



# Bandera County Aquifers

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# Aquifer

Lithologic unit that can yield water to pumped wells or springs.

- Confined
- Unconfined



# McDONALDS BIG MAC

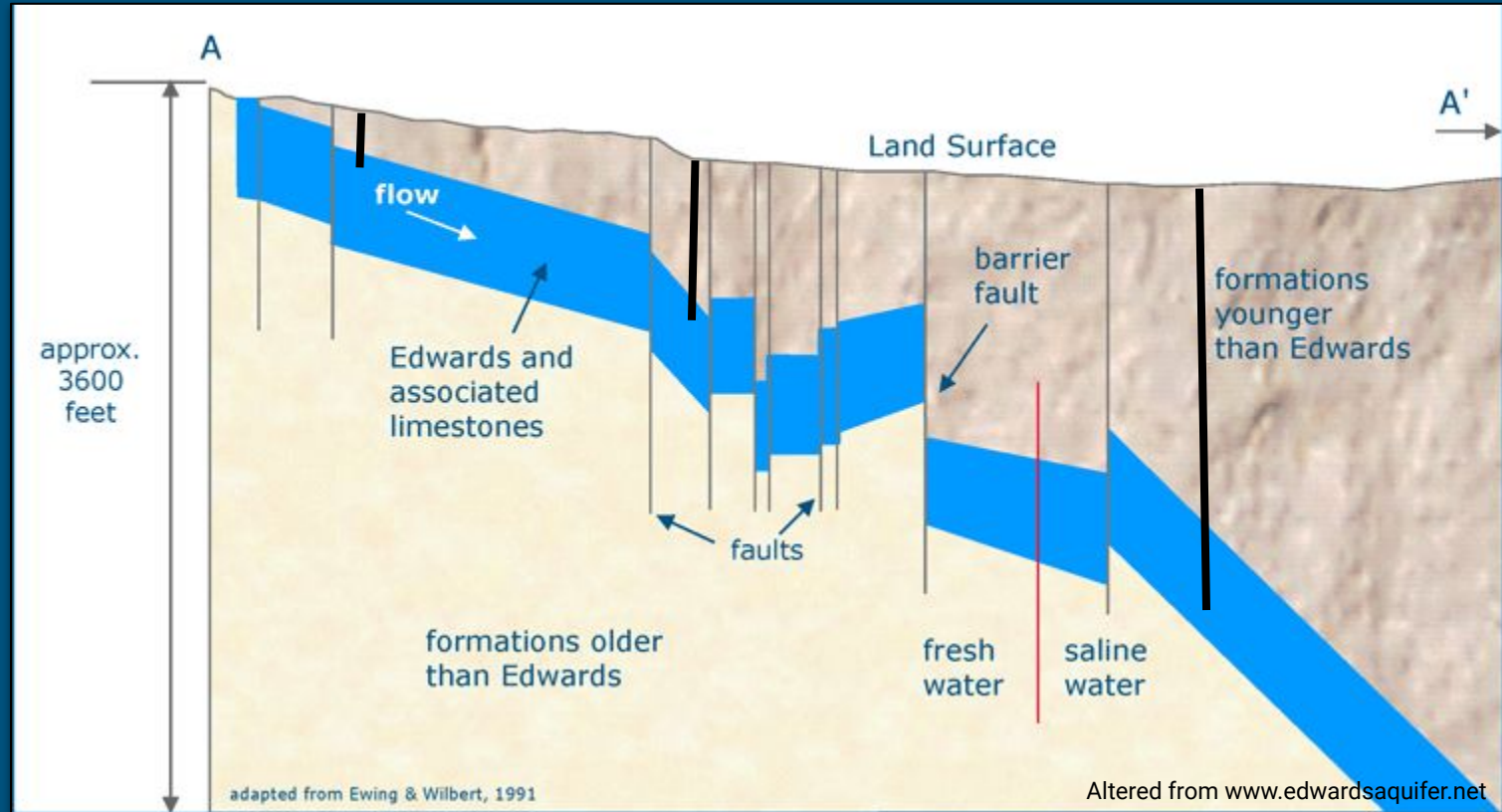
ADVERTISEMENTS



ACTUAL BIG MAC  
- ROTATED TO MOST ATTRACTIVE ANGLE



# Our aquifers looks more like this...





**AQUITARD**



**AQUIFER**

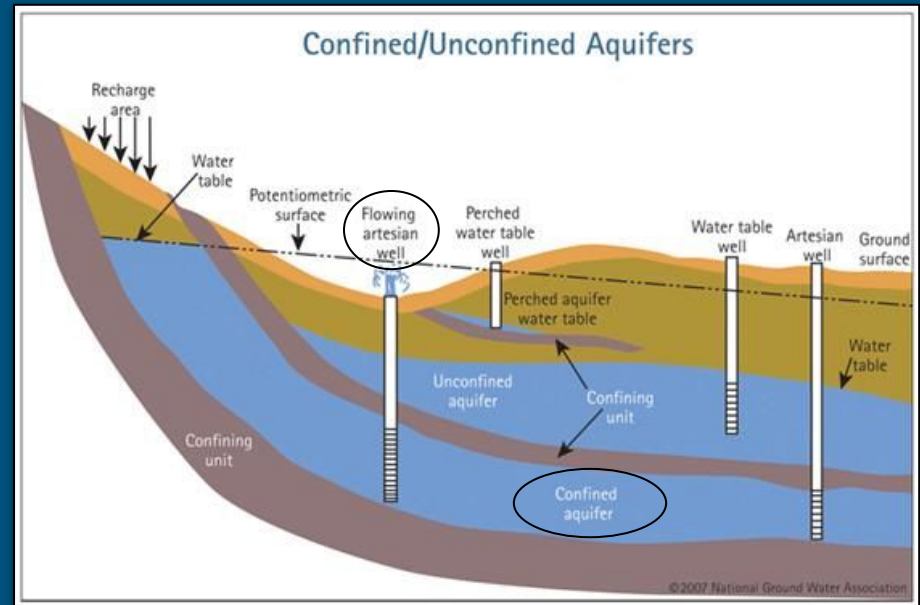


**AQUITARD**

# Middle and Lower Trinity - Confined Aquifers

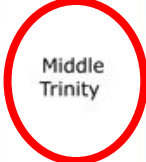
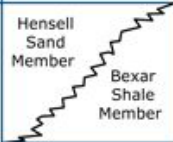

The entire aquifer is saturated with water (pressurized).

- Confined by a bottom and top layer with very low permeability (water has a hard time moving through it).
- Confining bed = aquitard (usually low permeability, but can store/transmit water between aquifers).
- \*\*No aquitard is completely impermeable.



## Stratigraphic Units of the Trinity Group in South Central Texas

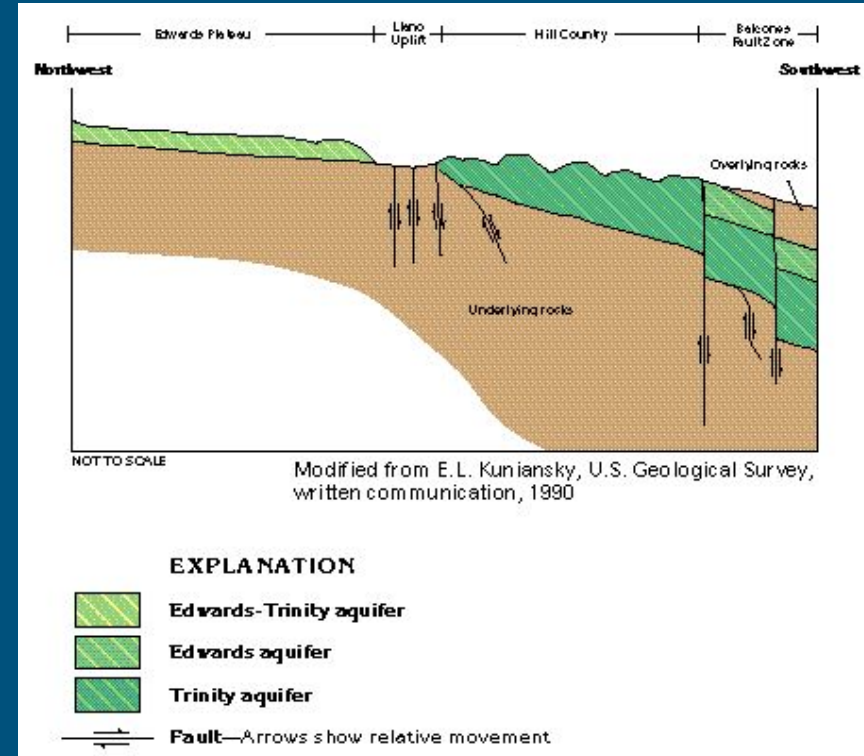
(adapted from Ashworth, 1983)

Stratigraphic Unit		Hydrologic Unit	Approx. Maximum Thickness (feet)	Character of Rocks	Water-Bearing Properties
