

Aquifer Management Principles in Artesian Aquifers

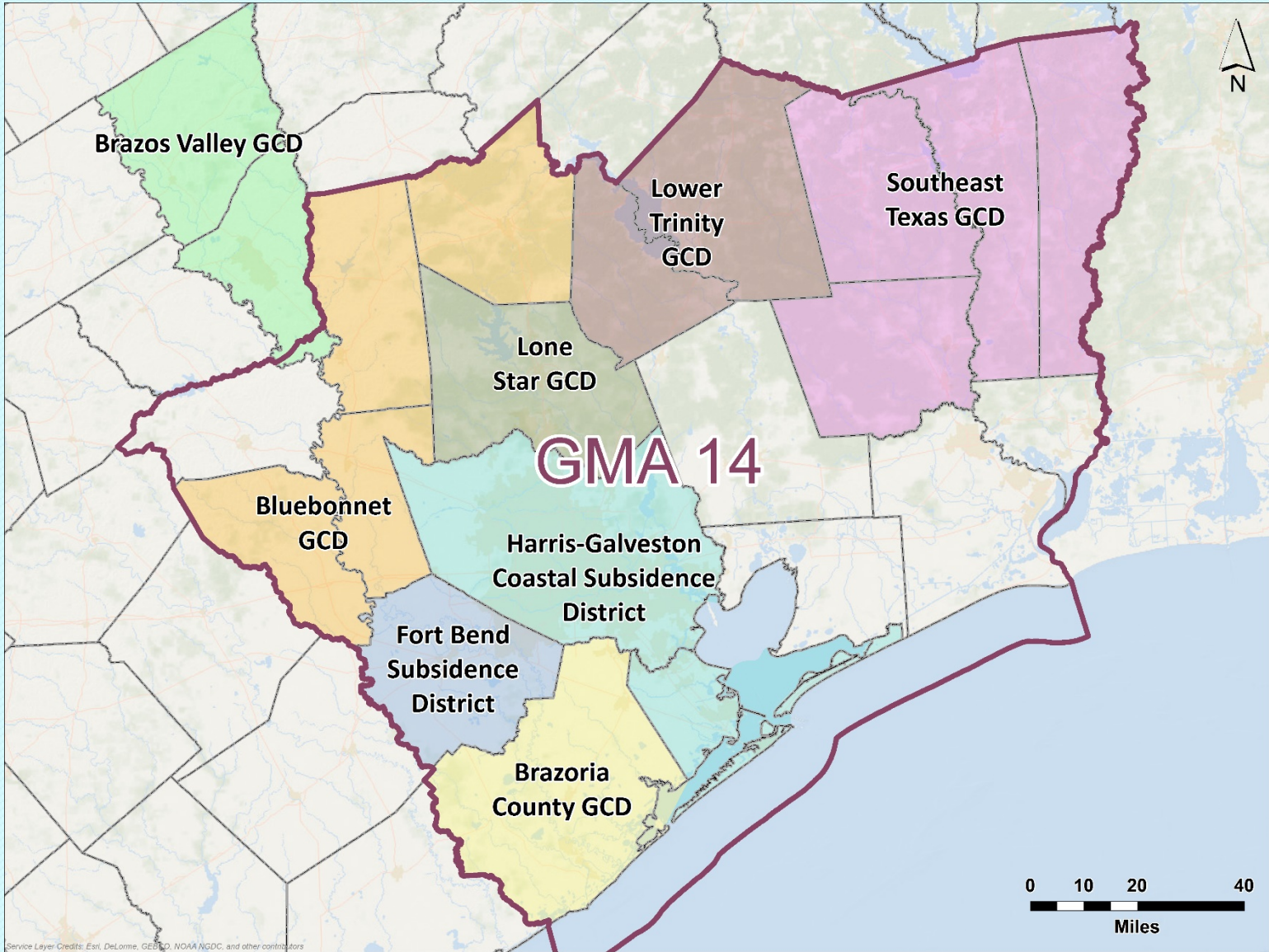
A DFC Proposal

