




whiskey's for drinkin', **water's** for fightin': the tumultuous history and collaborative future of **water** management in texas

Robert E. Mace, Ph.D., P.G.

The Meadows Center for **Water** & the Environment
Texas State University

presented to

19th Annual Bell County Water Symposium
“Collaborative Discussion and Planning Water Needs for the Future”
Killeen, Texas; November 6, 2019



the meadows center for water & the environment

inspiring research and leadership
that ensures clean, abundant water
for the environment and all humanity

TEXAS  STATE[®]
UNIVERSITY

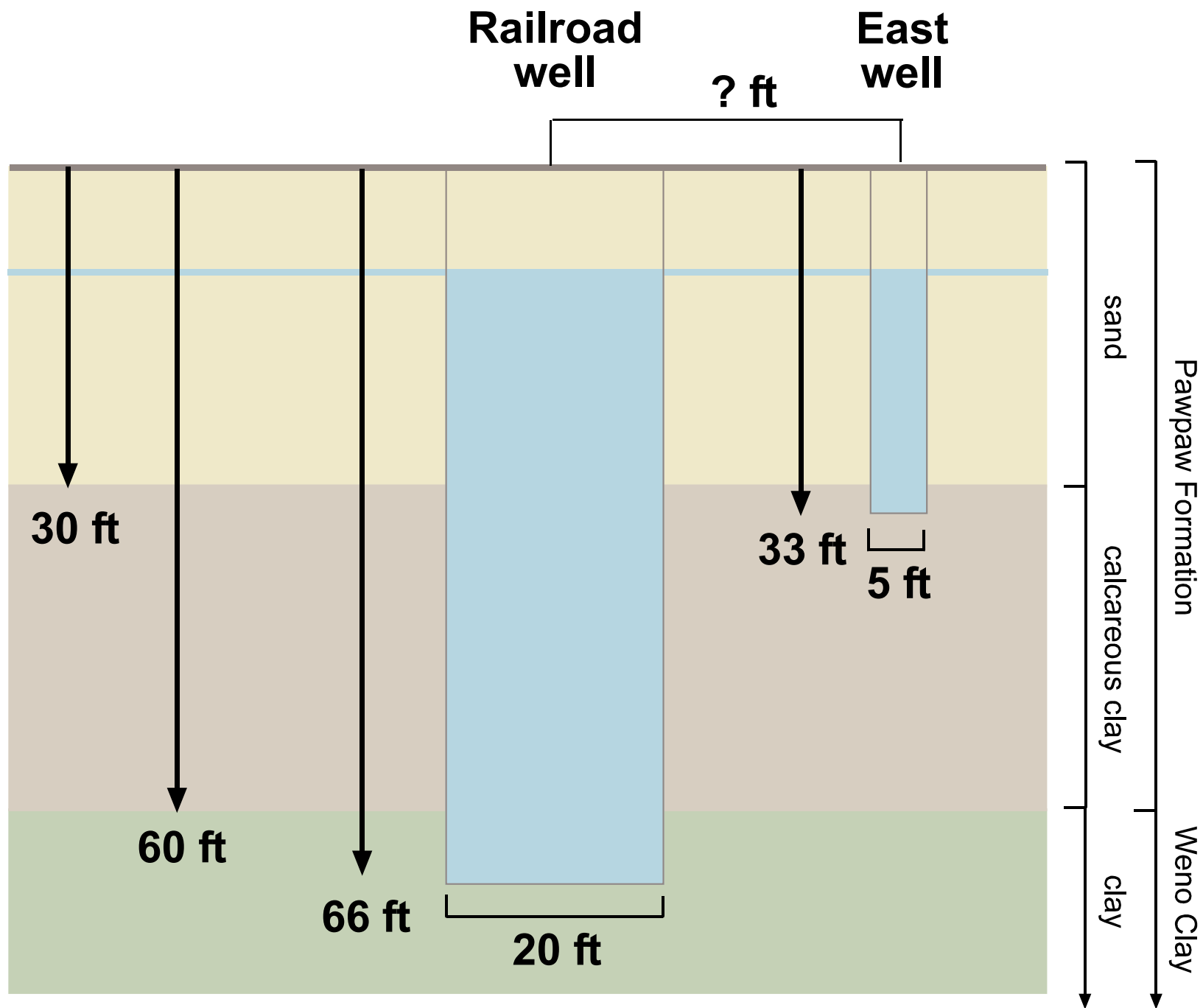
The rising STAR of Texas



Discussing Water Rights, A Western Pastime



Denison, Texas



Rule of Capture

1904

No. 74. Densy Printing Co., Stationers, Printers and Binders, Dallas-1281000. Class 2.

No. No. 1333, 5th Dist

No. No. 1333

W. A. East
Appellant's Plaintiff in Error.

vs.

H. I. C. R. R. Co.
Appellee's Defendants in Error.

From the District Court of Grayson Co.

Applied for by Moseley & Epstein Attorneys
for Appellant on the 12th day of Janu
1903 and delivered to Moseley & Epstein
on the 30th day of January 1903
C. Arnold
Clerk District Court Grayson County.

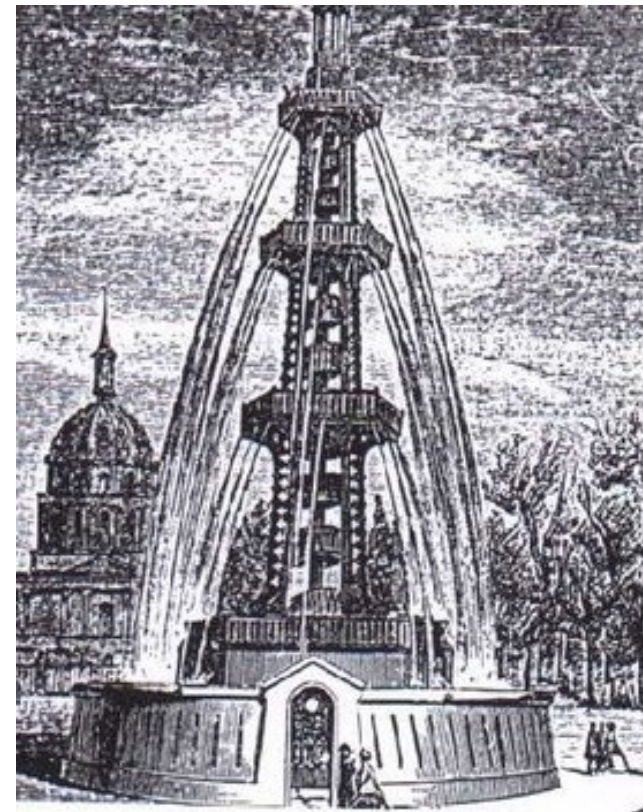
Filed in Court of Civil Appeals, at Dallas
the 2nd day of April 1904
Yours truly Clerk.
Court of Civil Appeals 5th Supreme District of Texas.

Attorneys for Appellant.
P. O. Address.

Attorneys for Appellee.
P. O. Address.

5th Dist
Filed in Supreme Court
May 18, 1904
J. J. Edwards, Clerk
By J. J. Edwards, Deputy
Appeal reversed
June 13, 1904

“Cujus est solum, ejus usque ad coelum at ad inferos.”