Glen Rose Limestone	upper member	Upper Trinity	500	Alternating resistant and non-resistant beds of blue shale, nodular marl, and impure fossiliferous limestone. Also contains two distinct evaporite zones.	Yields very small to small quantities of relatively highly mineralized water.
	lower member	 Middle Trinity	320	Massive, fossiliferous limestone grading upward into thin beds of limestone, dolomite, marl, and shale. Numerous caves and reefs occur in the lower portion of the member.	Yields small to moderate quantities of fresh to slightly saline water.  <span style="color: red;">30-50 gpm, sometimes more or less</span>
Travis Peak Formation	 Hensell Sand Member Bexar Shale Member		300	Red to gray clay, silt, sand, conglomerate, and thin limestone beds grading downdip into silty dolomite, marl, calcareous shale, and shaley limestone.	
	Cow Creek Limestone Member		90	Massive, fossiliferous, white to gray, argillaceous to dolomitic limestone with local thinly bedded layers of sand, shale, and lignite.	
	Hammett Shale Member		80	Dark blue to gray, fossiliferous, calcareous and dolomitic shale with thinly interbedded layers of limestone and sand.	
	 Sligo Limestone Member Hosston Sand Member	Lower Trinity	120	Sandy dolomitic limestone.	Yields small to large quantities of fresh to slightly saline water.
			350	Red and white conglomerate, sandstone, claystone, shale, dolomite, and limestone.	