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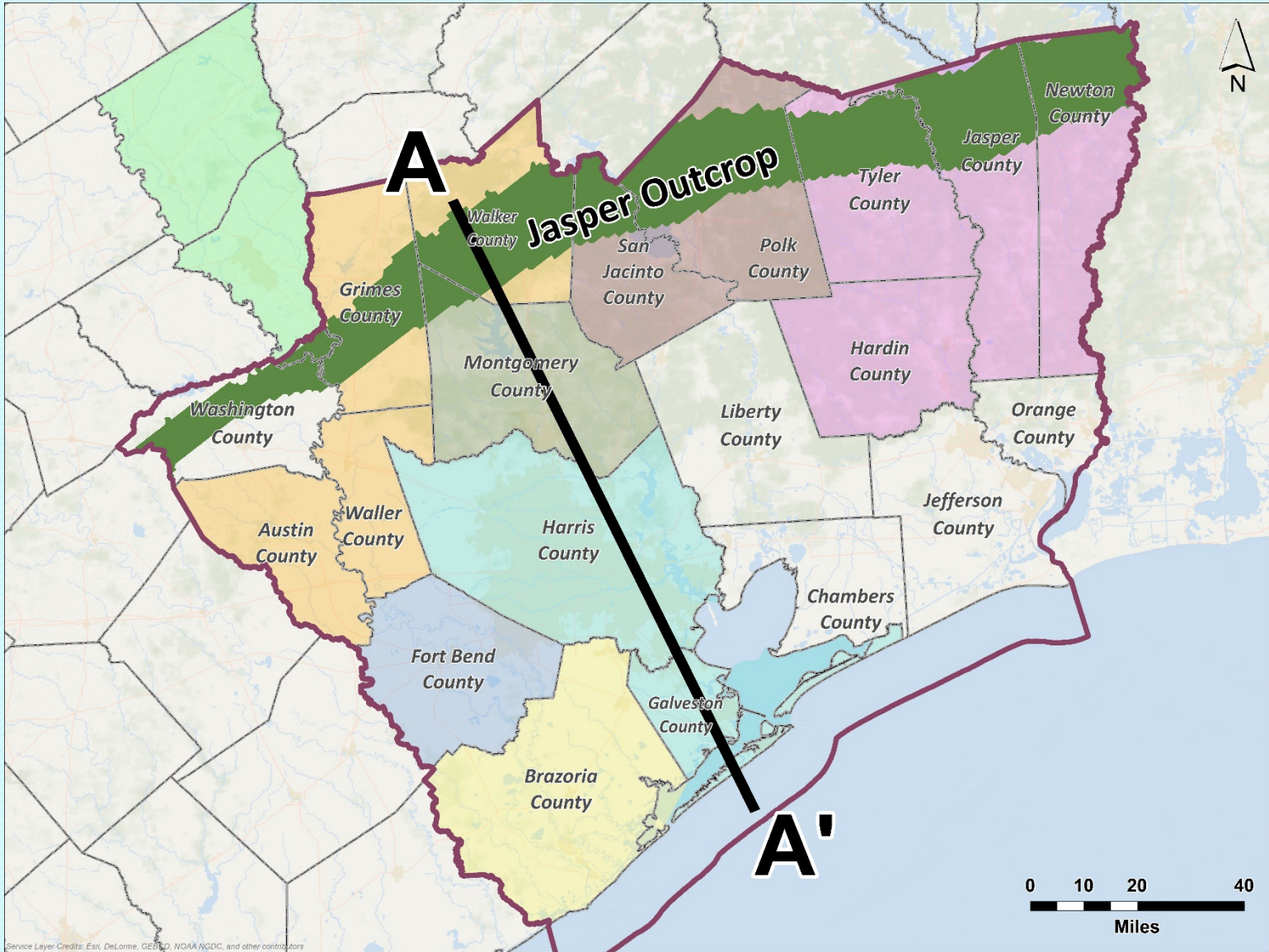
Representing:
City of Conroe

