

The nexus between water planning and groundwater planning



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Texas Water Development Board

presented at

Planning Workshop sponsored by the Findings and Review Committee
of Lone Star Groundwater Conservation District

March 2, 2015

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.



Texas Water
Development Board



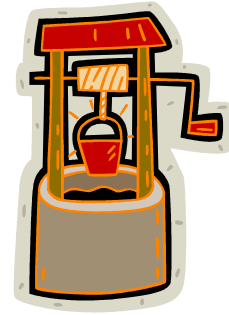
data

planning

financing



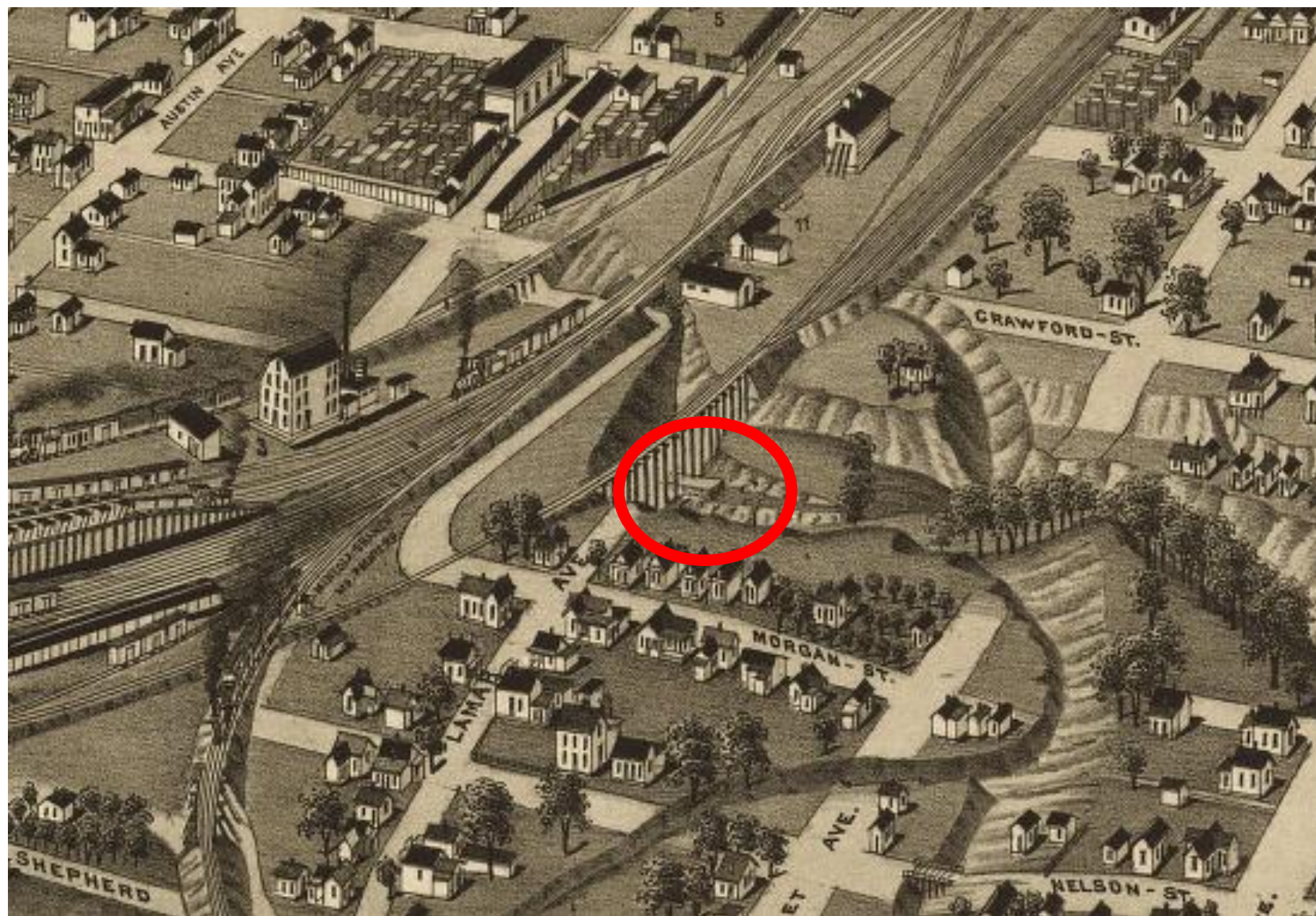
Discussing Water Rights, A Western Pastime