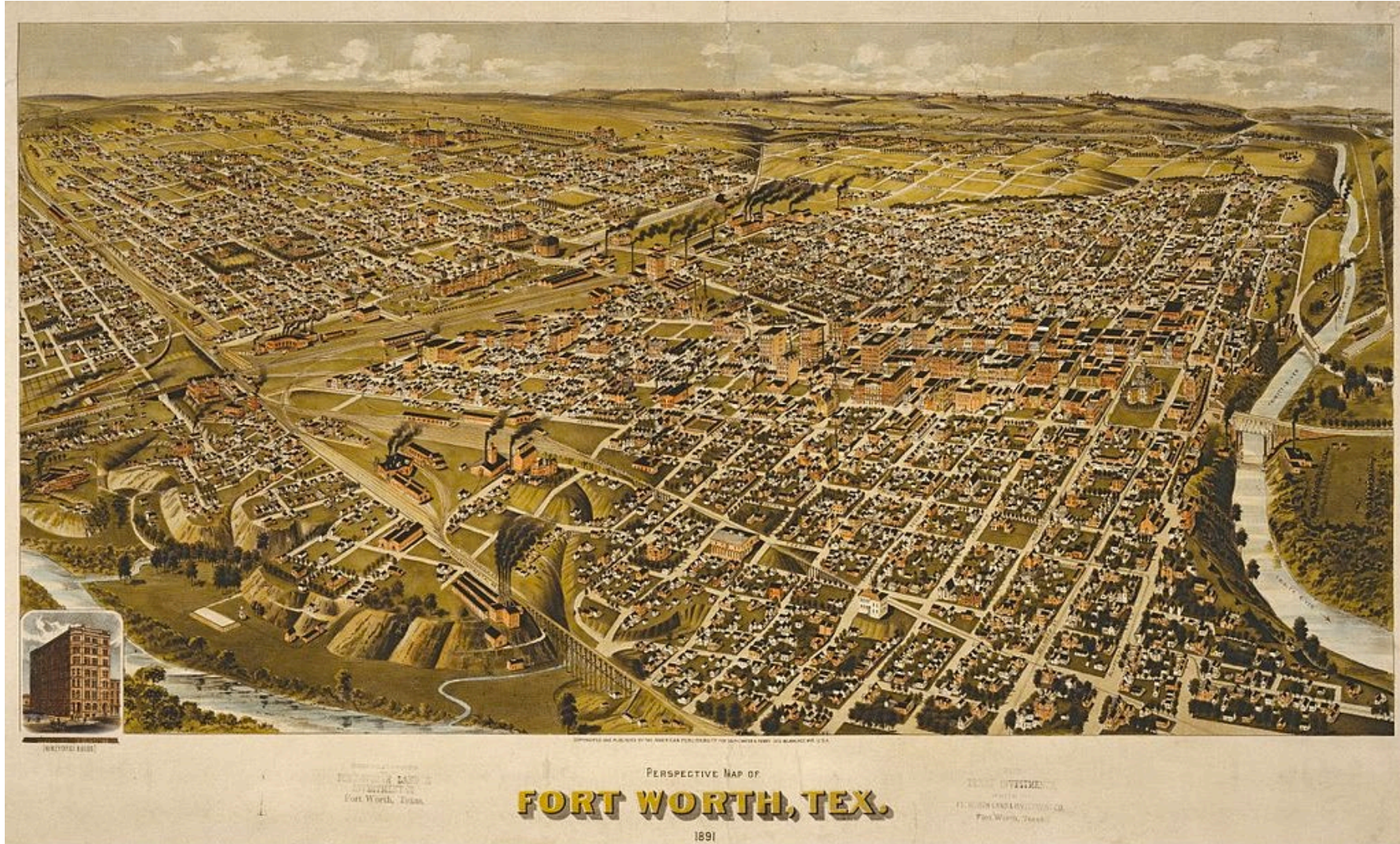
The Grenelle Well

1833-1841

1,798 feet deep

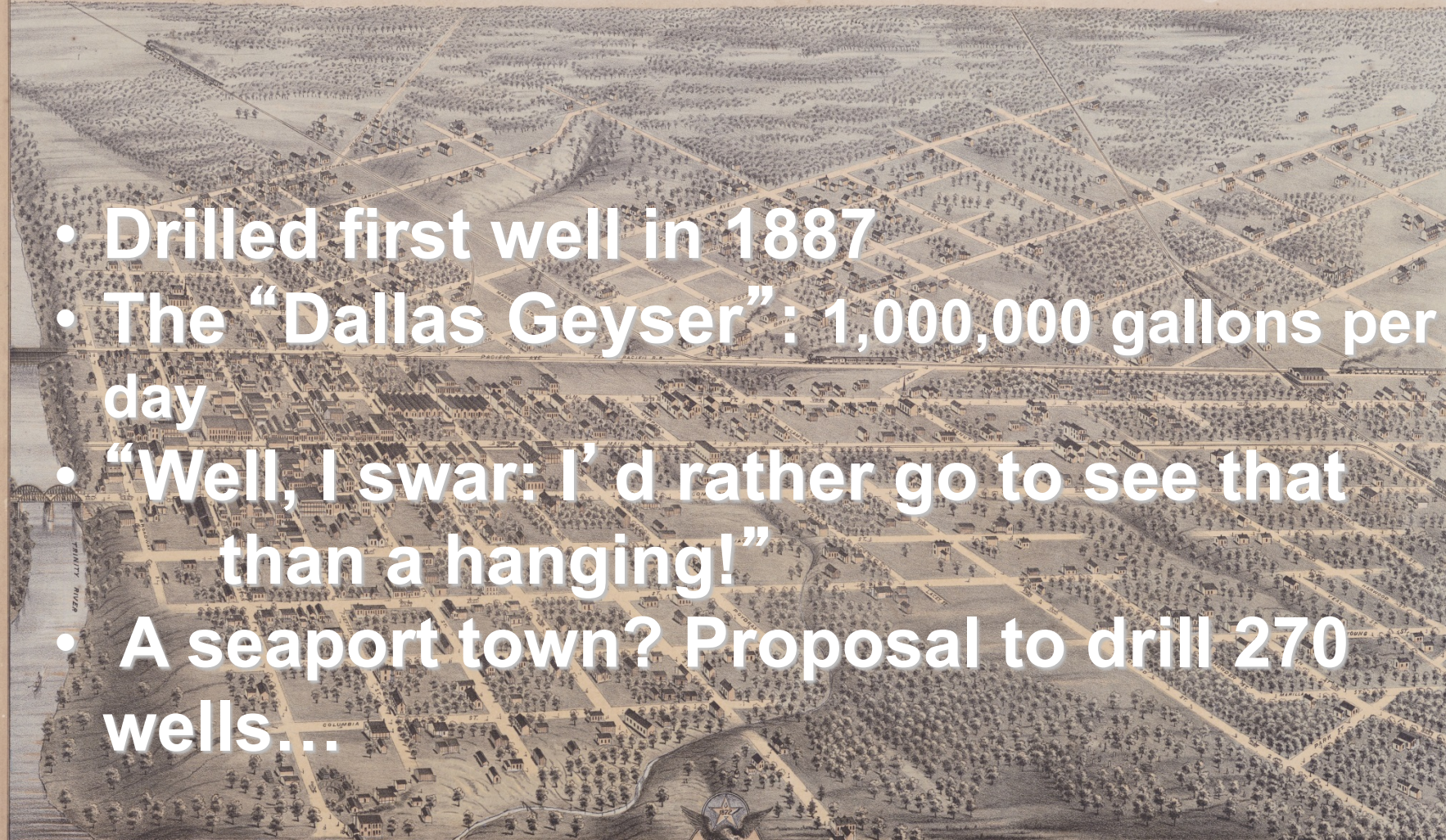
800,000 gallons per day (555
gpm)

Fort Worth: 1876



Dallas: 1887

- Drilled first well in 1887
- The “Dallas Geyser”: 1,000,000 gallons per day
- “Well, I swar: I’ d rather go to see that than a hanging!”
- A seaport town? Proposal to drill 270 wells...