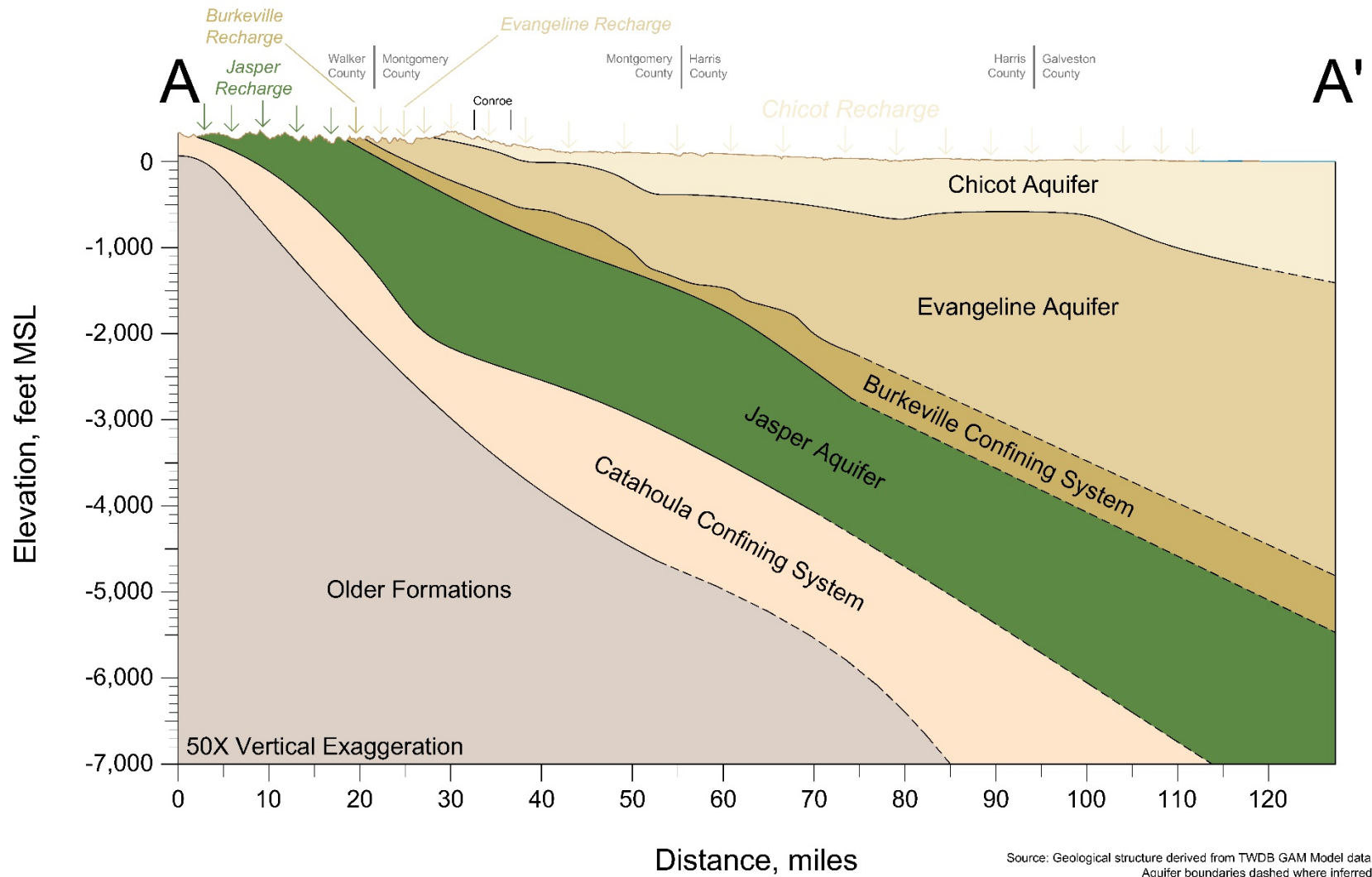




Jasper Aquifer

- Major aquifer throughout GMA 14
- Separate from Chicot/Evangeline
 - No known issues with subsidence (USGS, HAGM model)
 - Characteristic of “dipping” artesian aquifer





NW

SE

Outcrop/
Water Table Area
(water level is water table)

Artesian Zone
(water level represents aquifer pressure)

