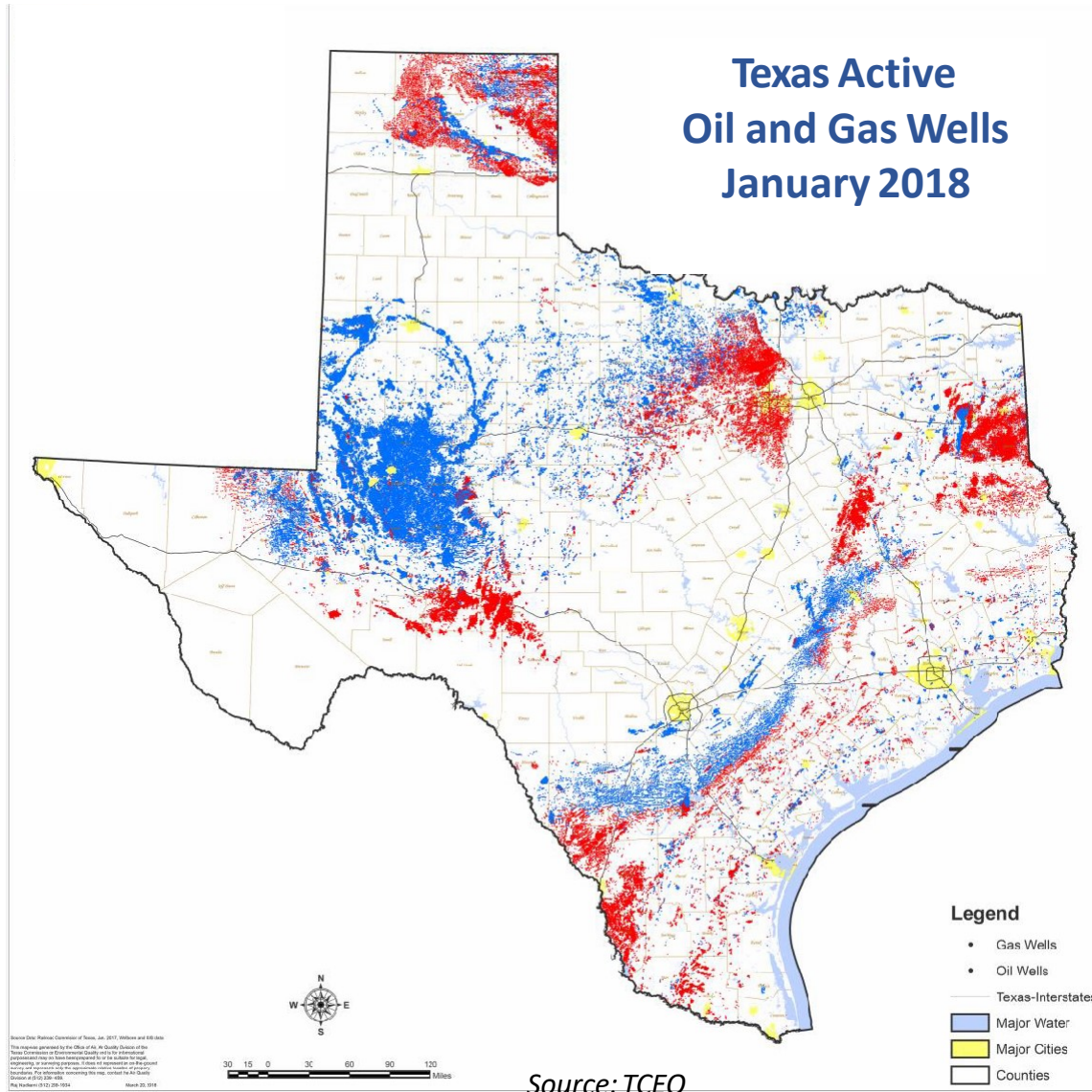
Joint Charges for Natural Resources and Economic Development Committee and Water and Rural Affairs Committee

Future Water Supply: Examine current laws, processes, and water storage options and availability. Make recommendations promoting the state's water supply, storage, availability, valuation, movement, and development of new sources.