# Edwards Aquifer - Confined & Unconfined Aquifer

- Recharges in Northwest Bandera County
- Visible at surface in unconfined areas.
- Overlies Trinity aquifer

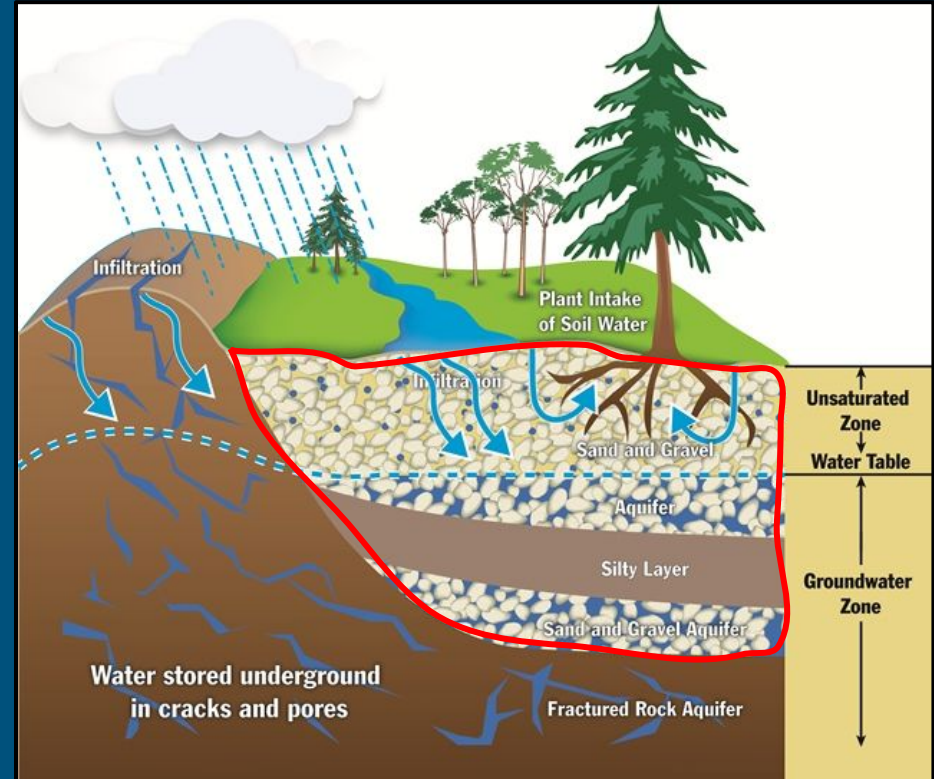




# Recharge Zone

When top of lithologic unit of aquifer is exposed to surface.

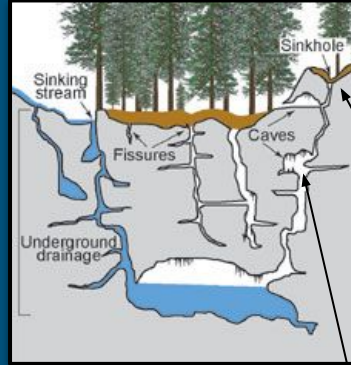
- Recharge is mostly from precipitation, and some streamflow in north Bandera County.
- Only a small part of precipitation actually makes it into the aquifer.



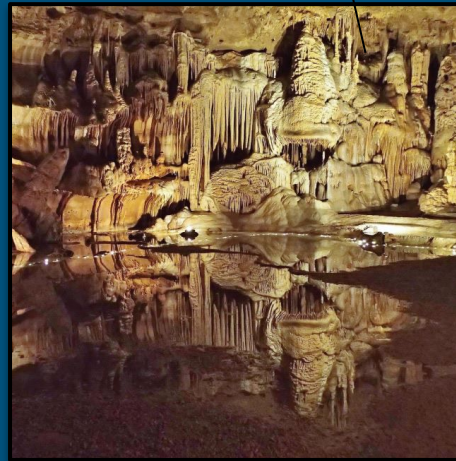
# Karst

Landscapes shaped by dissolution processes (water dissolving soluble rock).

- Often in limestone, marble, gypsum.
- Sinkholes, sinking streams, caves.
- Edwards Plateau is one of largest karst regions in the U.S.A.



Jacob's Well



# BCRAGD Office Well - Middle Trinity

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In 5 months (December 2020 - Today)

- Decreased 3.89% (0.77% per month)
- Approximately 8 feet total