Recharge

Ground Level

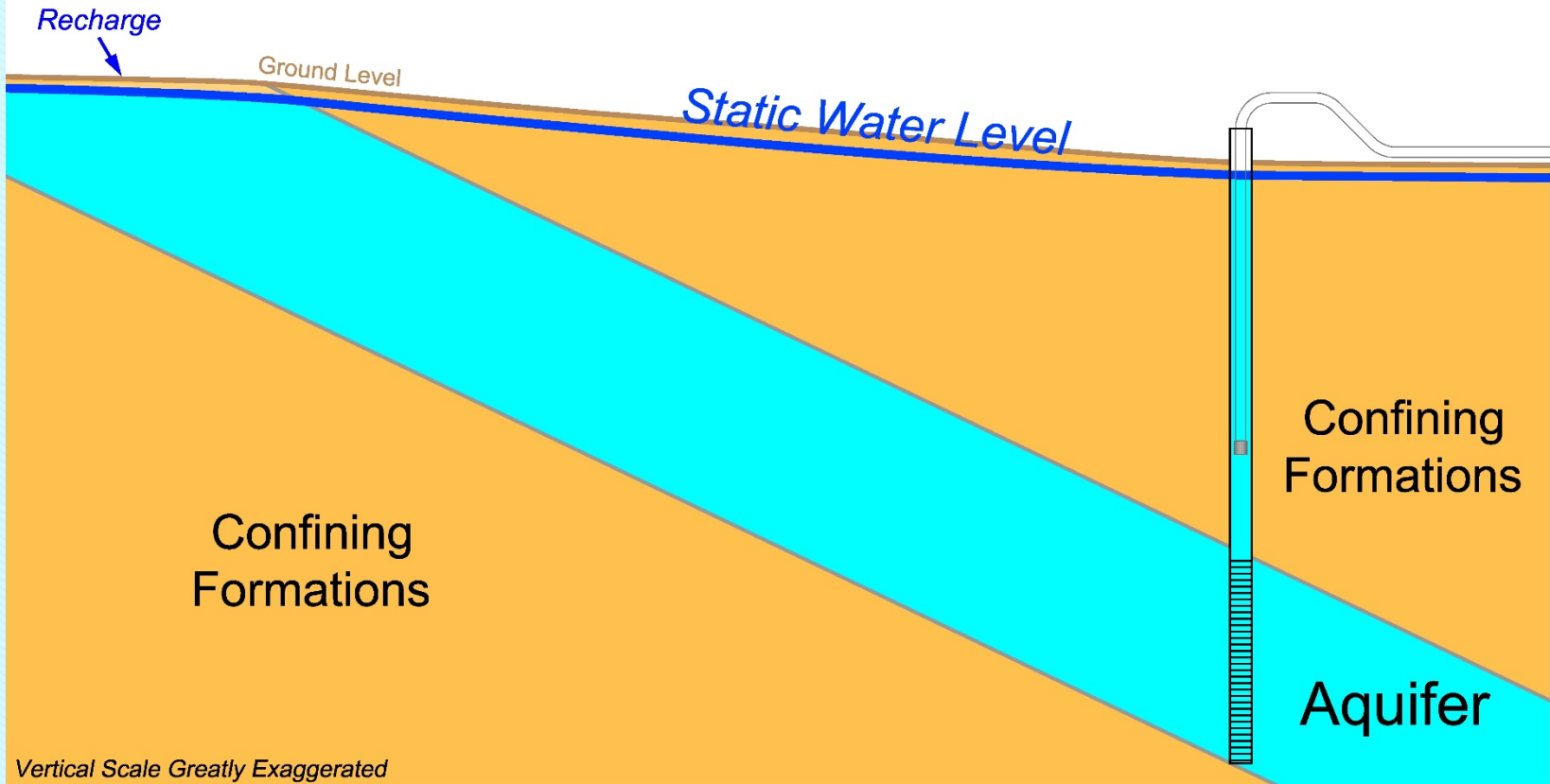
Static Water Level

Confining
Formations

Confining
Formations

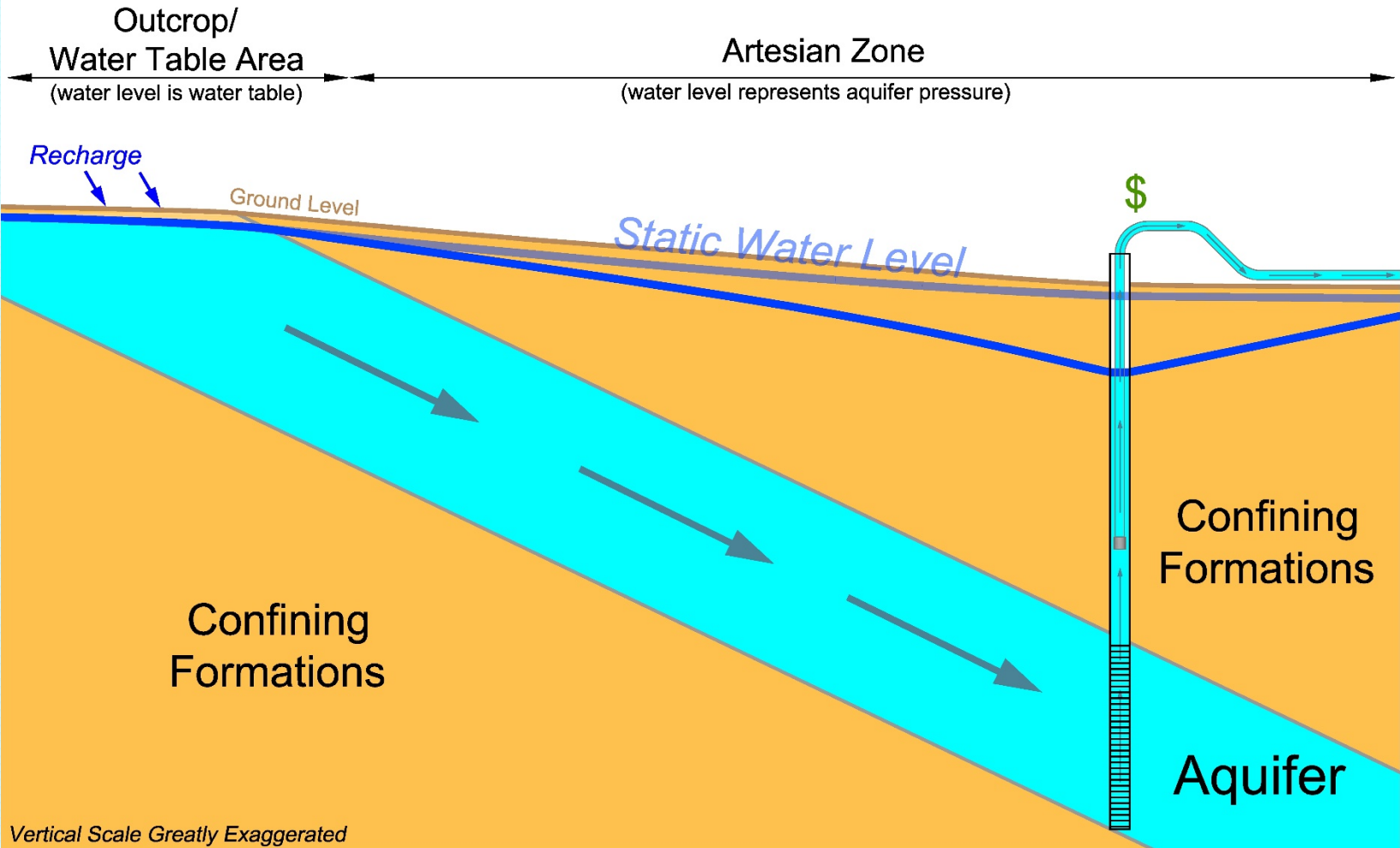