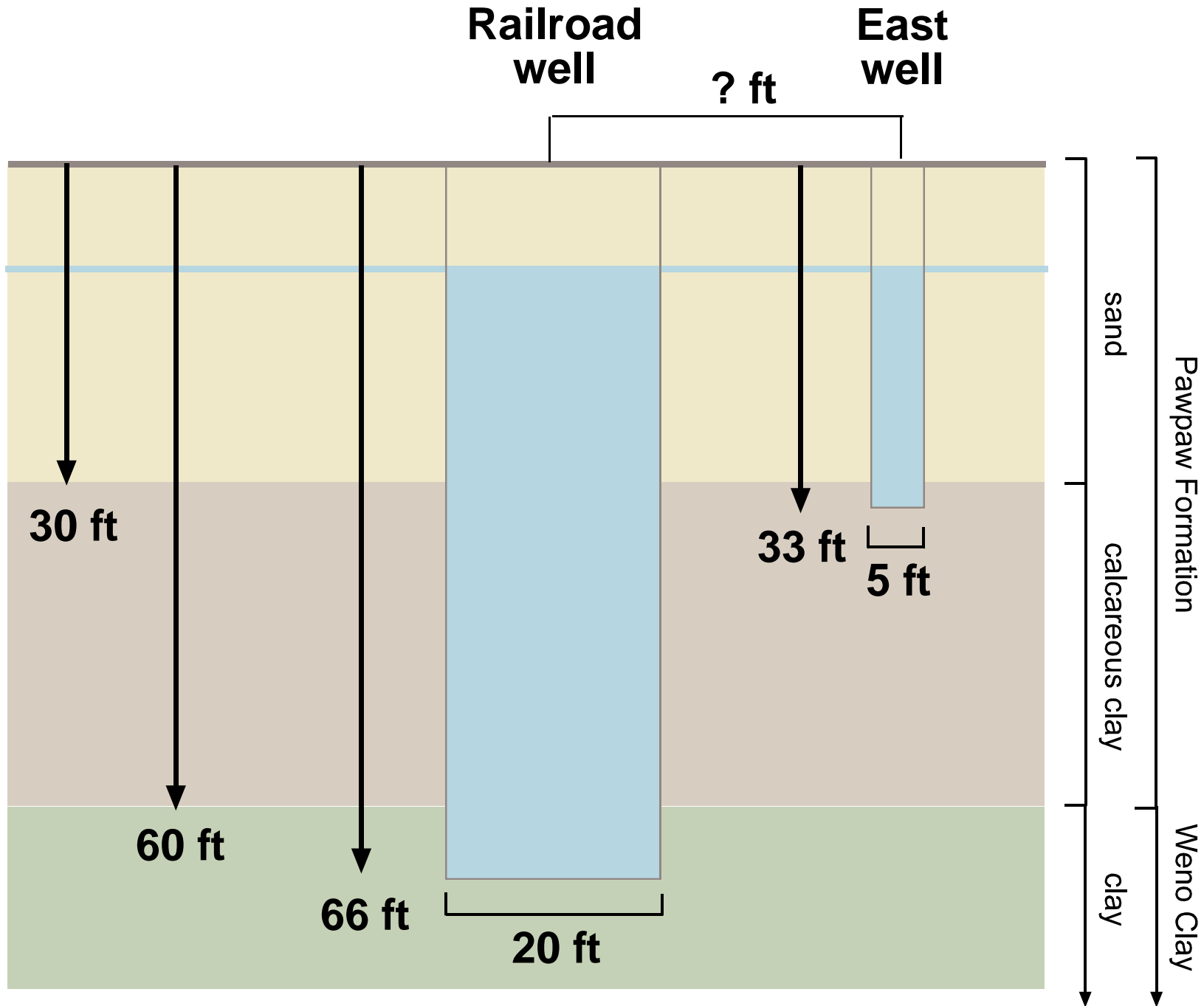


(policy) + (science) = groundwater
availability



Denison, Texas





Rule of Capture

1904

No. 74. Densy Printing Co., Stationers, Printers and Binders, Dallas-1281800. Class 2.

