

Texas Water Development Board: Leading National Efforts in Mapping Brackish Aquifers

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The following presentation is based upon professional research and analysis within the scope of the Texas Water Development Board's statutory responsibilities and priorities but, unless specifically noted, does not necessarily reflect official Board positions or decisions.

H.B. 30 History

- Authored by Representatives Larson and Villalba
- A few versions before it moved out of the Natural Resources House Committee and Agriculture, Water & Rural Affairs Senate Committee during the 84th Texas Legislature
- Signed in the House May 31, 2015
- Signed in the Senate June 1, 2015
- Signed by the Governor on June 19, 2015 and was effective immediately
- The enrolled version is available at:

http://www.twdb.texas.gov/innovativewater/bracs/doc/HB_30_enrolled.pdf

H.B. 30 Requirements

- Map brackish groundwater production zones and estimate 30- and 50-year production volumes without causing significant impact to water quality or water quantity in freshwater aquifers
- Make recommendations for reasonable monitoring
- Work with groundwater conservation districts and stakeholders
- Conduct science only

H.B. 30 Brackish Groundwater Production Zone Criteria

Must have brackish water	In areas of the state with moderate to high availability and productivity
Must have hydrogeologic barriers	Sufficient to prevent significant impacts to fresh water availability or quality
Cannot be within the boundaries of	Edwards Aquifer within the Edwards Aquifer Authority, Barton Springs-Edwards Aquifer Conservation District, Harris-Galveston Subsidence District, and Fort Bend Subsidence District
Cannot already be in use	Brackish water already serving as a significant source of water supply for municipal, domestic, or agricultural use
Cannot be in use or used for wastewater injection	Permitted under Title 2 of Texas Water Code, Chapter 27

H.B. 30 Study Completion Timeline

- Four aquifer designations that must be completed by December 1, 2016:
 - the Carrizo-Wilcox Aquifer located between the Colorado River and the Rio Grande,
 - the Gulf Coast Aquifers and sediments bordering that aquifer,
 - the Blaine Aquifer, and
 - the Rustler Aquifer.
- Include status report in every biennial desalination report, next report due December 1, 2016 (Water Code Sec. 16.060)
- Map remaining aquifers in the state by December 1, 2022

H.B. 30 Implementation

- **October 13, 2015:** Authorized to post Request For Qualifications (RFQ)
- **October 26, 2015:** First general stakeholder meeting in Austin
- **November 10, 2015:** RFQs posted
- **January 6, 2016:** Board approves six contracts
- **February 17, 2016:** Existing Carrizo-Wilcox contract amended to include H.B. 30 requirements
- **April, June, and August 2016:** Five stakeholder meetings
- **August 2016:** Draft project reports reviewed by TWDB staff
- **September 9, 2016:** Second general stakeholder meeting in Austin with results from four contracted projects
- **Fall 2016:** Staff recommends brackish areas for designation as groundwater production zones to Executive Administrator
- **Fall 2016:** The Board designates brackish groundwater production zones
- **Fall 2016:** The Board considers approving the Biennial Desalination Report to the Texas Legislature
- **December 1, 2016:** Biennial Desalination Report submitted to the Texas Legislature

Contracted Projects

- \$2,000,000 appropriated from General Revenue Fund
 - \$1,681,446 was dedicated to funding the seven contracted studies.
 - The remainder paid for two full time employees (FTE).
- Three 2016 contracts:
 - Blaine Aquifer: Daniel B. Stephens & Associates, Inc., \$200,000
 - Gulf Coast Aquifer: INTERA, Inc., \$500,000
 - Rustler Aquifer: INTERA, Inc., \$200,000
- Modified existing contract
 - Carrizo-Wilcox Aquifer: Texas Bureau of Economic Geology, additional \$181,446
- Three 2017 contracts:
 - Blossom Aquifer: LBG-Guyton Associates, \$50,000
 - Nacatoch Aquifer: LBG-Guyton Associates, \$150,000
 - Trinity Aquifer: Southwest Research Institute, \$400,000