Aquifer

Vertical Scale Greatly Exaggerated



NW

SE



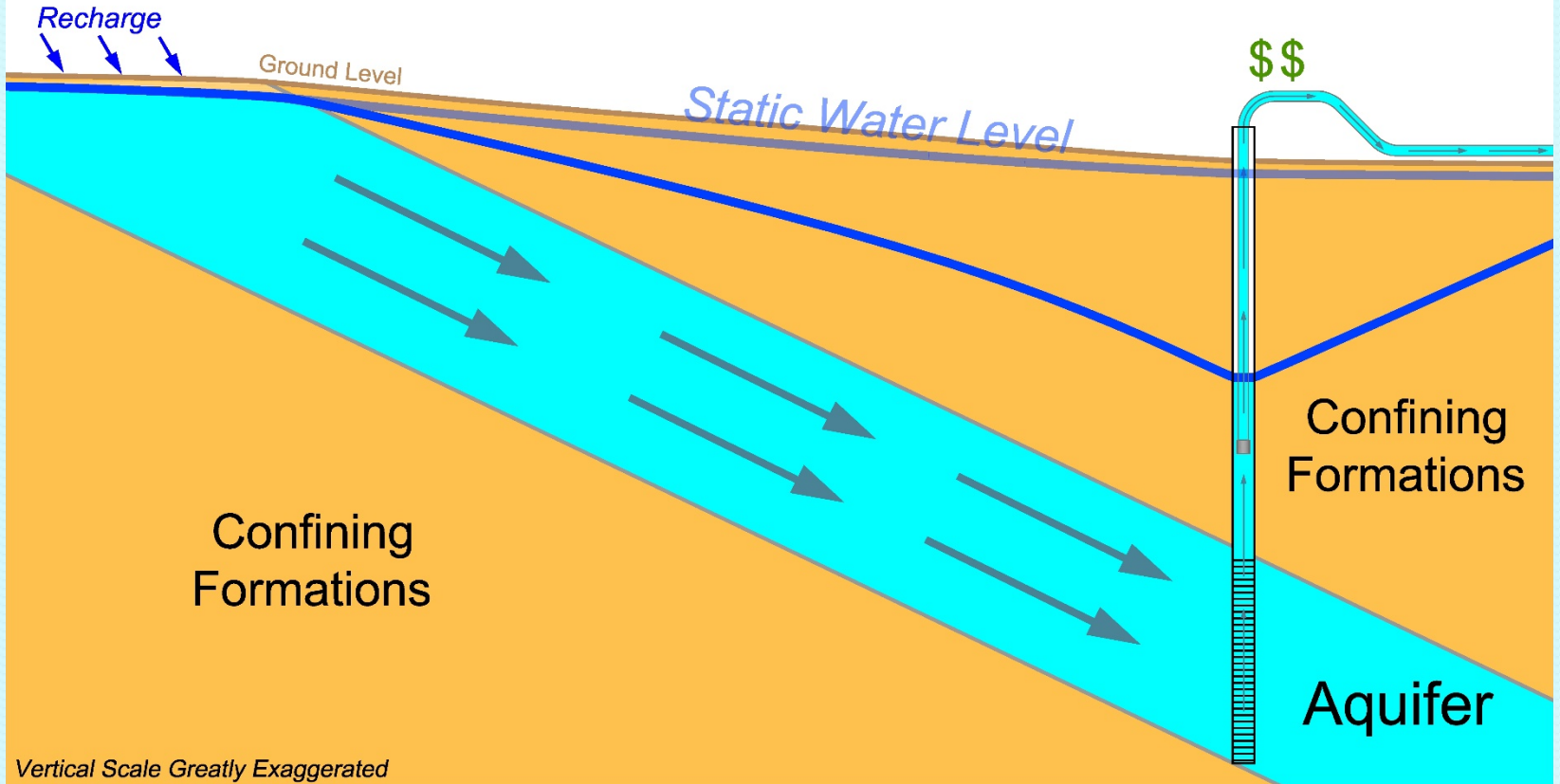
Vertical Scale Greatly Exaggerated

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Outcrop/
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(water level is water table)