No. No. 1333, 5th Dist
No. 1333

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

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

From the District Court of Grayson Co.

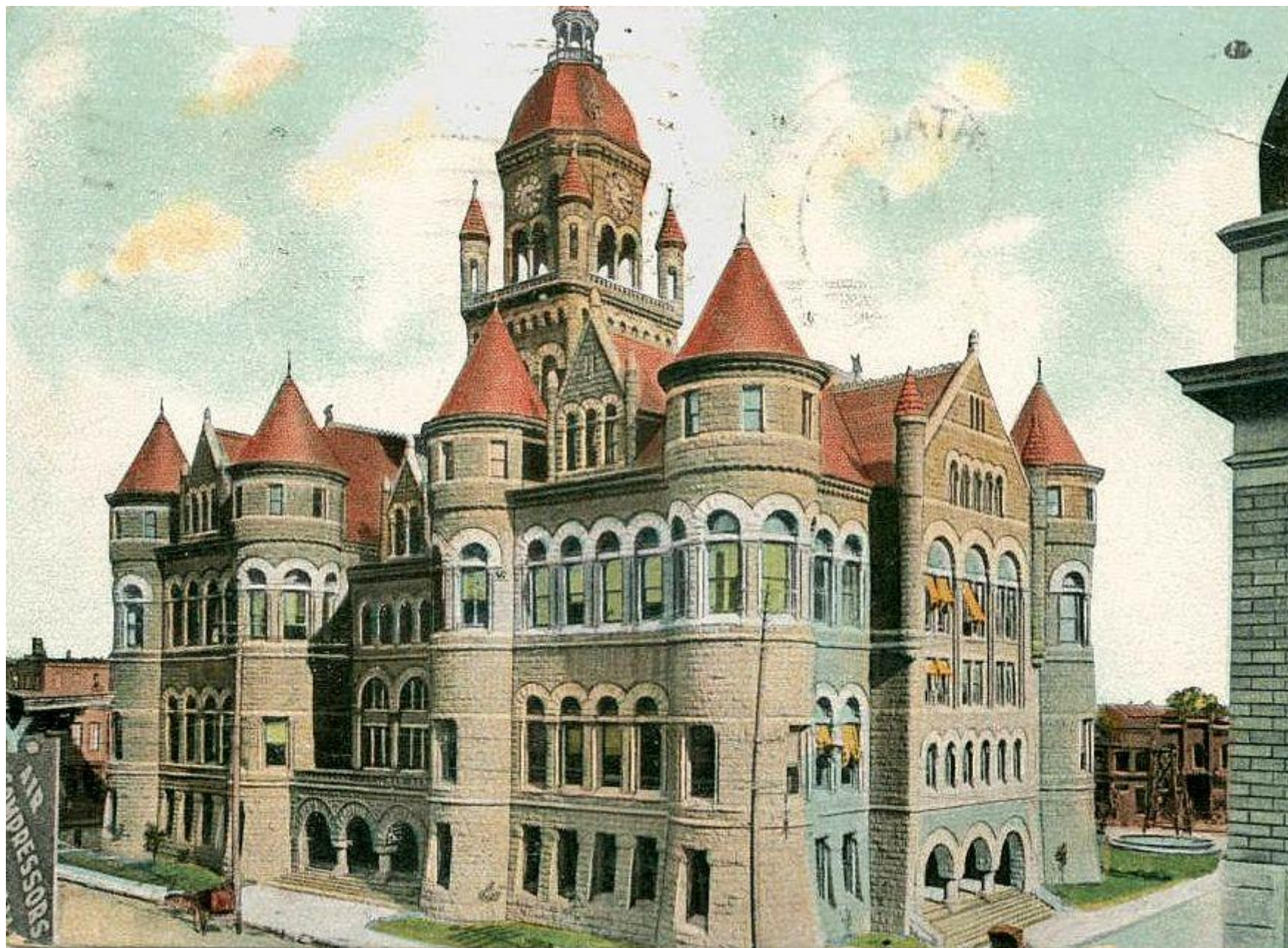
Applied for by Moseley & Epstein Attorneys
for Appellant on the 12th day of Janu
1903 and delivered to Moseley & Epstein
on the 30th day of January 1903
C. Arnold
Clerk District Court Grayson County.