H.B. 30 Projects and BRACS Studies

Brackish Resources Aquifer Characterization System

House Bill 30 Projects

2016 Aquifers

- Be. Blaine
- Cz. Carrizo
- Gc. Gulf Coast
- Rr. Rustler

2017 Aquifers

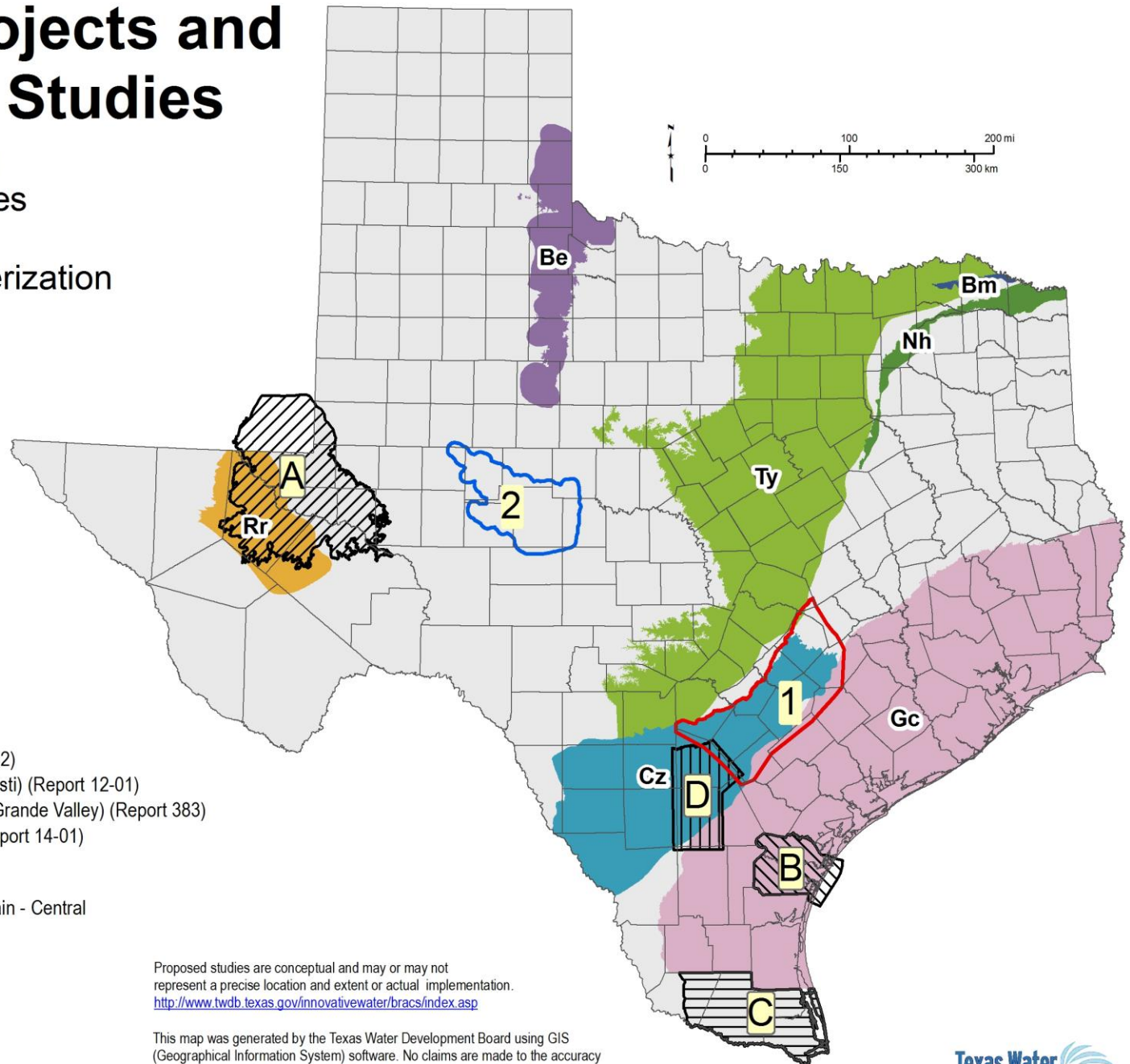
- Bm. Blossom
- Nh. Nacatoch
- Ty. Trinity

Completed Studies

- A. Pecos Valley Aquifer (Report 382)
- B. Gulf Coast Aquifer (Corpus Christi) (Report 12-01)
- C. Gulf Coast Aquifer (Lower Rio Grande Valley) (Report 383)
- D. Queen City-Sparta aquifers (Report 14-01)

Other Studies

- 1. Aquifers of the upper coastal plain - Central
- 2. Lipan Aquifer



Proposed studies are conceptual and may or may not represent a precise location and extent or actual implementation.
<http://www.twdb.texas.gov/innovativewater/bracs/index.asp>

This map was generated by the Texas Water Development Board using GIS (Geographical Information System) software. No claims are made to the accuracy or completeness of the information shown herein or to its suitability for a particular use. The scale and location of all mapped data are approximate.