Produced Water – Future Water Supply?

“Produced Water”

- *Flowback* – water and chemicals that were injected as part of hydraulic fracturing
- *Produced formation water* – water that was naturally contained within the hydrocarbon materials



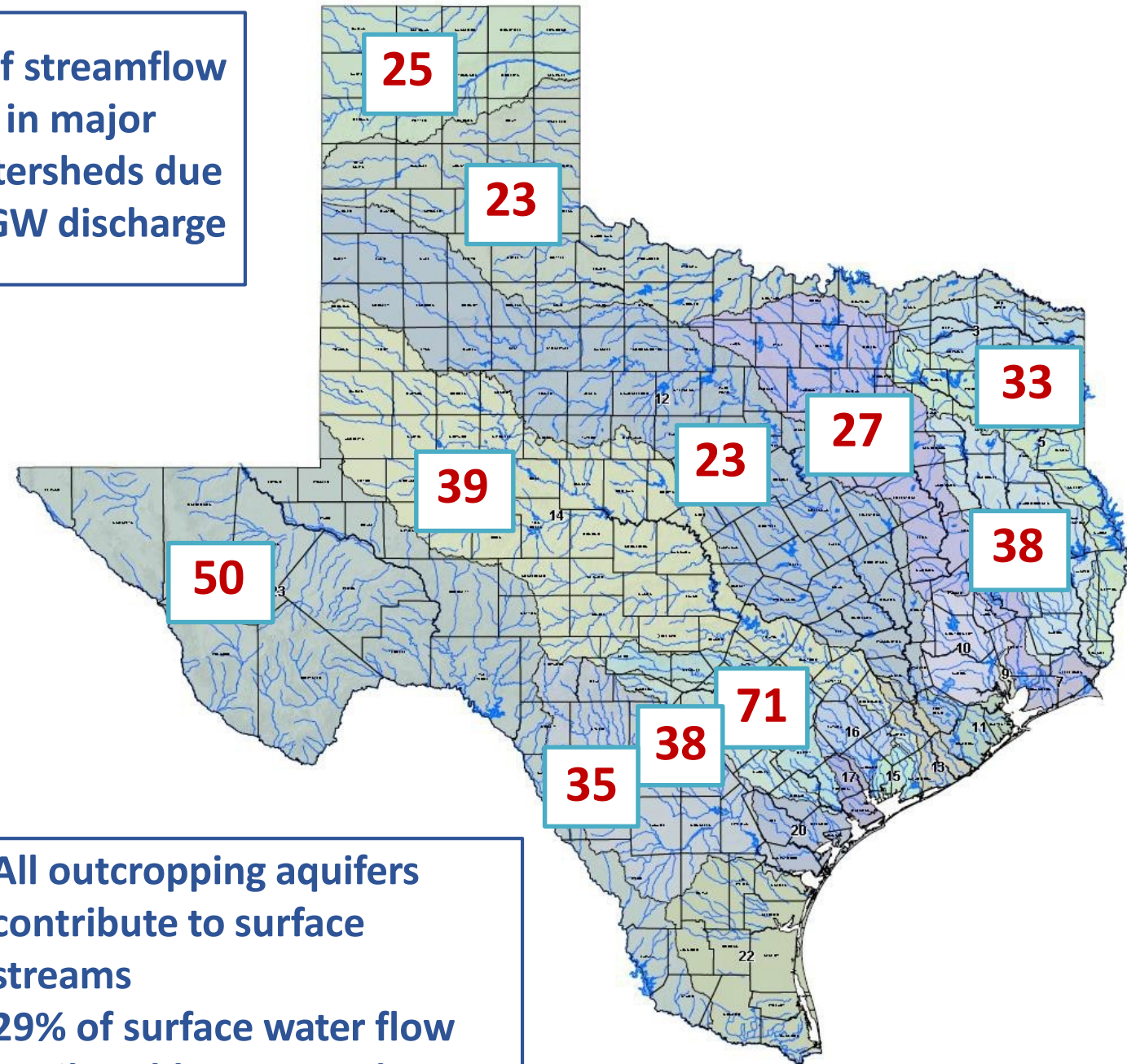
Lieutenant Governor's 2019 Interim Charges

Joint Charges for Natural Resources and Economic Development Committee and Water and Rural Affairs Committee

Groundwater Regulatory Framework: Study the state's groundwater regulatory framework and make recommendations to improve groundwater regulation, management, and permitting.