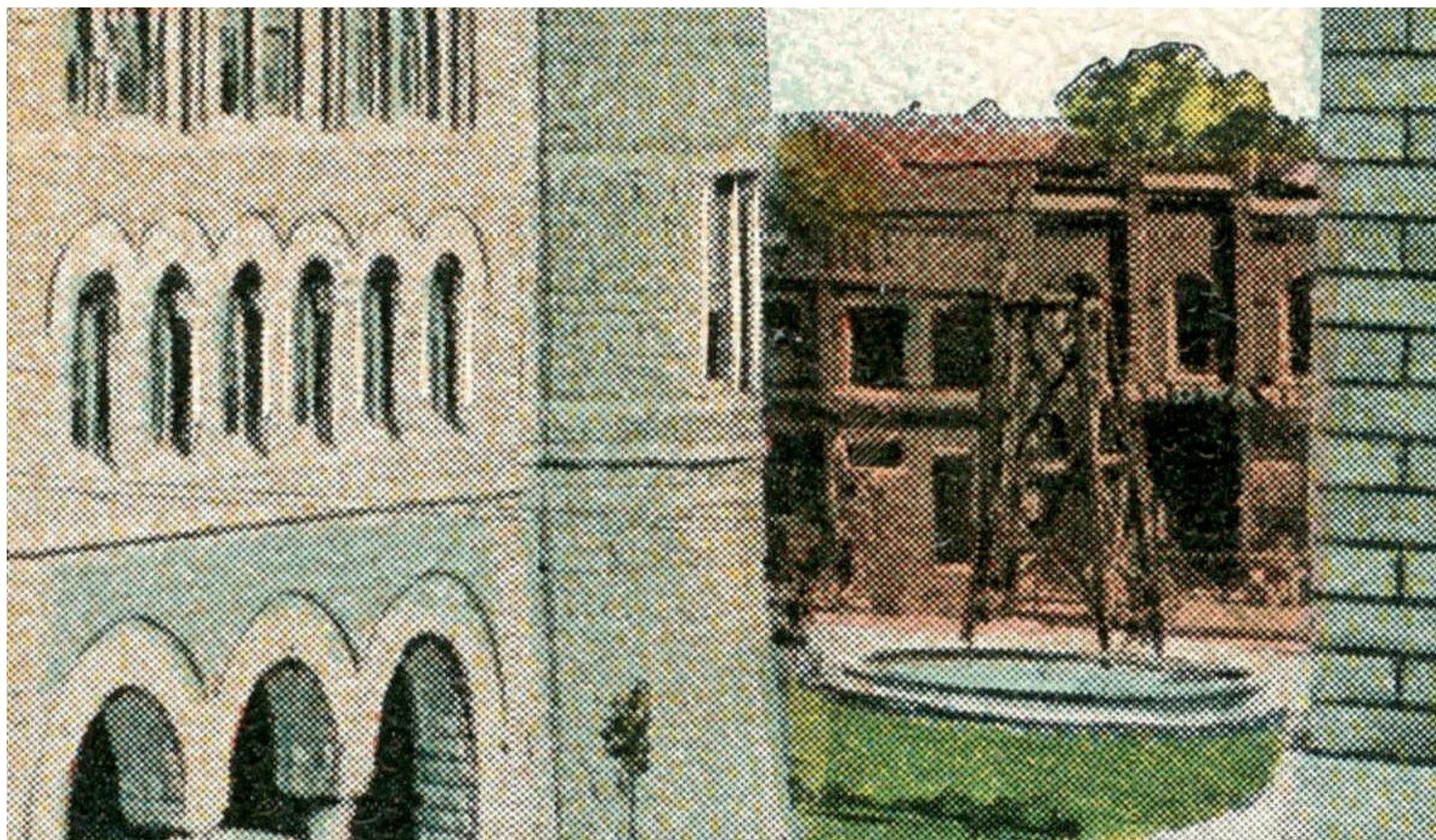
Filed in Court of Civil Appeals, at Dallas
the 2nd day of April 1903
George B. Cair Clerk.
Court of Civil Appeals 5th Supreme District of Texas.