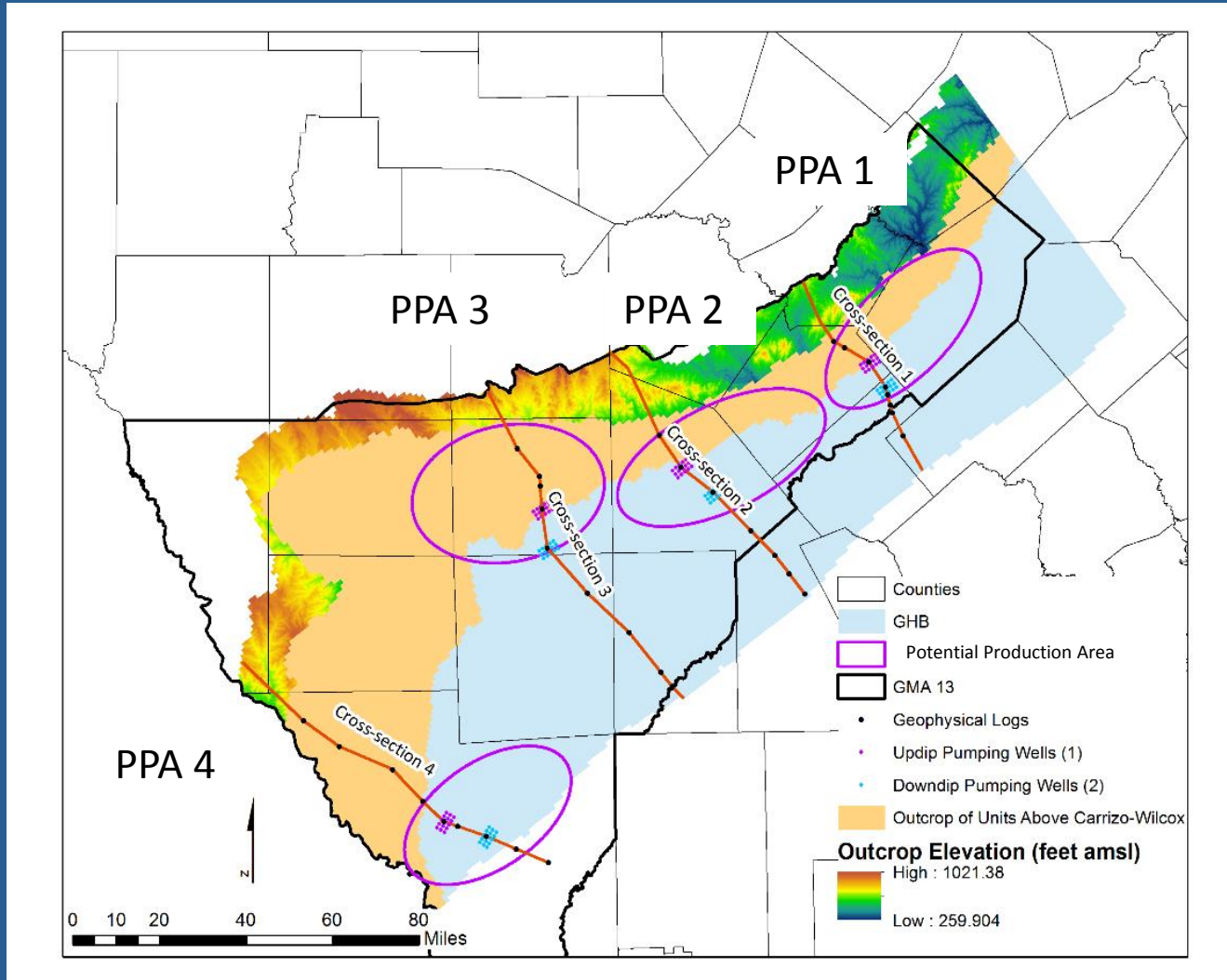
Reports

- Draft reports were delivered in July and August 2016
- Final reports received late August to early September 2016
- Available for download:
www.twdb.texas.gov/innovativewater/bracs/HB30.asp