Groundwater-Surface Water Interaction

% of streamflow
in major
watersheds due
to GW discharge

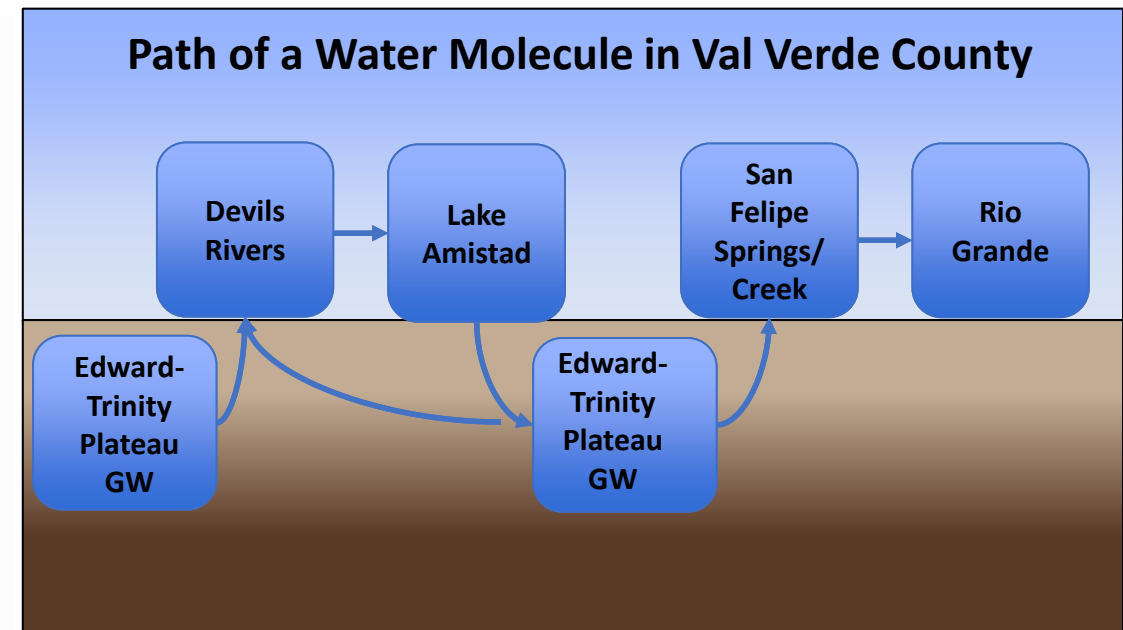


- All outcropping aquifers contribute to surface streams
- 29% of surface water flow attributable to groundwater

