

Hill Country Trinity Aquifer Brackish Groundwater Study Stakeholder Meeting

Mark C. Robinson, P.G.

Innovative Water Technologies

Lower Colorado RWPG Area K Meeting

July 10, 2019

Unless specifically noted, this presentation does not necessarily reflect official Board positions or decisions.

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Hill Country Trinity Study Outline



www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Presentation Outline

Introduction to mapping brackish groundwater in the Hill Country Trinity Aquifer

- What is brackish groundwater?
- Aquifer geology
- Brackish groundwater zone designation
- Next steps
- Questions, comments, stakeholders input

3

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Brackish Groundwater

Saltier than fresh water, less salty than seawater

Salinity Classification	Salinity Zone Code	Total Dissolved Solids Concentration in milligrams per liter (mg/L)	
Fresh	FR	0 to 1,000	← Drinking Water Limit
Slightly Saline	SS	1,000 to 3,000	← Major/Minor Texas Aquifers Mapped Limit*
Moderately Saline	MS	3,000 to 10,000	
Very Saline	VS	10,000 to 35,000	
Brine	BR	Greater than 35,000	← Seawater

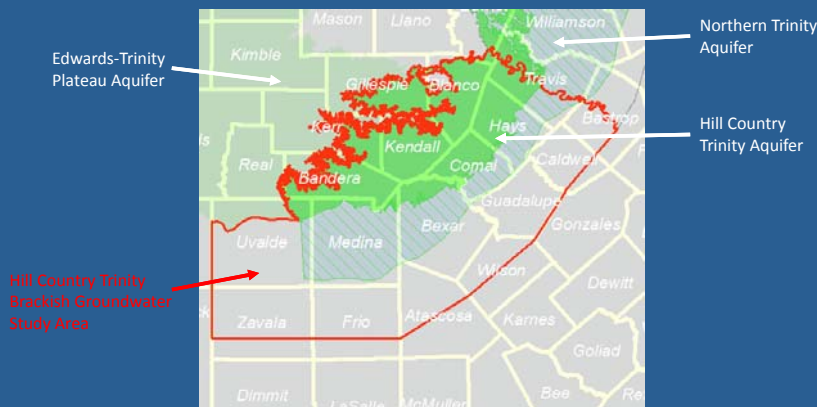
Classification modified from Winslow, A.G., and Kister, L.R., 1956, saline-water resources of Texas: U.S. Geological Survey, Water-Supply Paper 1365, 105 p.

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Hill Country Trinity Study Outline



www.twdb.texas.gov

www.facebook.com/twdbboard @twdb



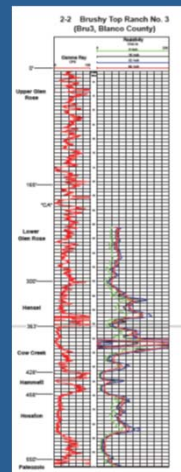
Geology

Period	Approximate Age	Stratigraphic Column & Geologic Features	Classified Operational Environment	Hydrostratigraphy
LOWER CRETACEOUS	100-140 Ma	Chert, dolomite, limestone	Shallow Shelf	Edwards Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Upper Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Middle Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
		Shale, sandstone, limestone	Shallow Shelf	Lower Trinity Aquifer
UNCONFORMABLE PALEOZOIC	250-300 Ma	Basal conglomerate	Basal Shelf	Unconformable Paleozoic Aquifer
		Basal conglomerate	Basal Shelf	Unconformable Paleozoic Aquifer

- Follow stratigraphic nomenclature used in previous studies: (for example) *Hydrogeologic Atlas of the Hill Country Trinity Aquifer Blanco, Hays, and Travis Counties, Central Texas*

Editors
Douglas A. Wierman, P.G., Alex S. Broun, P.G., and Brian B. Hunt, P.G. July 2010

- Extend stratigraphy into downdip Trinity Group.
 - Upper Glen Rose
 - Lower Glen Rose
 - Hensel
 - Cow Creek
 - Hammett
 - Sligo
 - Hosston



www.twdb.texas.gov

www.facebook.com/twdbboard @twdb



Brackish Groundwater Production Zones (BGPZ)

84th Texas Legislature, House Bill 30, 2015

Directed TWDB to:

- ✓ Identify brackish groundwater production zones
- ✓ Estimate productivity over 30 & 50 year periods
- ✓ Recommend groundwater monitoring
- ✓ Work with stakeholders and groundwater conservation districts
- ✓ Complete four aquifers December 2016
- ✓ Complete all aquifers December 2022*

<http://www.twdb.texas.gov/innovativewater/bracs/HB30.asp>

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Criteria for Zone Designation

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 these boundaries	Edwards Aquifer within the Edwards Aquifer Authority, Barton Springs-Edwards Aquifer Conservation District, Harris-Galveston Subsidence District, or Fort Bend Subsidence District
Cannot be already in use	Brackish water already serving as a significant source of water supply for municipal, domestic, or agricultural
Cannot be used for wastewater injection	Permitted under Title 2 of Texas Water Code, Chapter 27

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Next Steps for Study:

- Additional stakeholder meetings to introduce study.
- Map stratigraphy, lithology, measured water quality, calculated water quality, aquifer properties, and existing use.
- Calculate the volume of fresh, slightly saline, moderately saline, and very saline groundwater.
- Proposed production area (PPA) analysis and stakeholder meeting.
- PPA impact analysis (modeling).
- Final report(s) and stakeholder comment solicitation.
- Board possibly designates brackish groundwater production zones.

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)

9

Texas Water
Development Board

Seeking Stakeholder Input

- Additional Trinity Well Data
 - Aquifer Tests
 - Water chemistry
 - Geophysical well logs
- Injection well data
- Current use

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)

10

Texas Water
Development Board

Contact Information

- Mark C. Robinson
- 512-463-7657
- Mark.Robinson@twdb.texas.gov

Hill Country Trinity Study Outline



- Study Webpage:
 - www.twdb.texas.gov/innovativewater/bracs/studies/HillCountry_Trinity/index.asp

www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)



Hill Country Trinity Study Outline



www.twdb.texas.gov

www.facebook.com/twdbboard [@twdb](https://twitter.com/twdb)