Designation of brackish groundwater production zones

- TWDB staff reviews the potential production areas (PPA) evaluated by contractors and stakeholder comments
- TWDB staff will recommend areas to the Executive Administrator (EA)
- The EA will review and propose brackish groundwater production zones to the Board
- The Board will designate brackish groundwater production zones in the fall

Carrizo-Wilcox Aquifer: Potential Production Areas



Hamlin and others, 2016

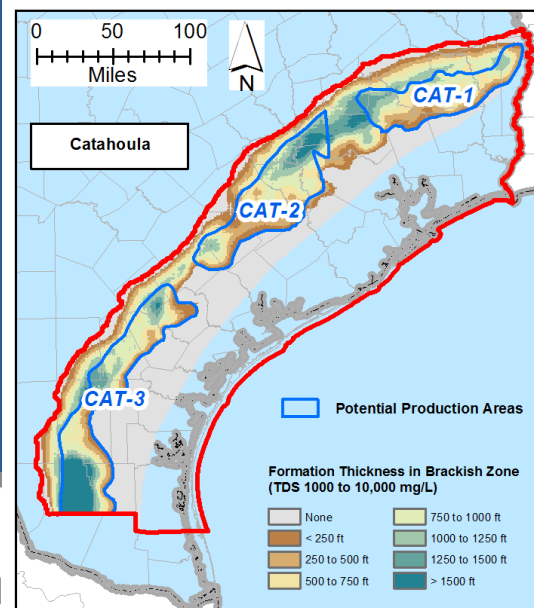
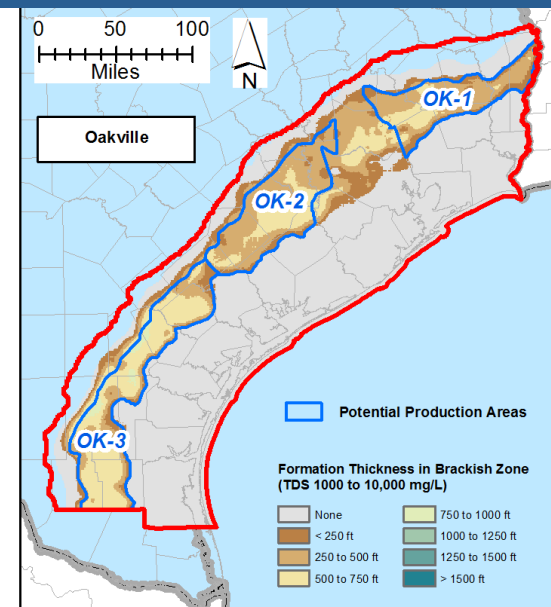
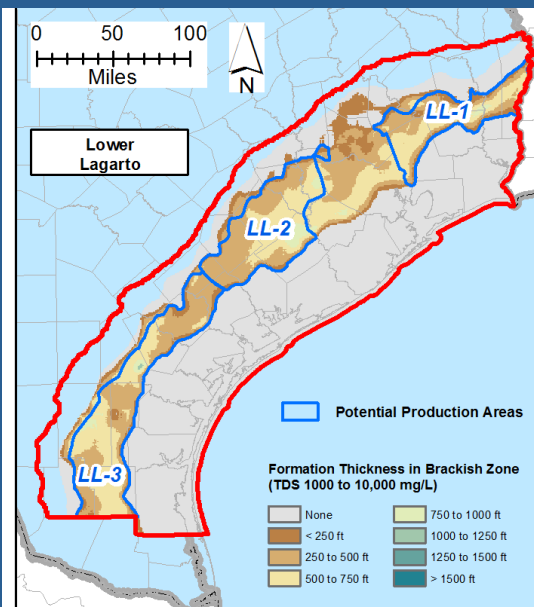
Gulf Coast Aquifer: Potential Production Areas 1, 2, and 3

■ Each Potential Production Area

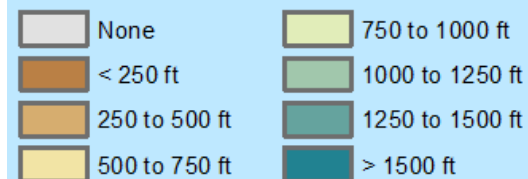
- Includes Portions of Lower Lagarto, Oakville, and Catahoula
- Areal extend for each PPA is different for each geologic unit
- Regional trends in sands thickness and transmissivity is a consideration