Texas Aquifers Study

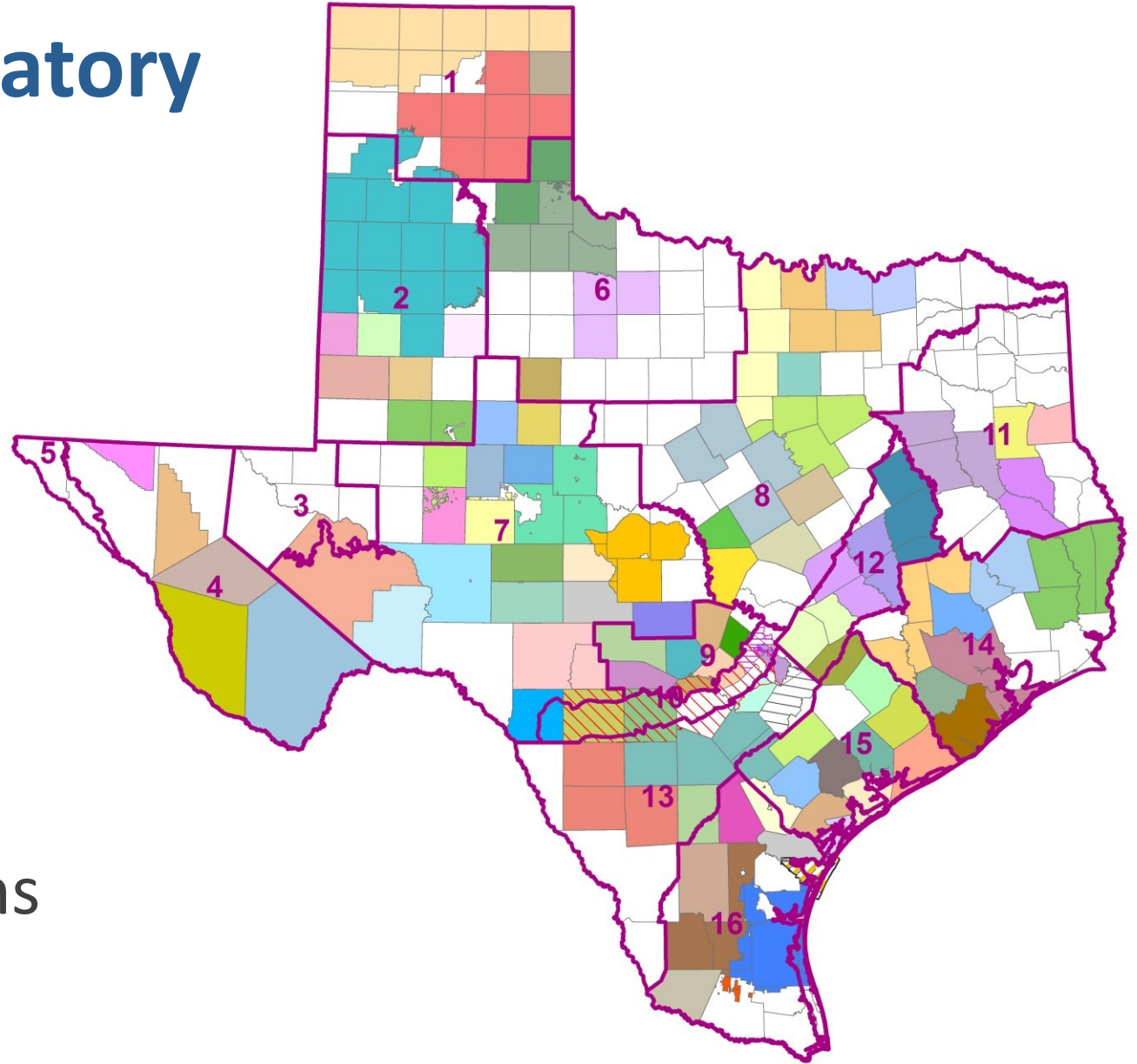
Groundwater Quantity, Quality,
Flow, and Contributions
to Surface Water
December 31st 2016

Texas Water
Development Board



Groundwater Regulatory Framework

- 💧 Similar Rules
- 💧 Permitting Approaches
- 💧 Groundwater Exports
- 💧 Attorney's Fees
- 💧 DFC Appeals
- 💧 GCD Management Plans



John T. Dupnik, P.G.