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
District Court affirmed
June 13, 1904

...so secret, occult and concealed...





Artesian Well. One of More Than 250 in Pecos, Tex.

Burges-Glasscock Act

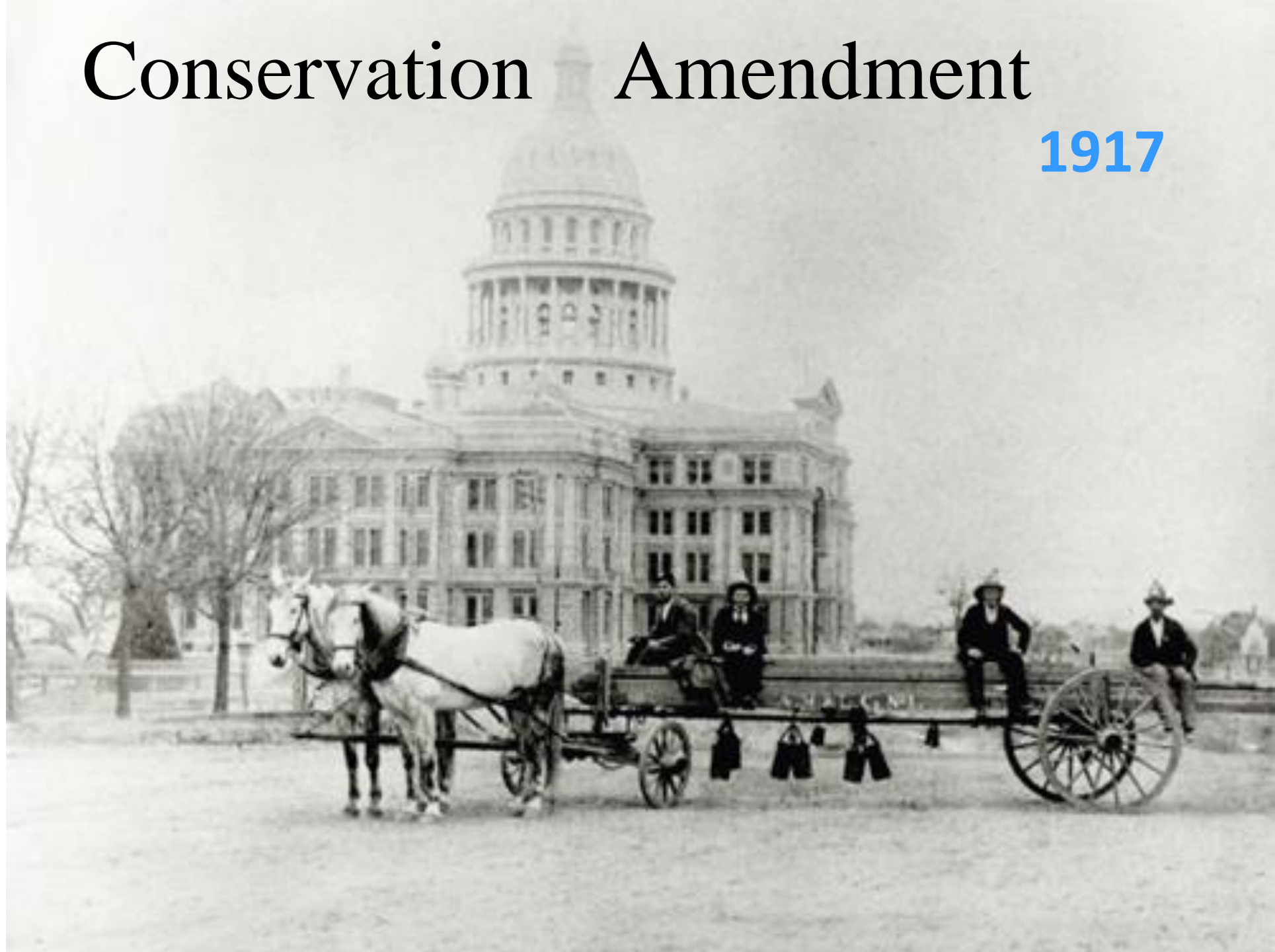
1913



W. B. WHIPP CO. PHOTO MILWAUKEE

Conservation Amendment

1917