■ No Production Areas

- Harris-Galveston Subsidence District
- Fort Bend Subsidence District



Formation Thickness in Brackish Zone (TDS 1000 to 10,000 mg/L)



Gulf Coast Aquifer: Potential Production Areas 4, 5, and 6

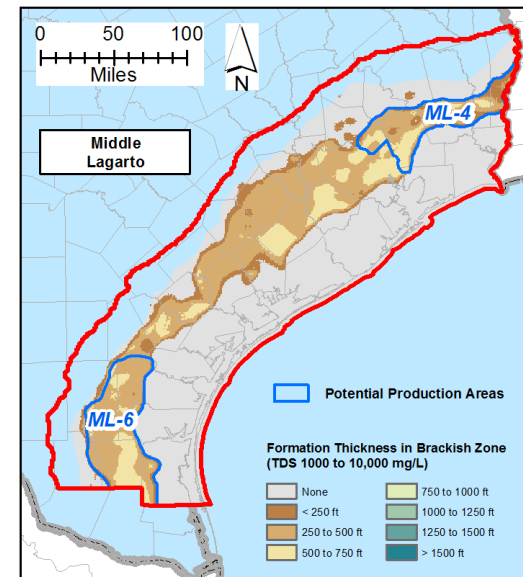
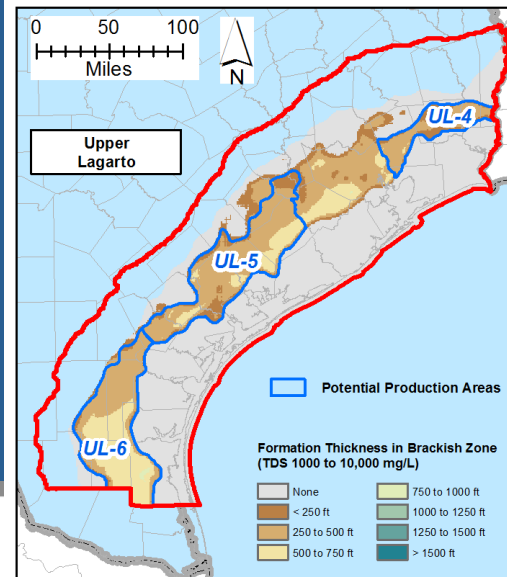
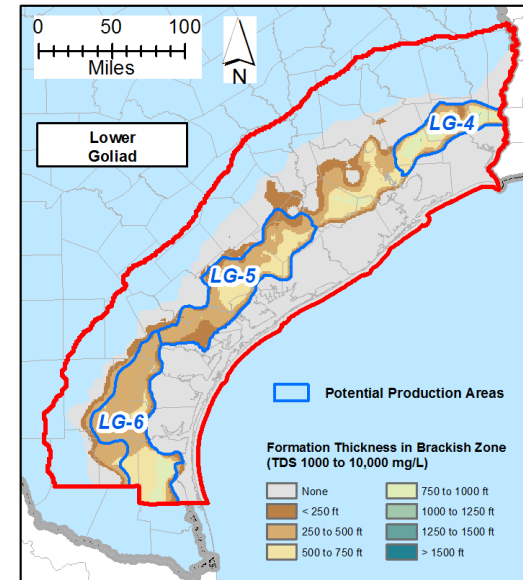
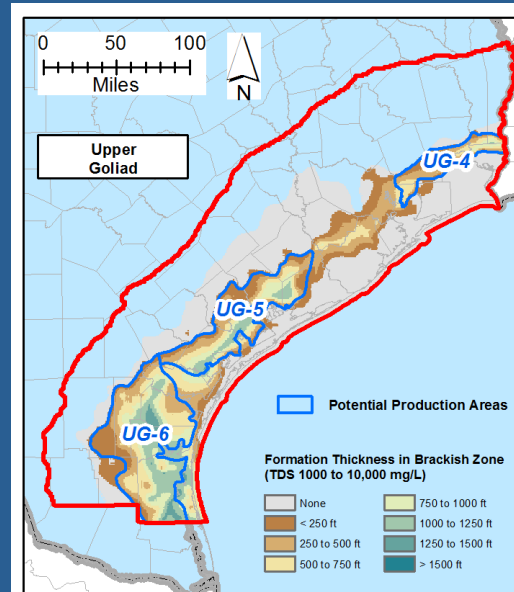
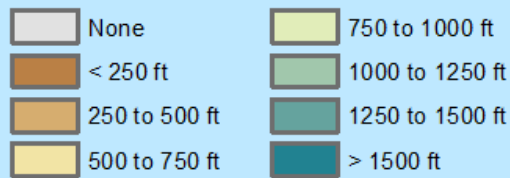
■ Each Potential Production Area