REFERENCES:
Nº1 Court House
• 2 County Jail
• 3 Schools
• 4 Seminary
• 5 Cherry Hill Academy
• 6 Cemetery

REFERENCES:
Nº2 Methodist
• 3 Presbyterian
• 4 Cum. Presbyterian
• 5 Episcopal
• 6 Christian
Churches

BIRDS EYE VIEW OF THE CITY OF
DALLAS
TEXAS.

REFERENCES:
Nº3 H. & T. C. R. R. Depot
• 4 City Mills
• 5 Dallas Herald
• 6 D. O. G. Hall
• 7 Masonic
• 8 Breweries

REFERENCES:
Nº4 Post Office
• 5 City Mills
• 6 Dallas Herald
• 7 D. O. G. Hall
• 8 Breweries

Drawn by H. Brazier

Bell's Well, Waco, 1880s





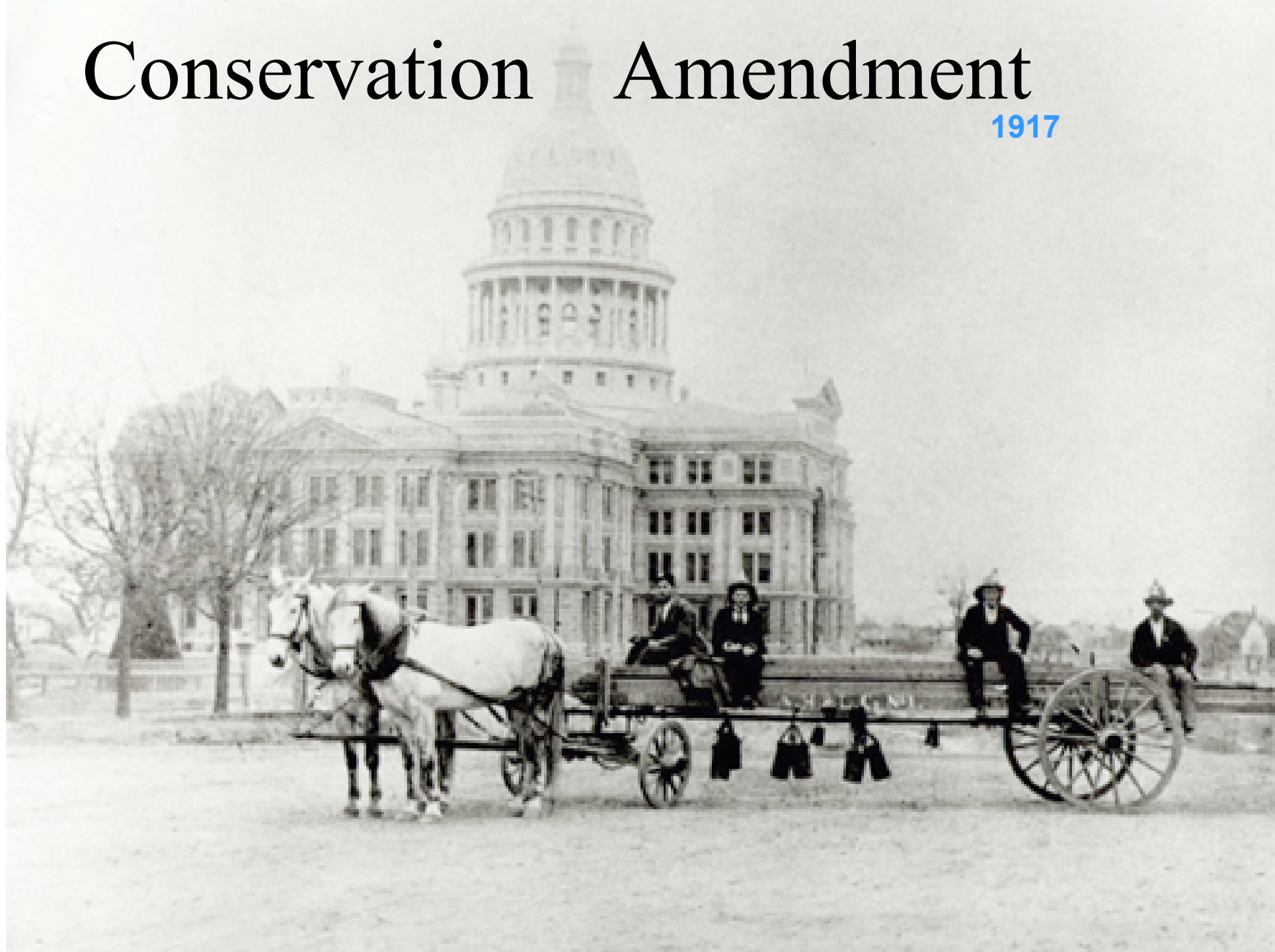
Burges-Glasscock Act

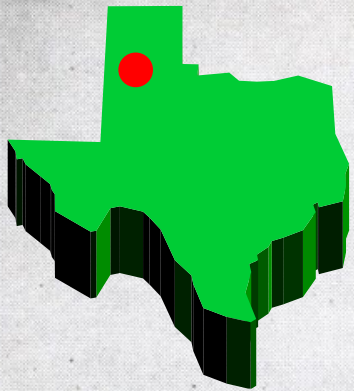
1913

- created the Texas Board of Water Engineers
- disallowed the waste of flowing groundwater
 - misdemeanor
 - \$100 to \$500 fine
- required well completion standards and reports
- first water conservation bill in Texas?

Conservation Amendment

1917





McDonald Irrigation Well, 1200 Gallons per Minute, Hereford, Texas.