Stratford, Texas; April 18, 1935



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

Groundwater conservation districts 1949



Powers of a groundwater conservation district

In general, districts may:

- register wells
- regulate well spacing
- regulate pumping

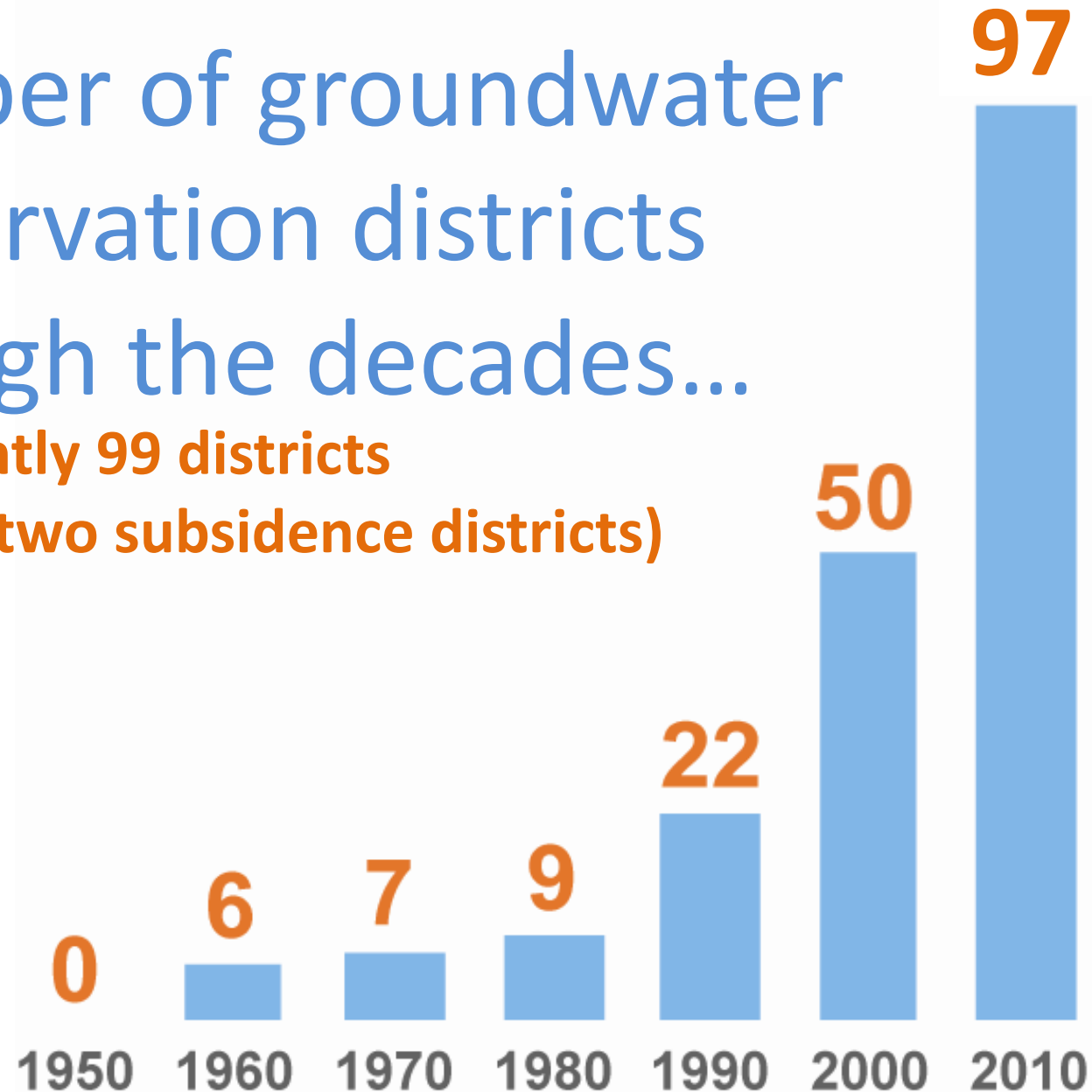
To know the powers:

- Chapter 36, Texas Water Code
- enabling legislation
- amendments to enabling legislation
- rules

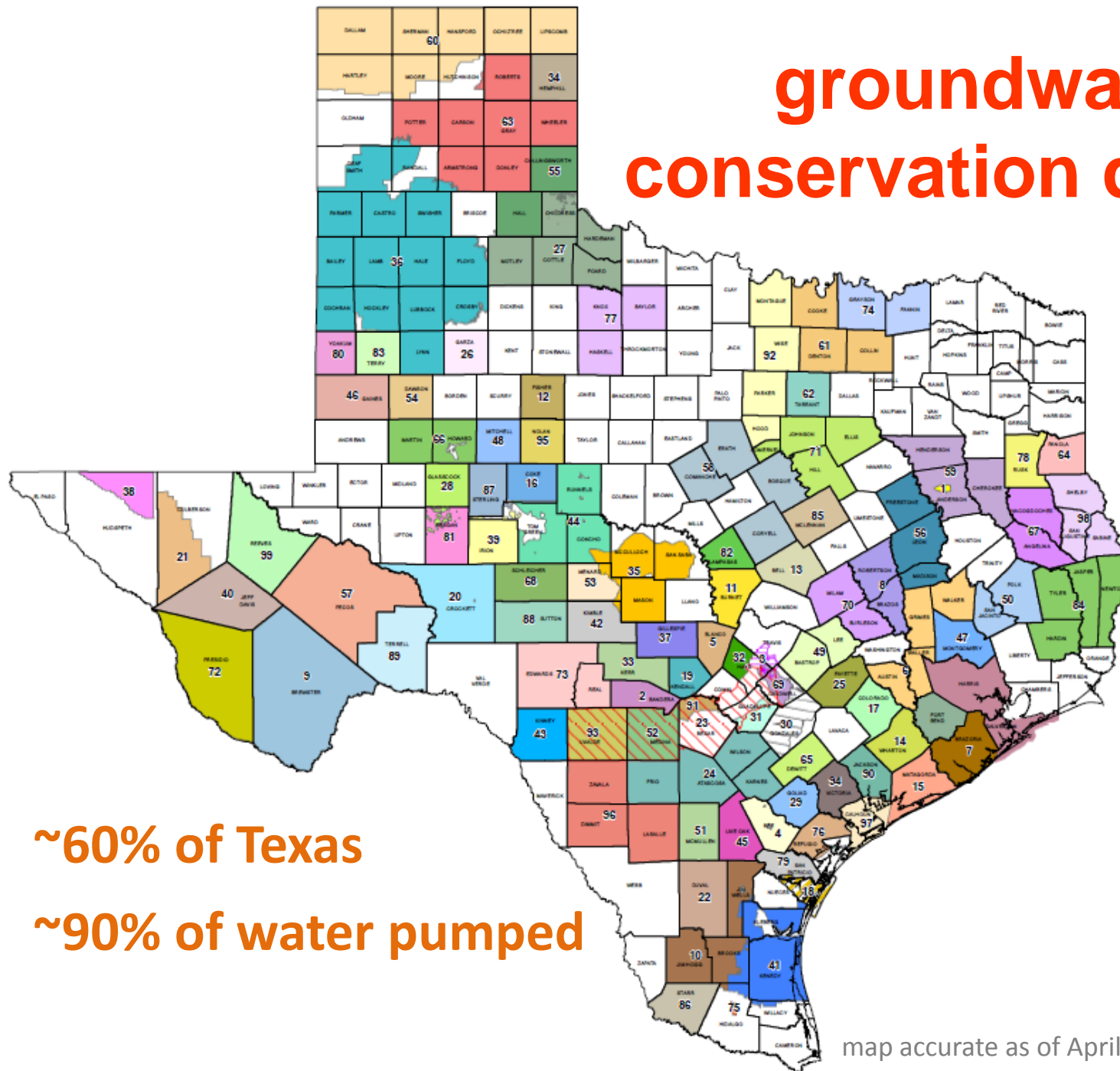


Number of groundwater conservation districts through the decades...