- Includes Portions bottom third of Upper Goliad, Lower Goliad, Upper Lagarto, and the Middle Lagarto
- Areal extent for each PPA is different for each geologic unit

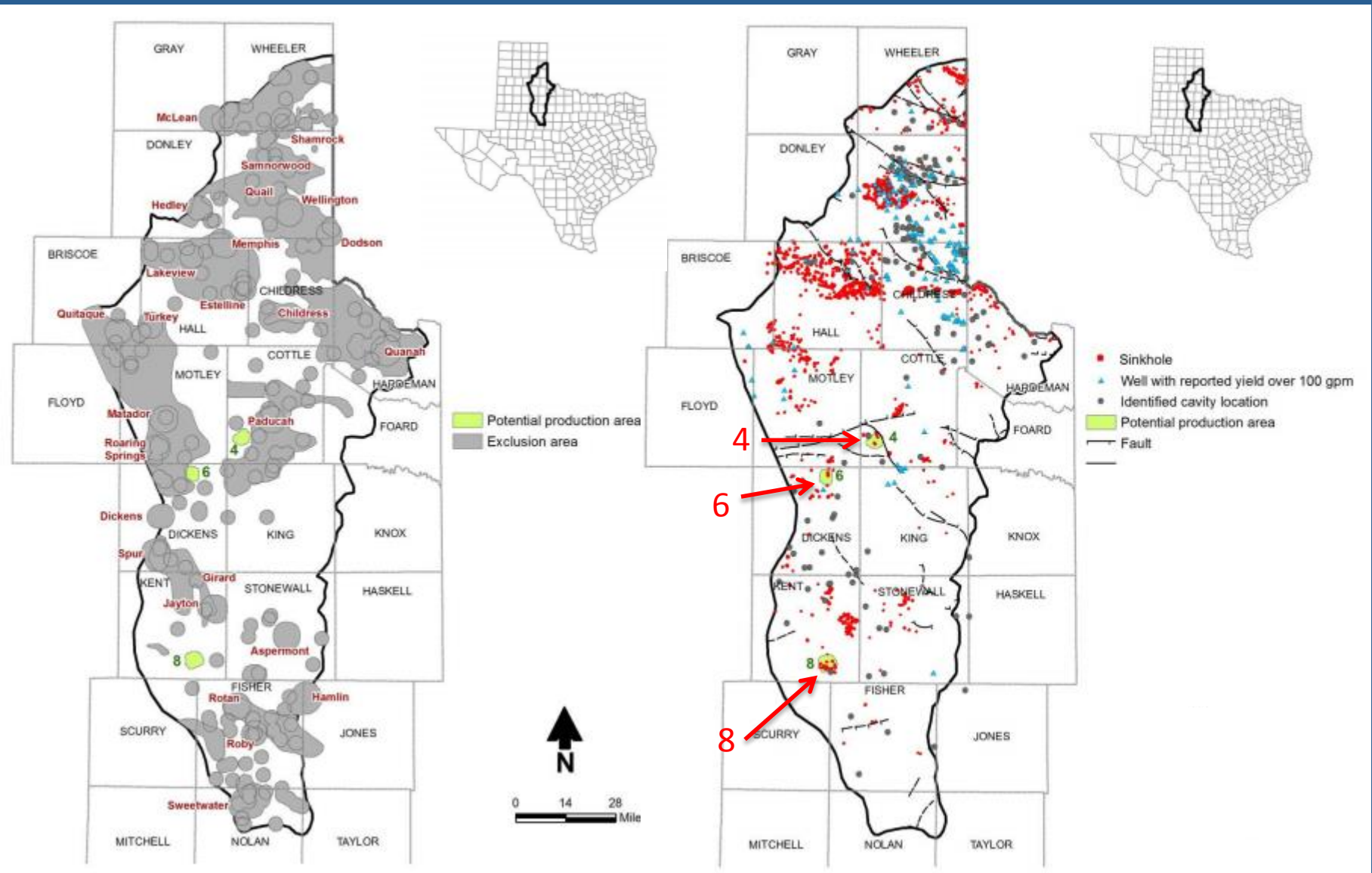
■ No Production Areas

- Harris-Galveston Subsidence District
- Fort Bend Subsidence District

Formation Thickness in Brackish Zone (TDS 1000 to 10,000 mg/L)