Stratford, Texas; April 18, 1935

Groundwater conservation districts 1949



Powers of a groundwater conservation district

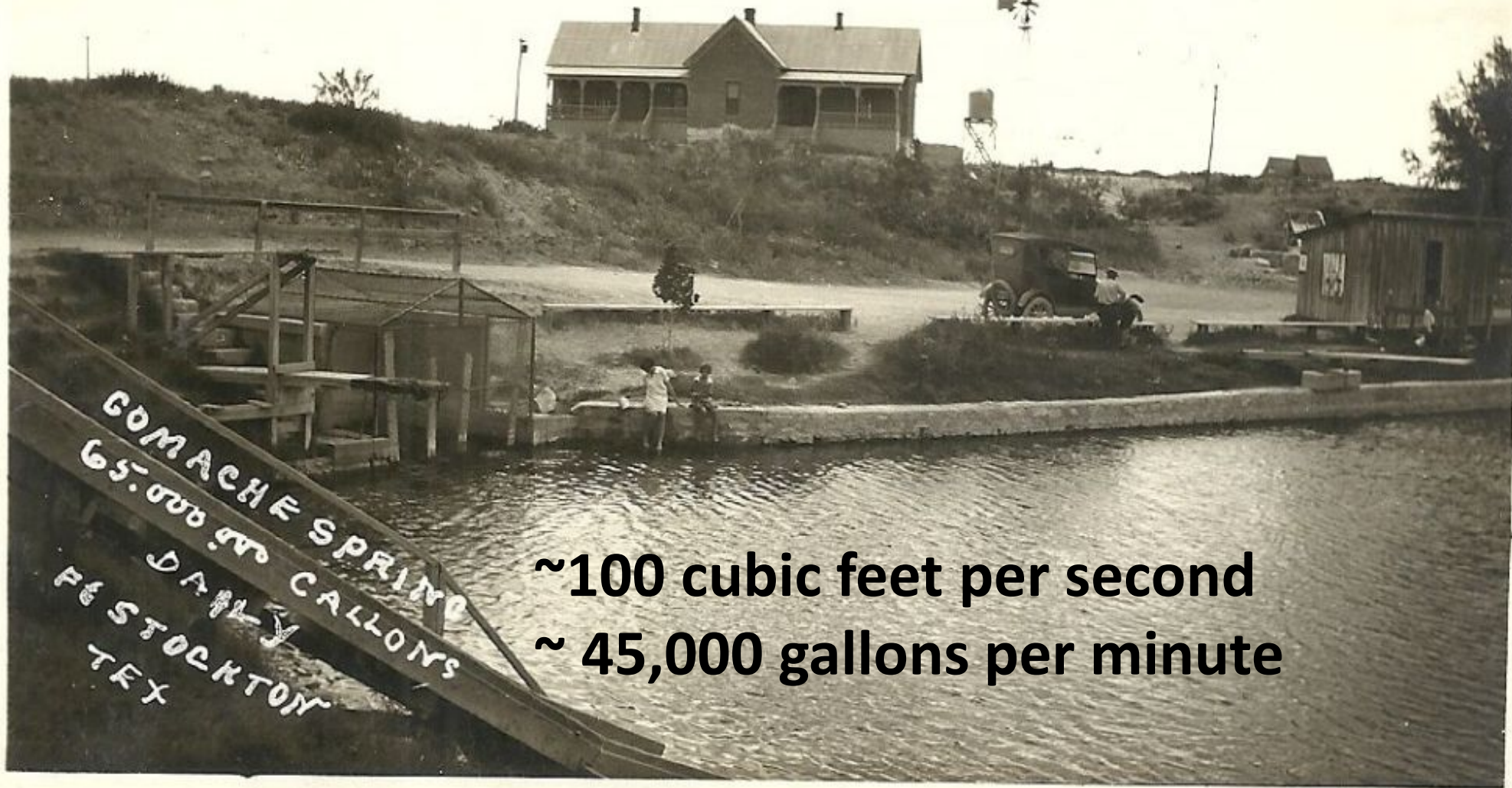
In general, districts may:

- Register wells
- Regulate well spacing
- Regulate pumping

To know the powers:

- Chapter 36, Texas Water Code
- Enabling legislation
- Amendments to enabling legislation
- Rules