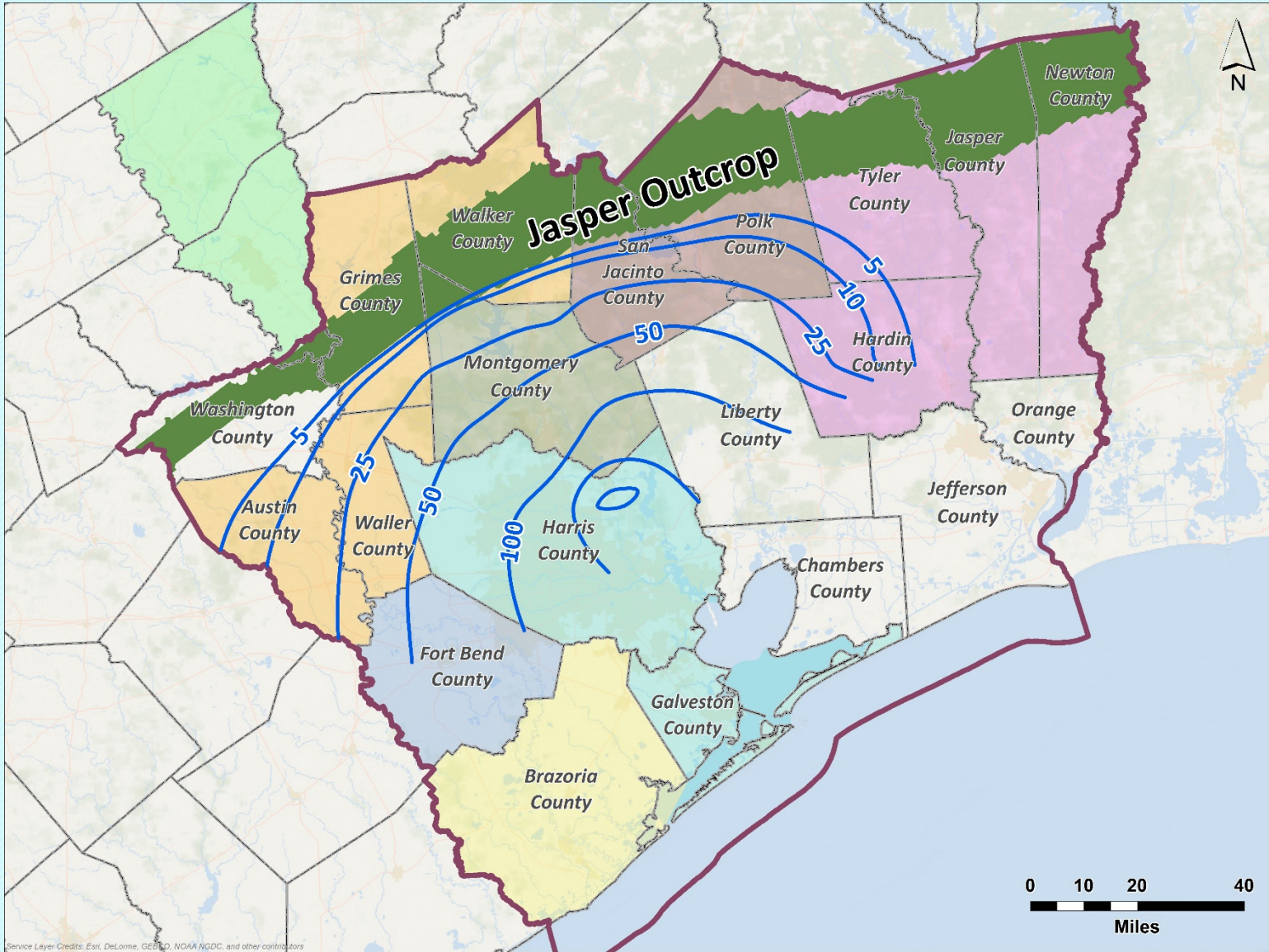
Artesian Zone
(water level represents aquifer pressure)



Vertical Scale Greatly Exaggerated

Management Realities

- Artesian Pressure
 - Proportional to production
 - Economic consideration
- Outcrop Water Table
 - Aquifer water budget
 - Long-term change in storage
 - Increases captured recharge
 - Quantifies sustainable use



Service Layer Credits: Esri, DeLorme, GEBCO, NOAA NGDC, and other contributors

Production Effects

- Artesian Pressure Change
 - Does not honor county boundaries
 - Does not honor GCD boundaries
- Changes in Storage
 - Dependent upon all long-term use
 - Occur slowly
 - Quantifiable

Aquifer Management Should...

- Be regional
- Have a quantifiable management standard
- Quantify the amount of the resource
- Consider environmental effects
- Treat all users equally

A Proposed DFC

“No less than 95% of the total storage in the Jasper aquifer is to be remaining in 2070”