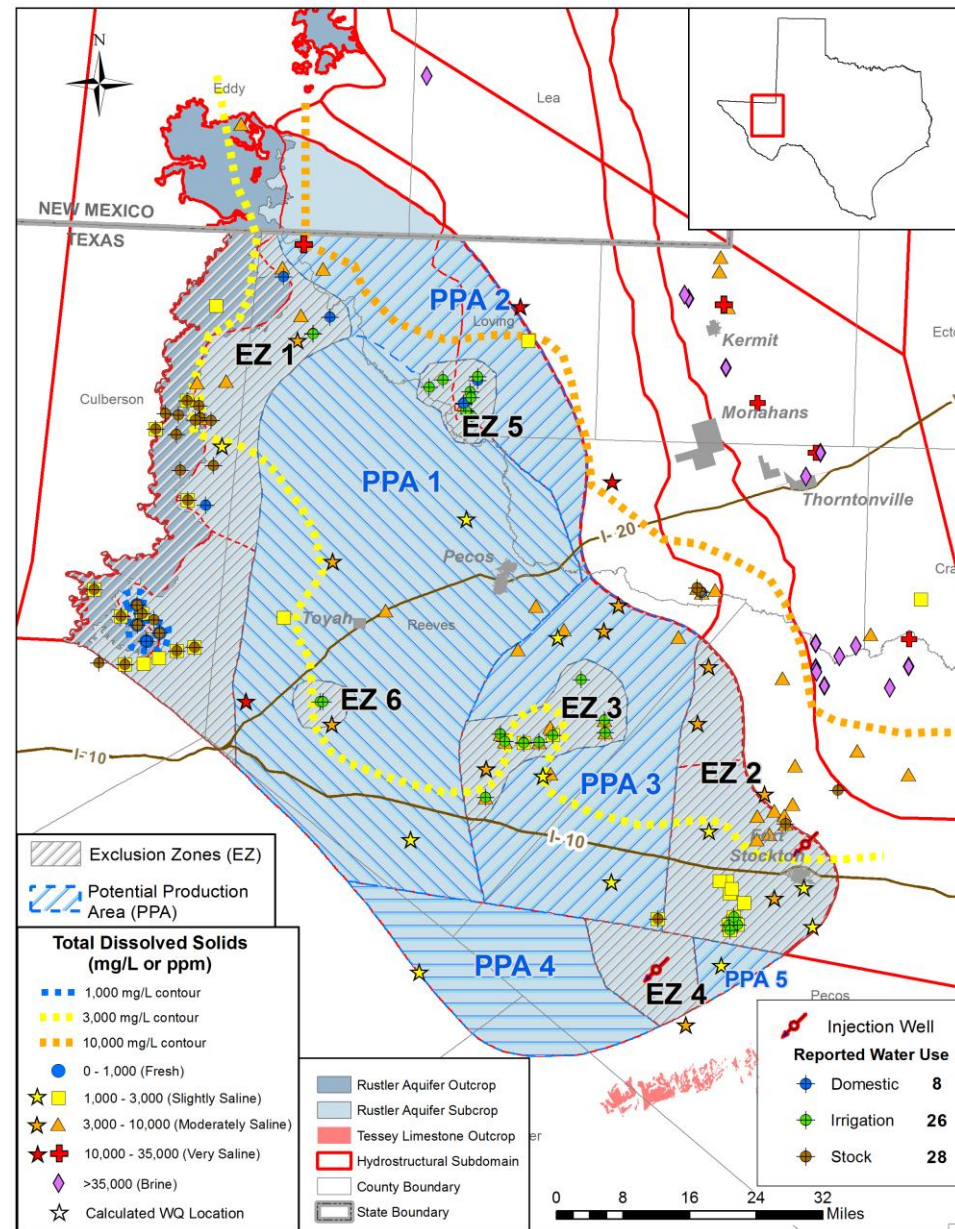


Blaine Aquifer: Potential Production Areas and Exclusions



Rustler Aquifer: Potential Production Areas

Potential Production Area Number	Hydrogeologic Barriers
1	Structural and hydraulic distance boundaries
	Dewey Lake Formation above and Salado Formation below
2	Structural and hydraulic distance boundaries
	Dewey Lake Formation above and Salado Formation below
3	Structural and hydraulic distance boundaries
	Dewey Lake Formation above and Salado Formation below
4	Structural boundaries
	Dewey Lake Formation above and Salado Formation below
5	Structural boundaries
	Dewey Lake above and Salado below



Then what?