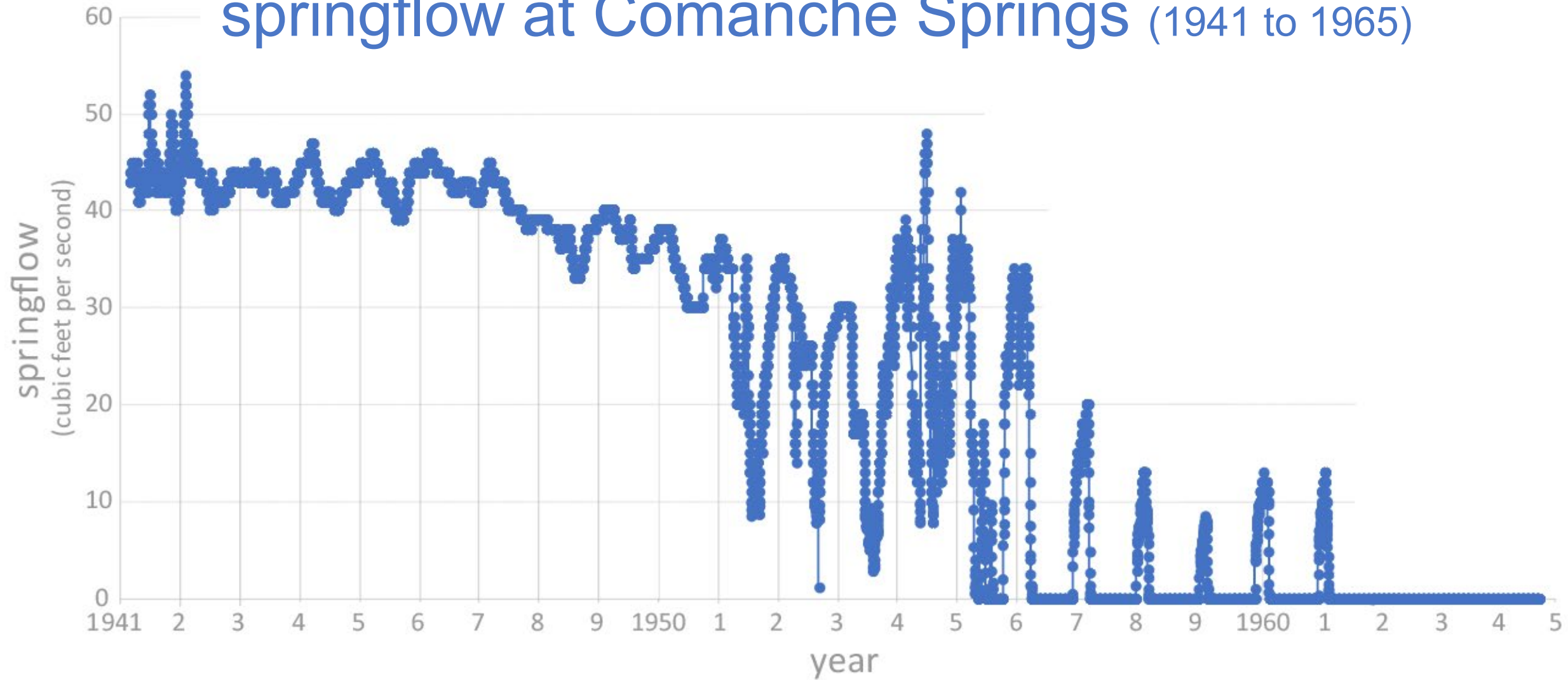




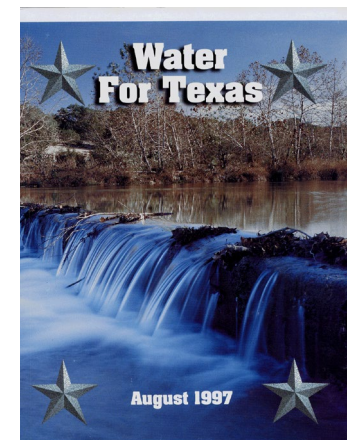
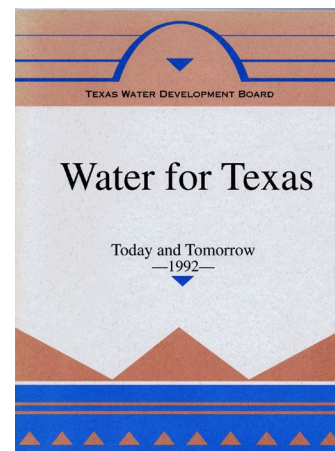
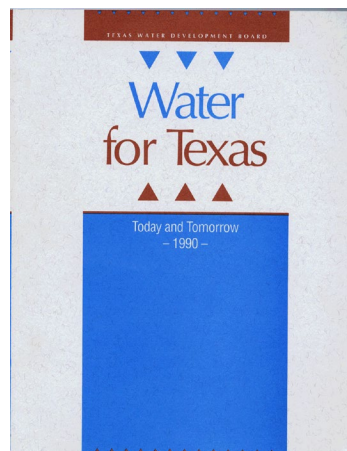
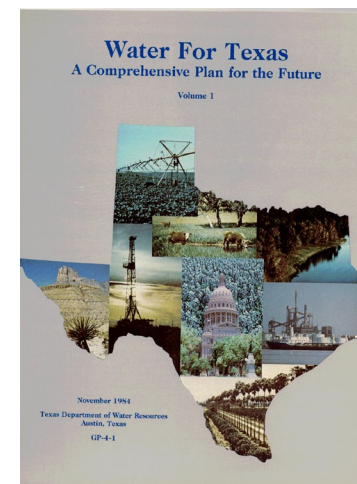
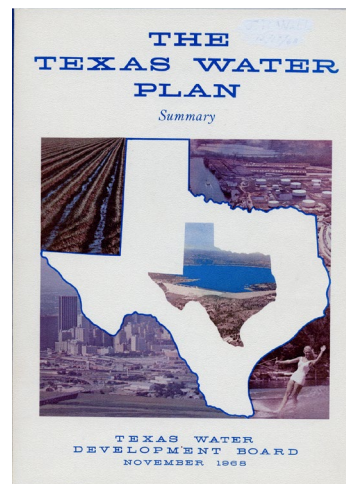
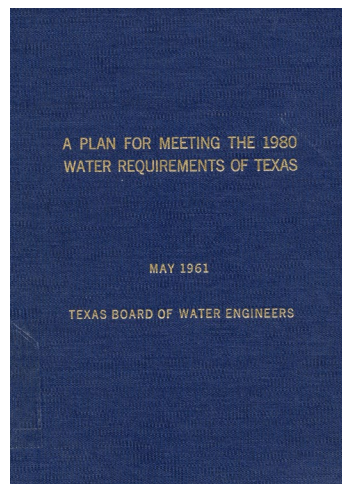
**~100 cubic feet per second
~ 45,000 gallons per minute**



springflow at Comanche Springs (1941 to 1965)