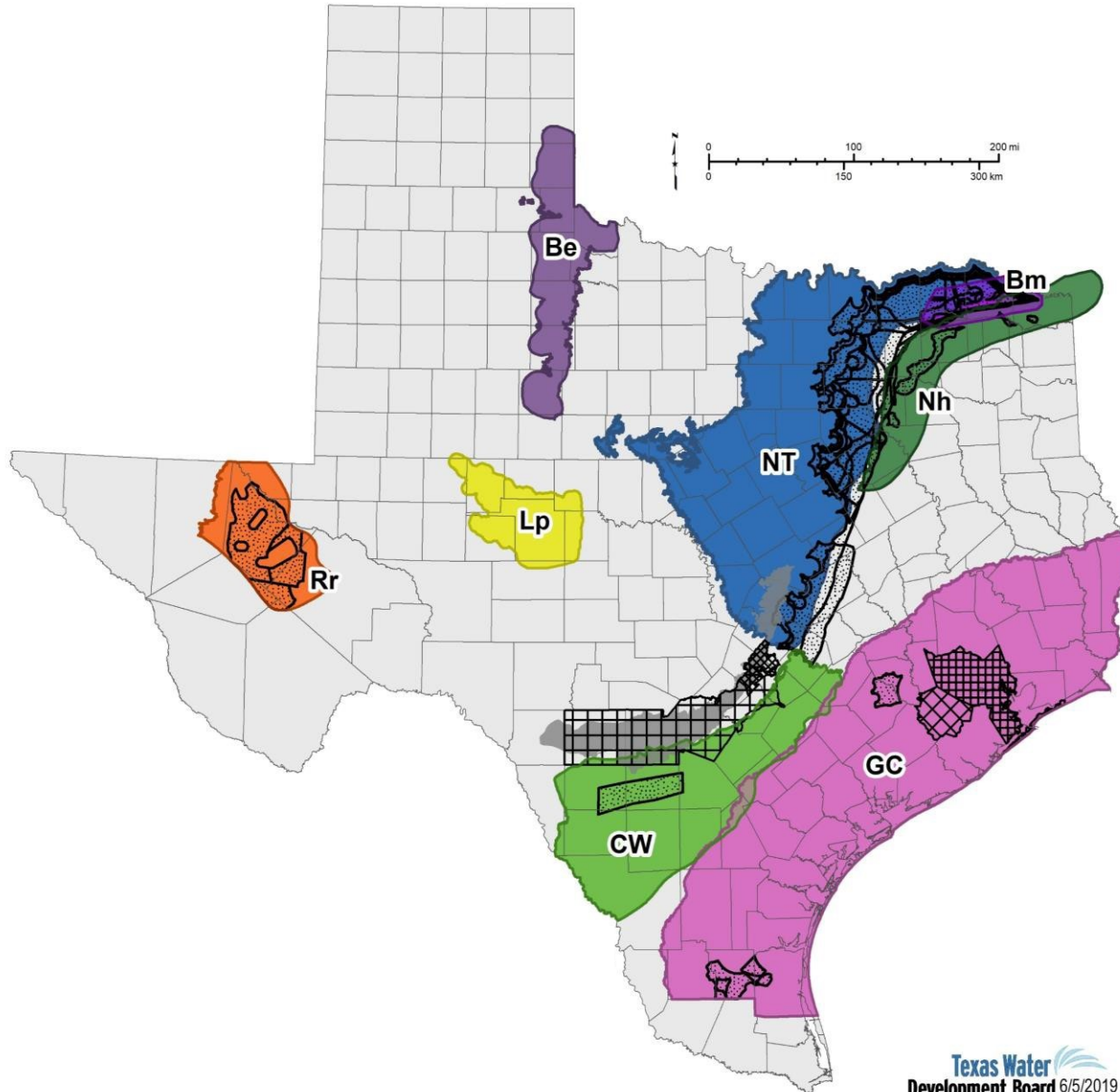
(512)936-0861

john.dupnik@twdb.texas.gov

www.twdb.texas.gov



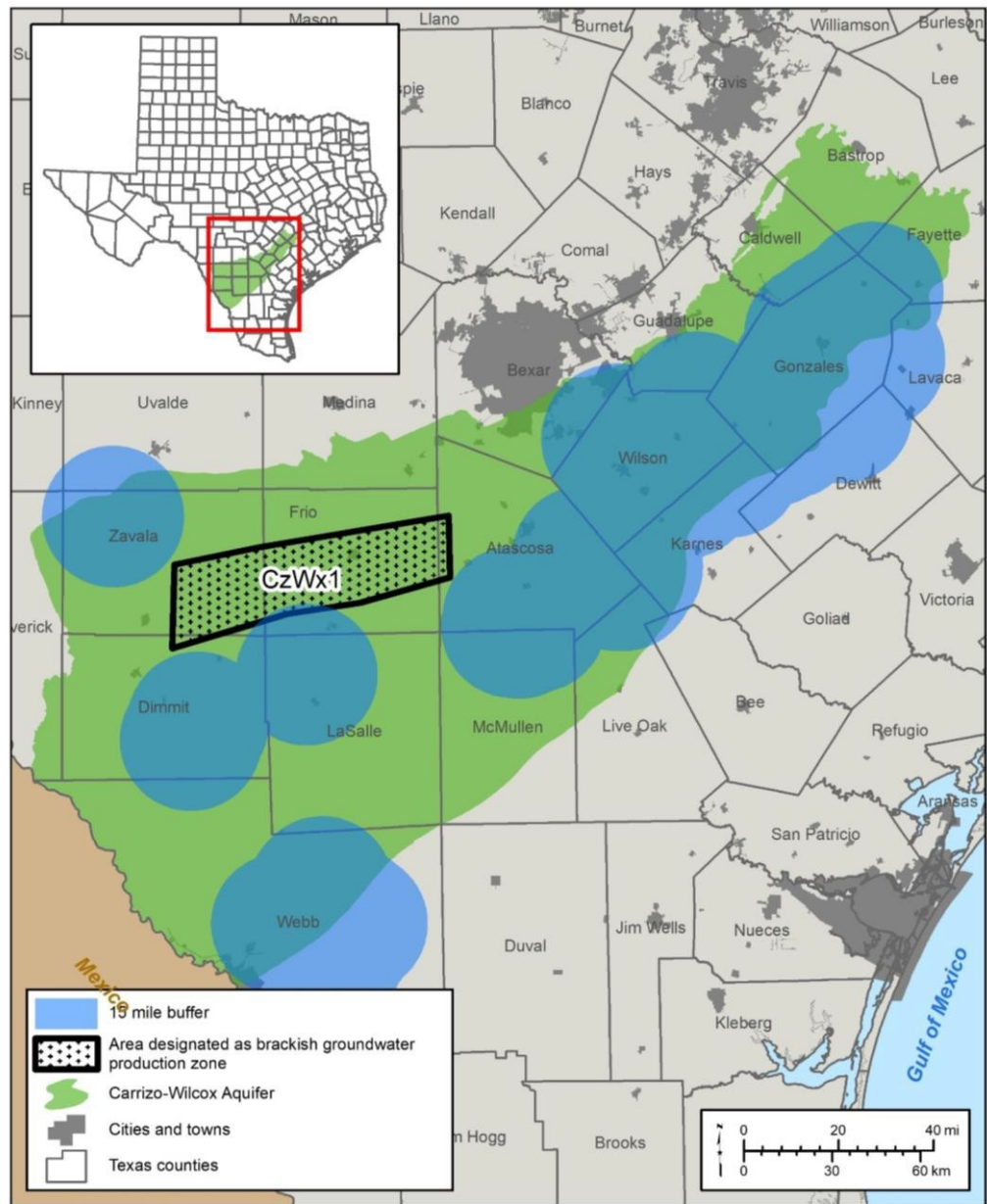
Impact to Brackish Groundwater Production Zones



HB 30 Brackish Groundwater Production Zone Designation Criteria:

- Moderate to high availability of brackish productivity that can be used to reduce the use of fresh groundwater
- Separated by hydrogeological barriers to prevent impacts to freshwater
- Not located in an aquifer with average less than 1,000 mg/L TDS
- Not located in an aquifer in use as a significant source of municipal, domestic, or agriculture supply
- **Not located in a zone designated or used for wastewater injection**

Impact to Brackish Groundwater Production Zones



USDN UIC	Groundwater Salinity Classification	Salinity Zone Code	Total Dissolved Solids Concentration (units: milligrams per liter)	
	Fresh	FR	0 to 1,000	← Drinking Water Limit
	Slightly Saline	SS	1,000 to 3,000	← Major/Minor Aquifer Mapped Limit
	Moderately Saline	MS	3,000 to 10,000	← Base of USDW
	Very Saline	VS	10,000 to 35,000	← Seawater
	Brine	BR	Greater than 35,000	

Groundwater Salinity Classification
modified from Winslow and Kister, 1956