- By December 1, 2022, TWDB is required to designate brackish groundwater production zones in all remaining major and minor aquifers in Texas
 - more science remains to be done!
- Next spring is a new legislative session...

Valuable information on our website!

www.twdb.texas.gov/innovativewater/bracs/HB30.asp

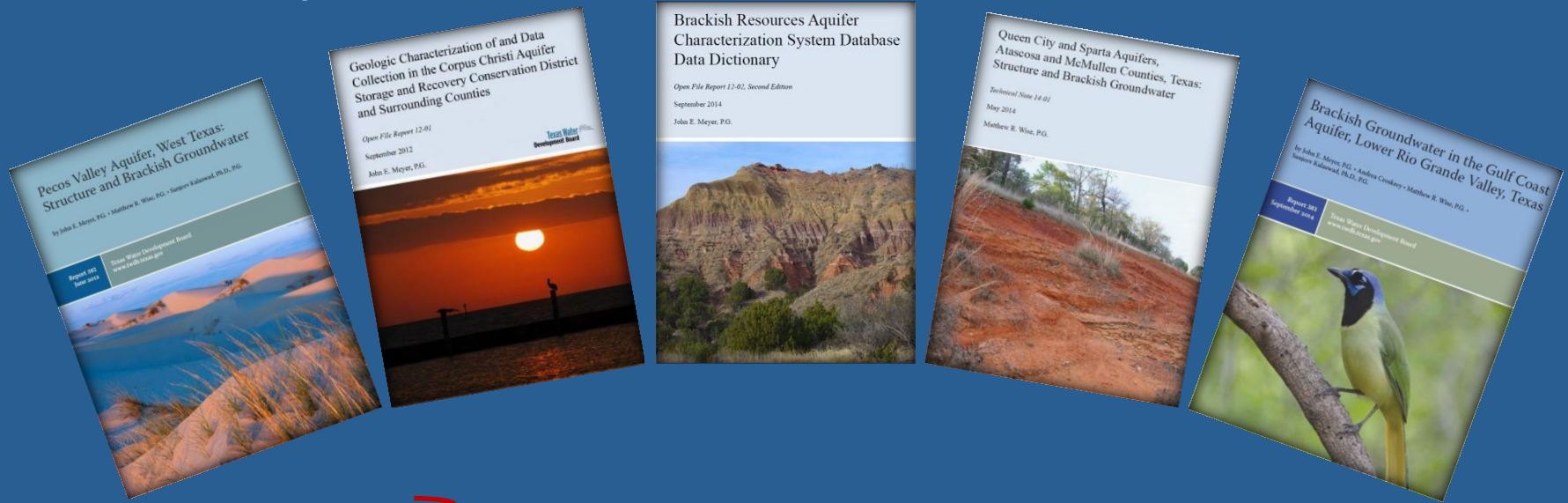
- Projects Map
- Enrolled version of H.B. 30
- The RFQ
- Board authorizations and approvals
- Video of the first general stakeholder meeting
- Stakeholder comments
- Announcements
- Aquifer specific stakeholder meeting presentations
- Stakeholder questions and answers
- Draft and final reports

Brackish Resource Aquifer Characterization System (BRACS) Studies:

- collect well logs
- build geologic datasets
- compile aquifer properties
- map aquifer extent
- map key desalination water quality parameters
- estimate volumes of water
- provide all data to stakeholders
- *each aquifer will require unique analysis based on data availability and local hydrogeology*

Study Deliverables

- Published reports



- GIS Datasets
- BRACS Database
- Well logs

The real value is in the data:

Stakeholders can use this to evaluate potential groundwater exploration areas.

<http://www.twdb.texas.gov/innovativewater/bracs/docs.asp>

Thank you for your support!



We
appreciate
data!

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