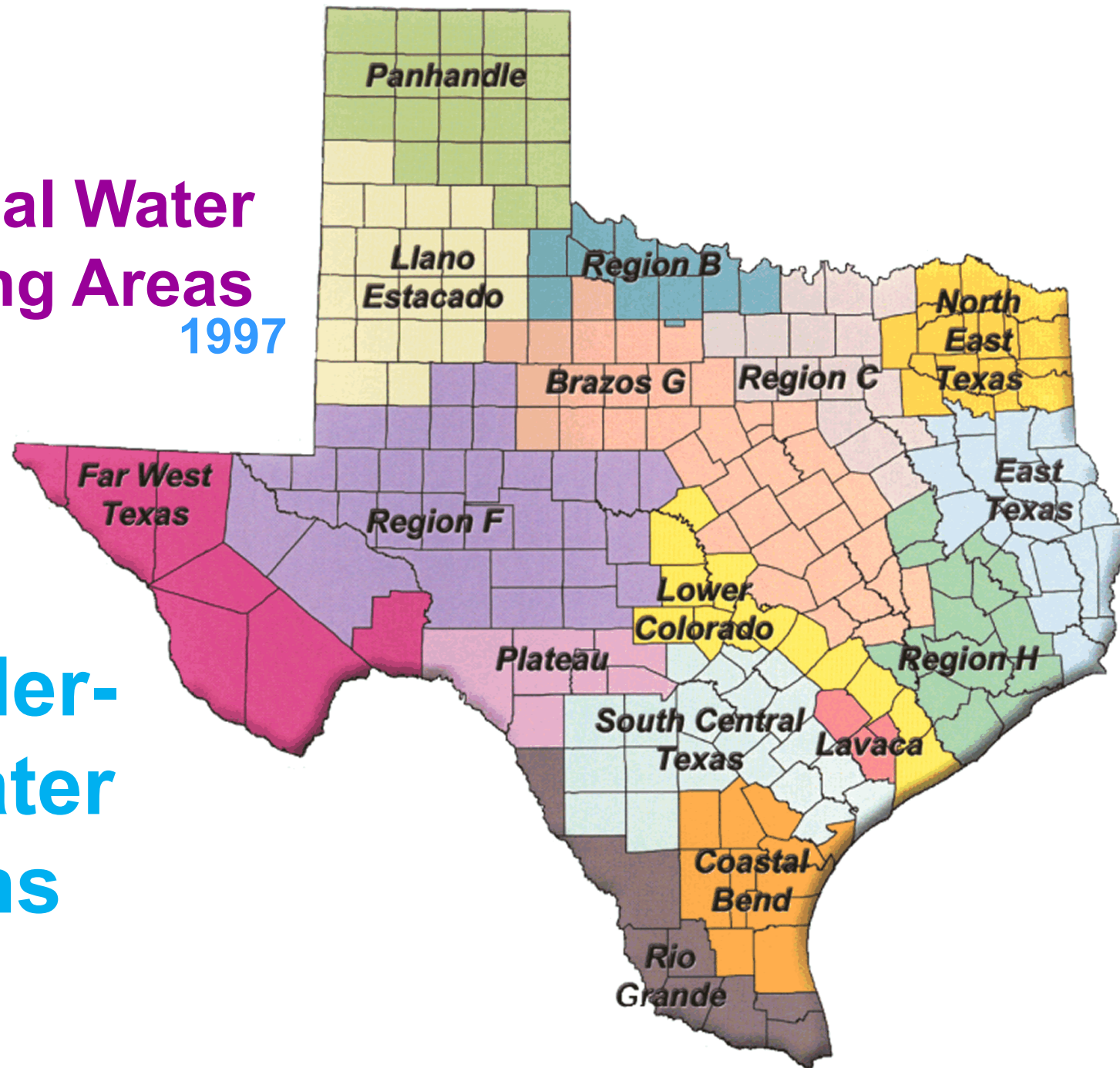
State Water Planning 1957



1961, 1968, 1984, 1990, 1992, 1997

Regional Water Planning Areas 1997

stakeholder-
driven water
decisions



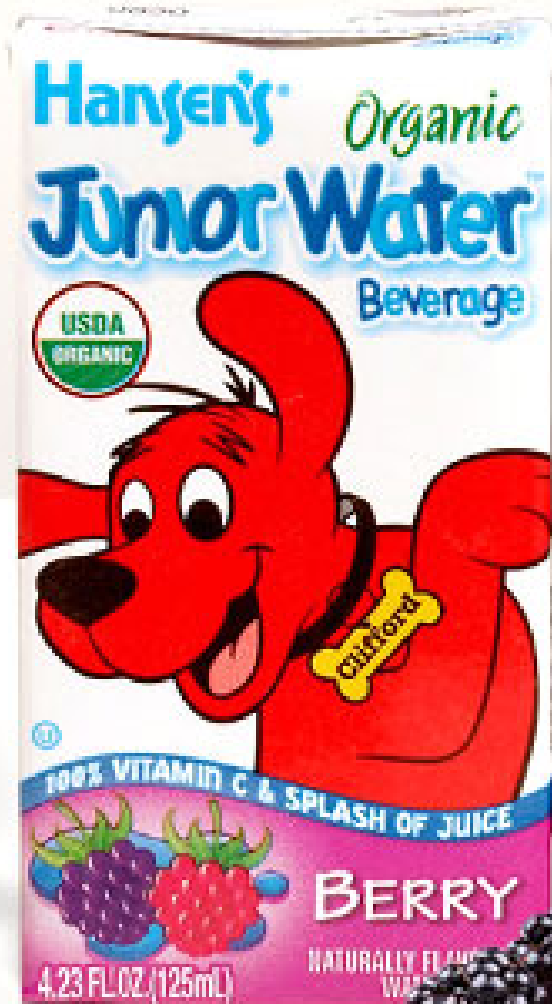
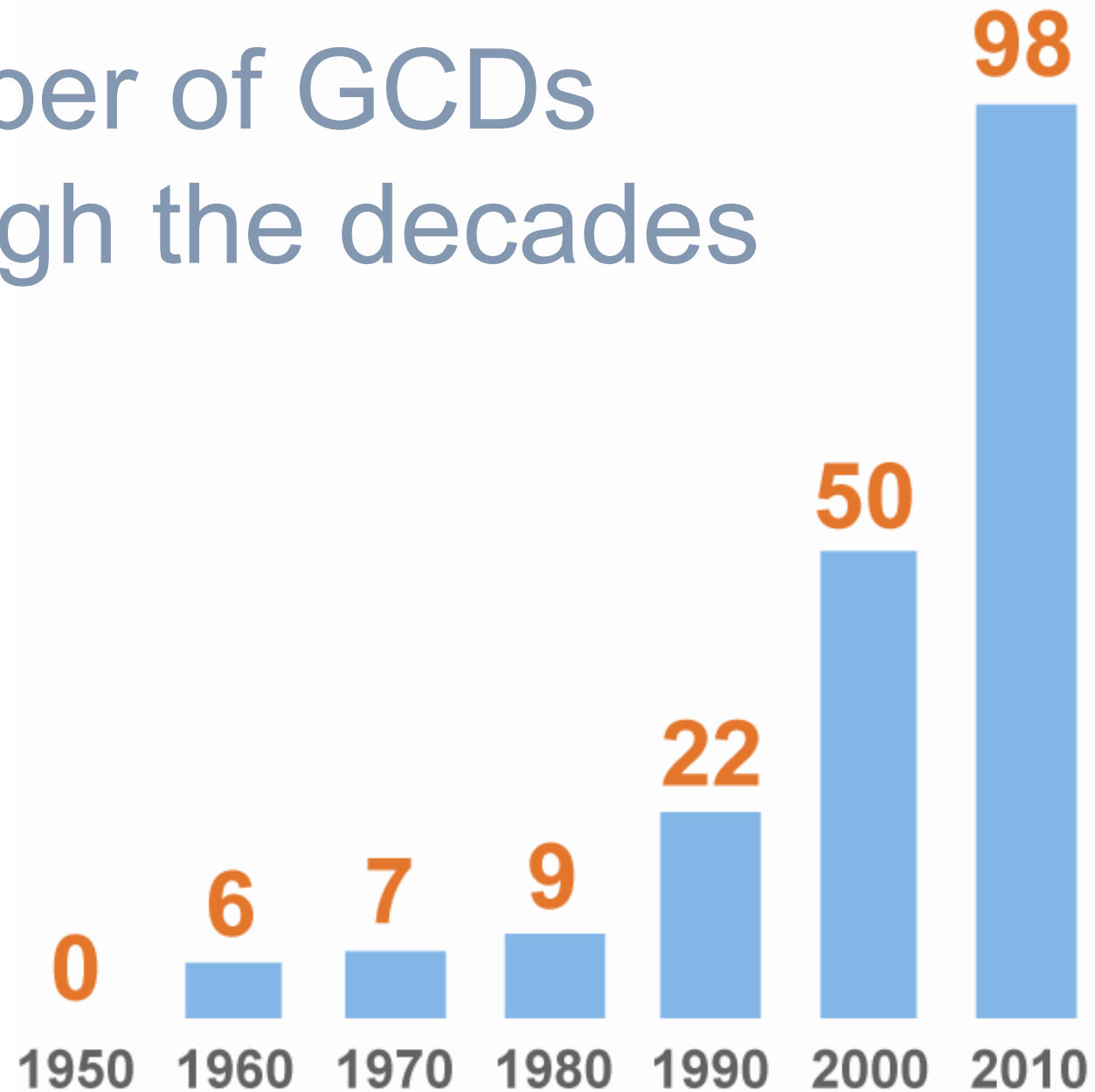




Illustration by Philip Burke

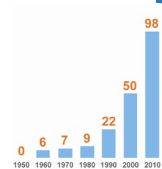


Number of GCDs through the decades

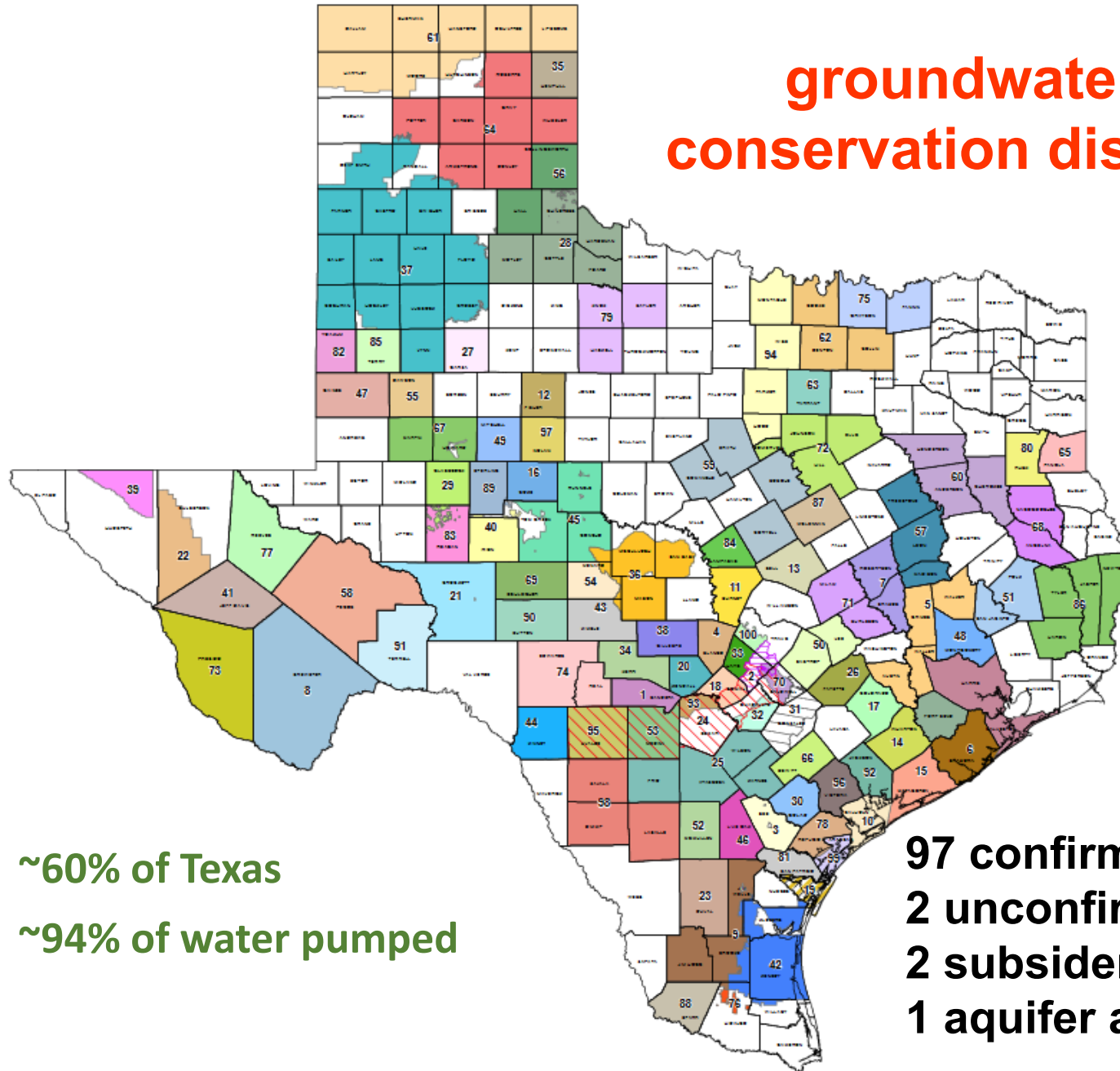




32,136.4 districts by 2060



groundwater conservation districts



~60% of Texas
~94% of water pumped

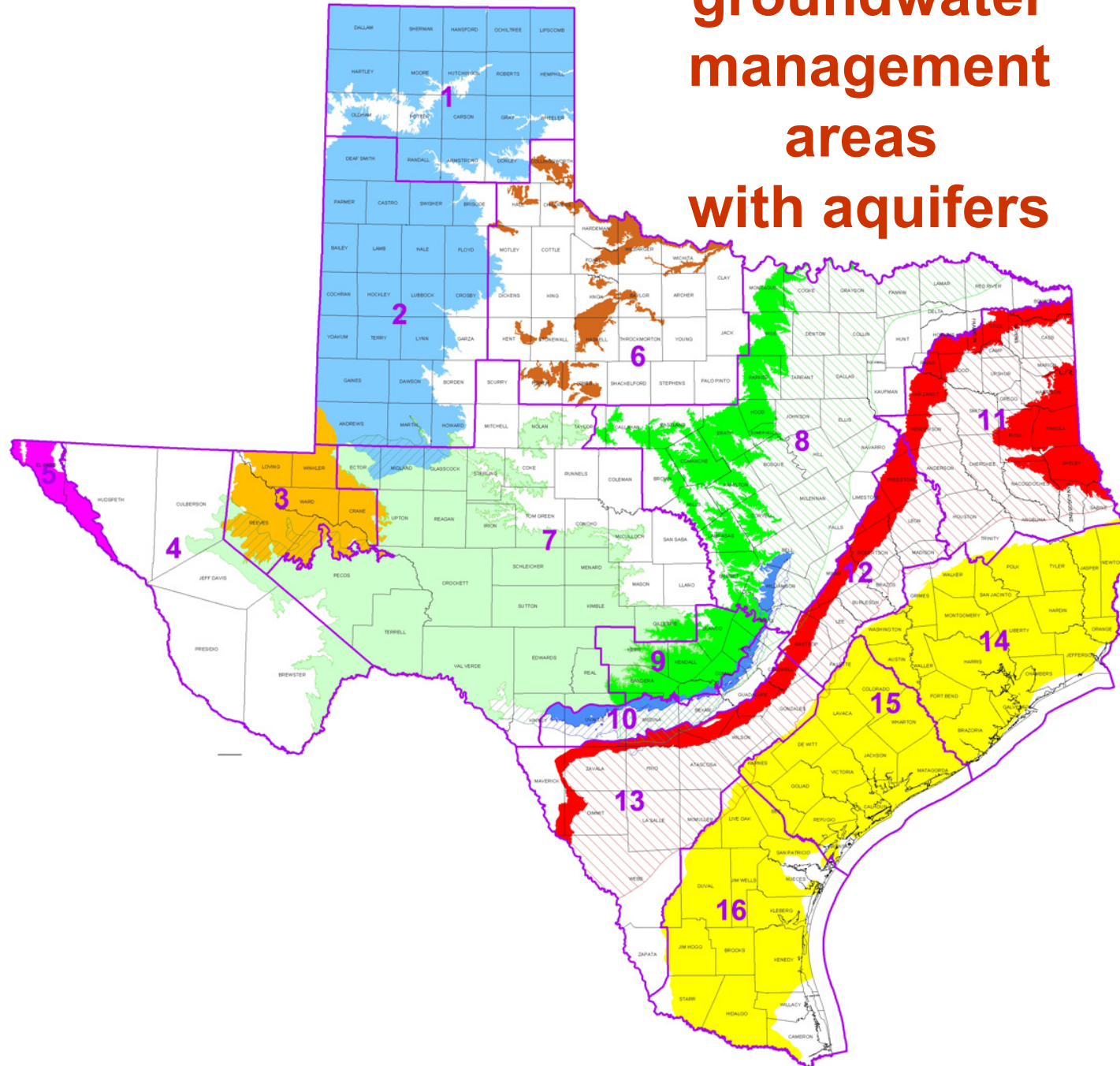
**97 confirmed
2 unconfirmed
2 subsidence districts
1 aquifer authority**

map accurate as of October 2019



groundwater management areas

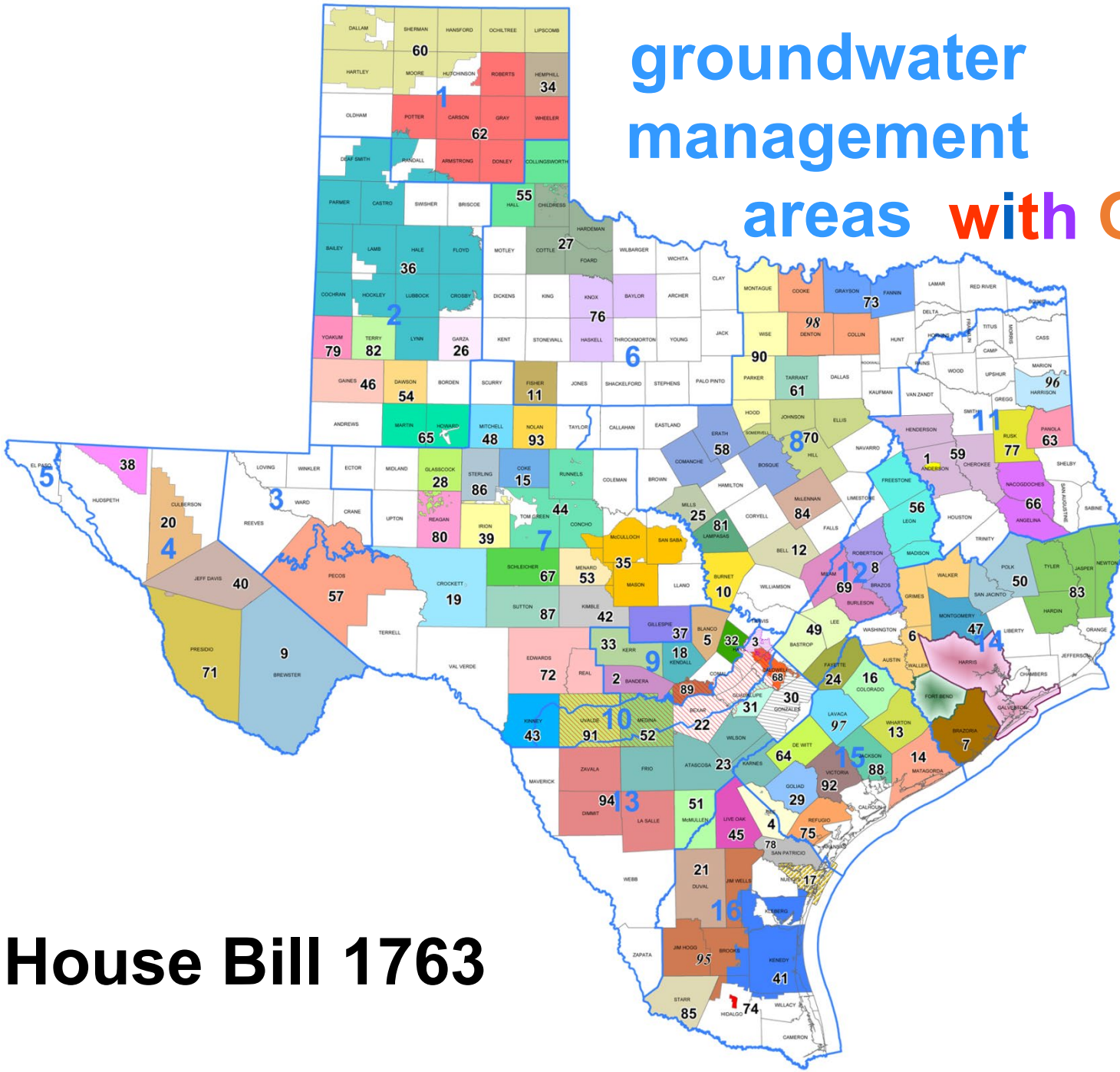
groundwater management areas with aquifers





groundwater management areas with GCDs

2005



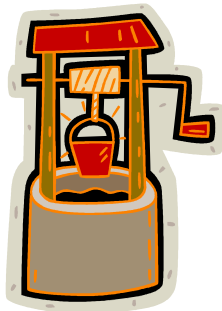
House Bill 1763



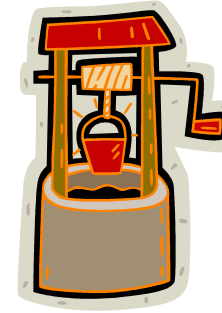
groundwater
Two terms Texans
mutter in their sleep...



- Desired Future Conditions



- Modeled Available Groundwater



(policy) + (science) = groundwater
availability



**desired
future
conditions**

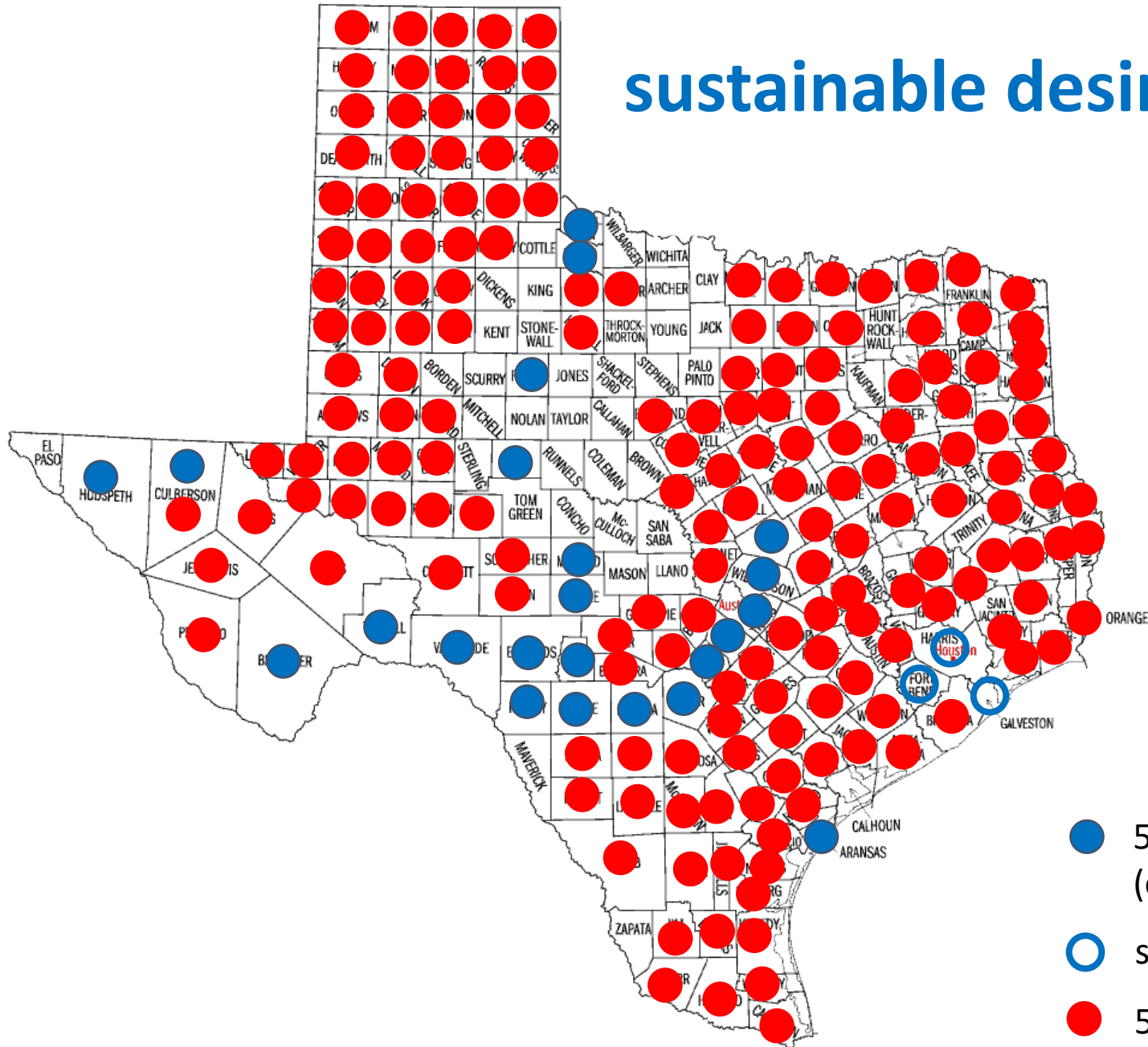


**modeled
available
groundwater**



**permitting
and planning**

sustainable desired future conditions?



senate bill 3

2007

- environmental flows
- recovery implementation plan for the Edwards Aquifer (San Antonio Segment)
- both processes used:
 - Science Team/Committee
 - Stakeholder Committee
 - Regulating Body



questions?

Robert E. Mace, Ph.D., P.G.
The Meadows Center for Water & the Environment
Texas State University

robertmace@txstate.edu
(512)245-6021
@MaceatMeadows