currently 99 districts
(+ two subsidence districts)

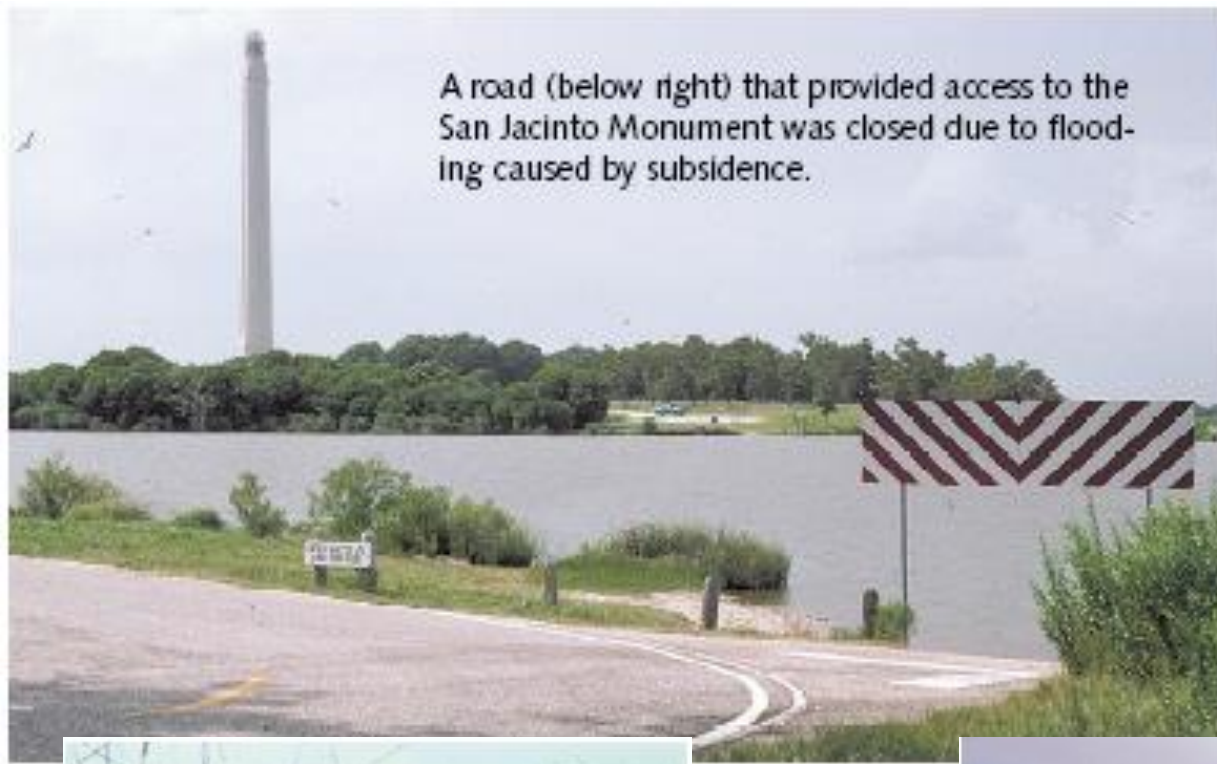


groundwater conservation districts



Friendswood Development Company v. 1978 Smith-Southwest Industries, Inc.





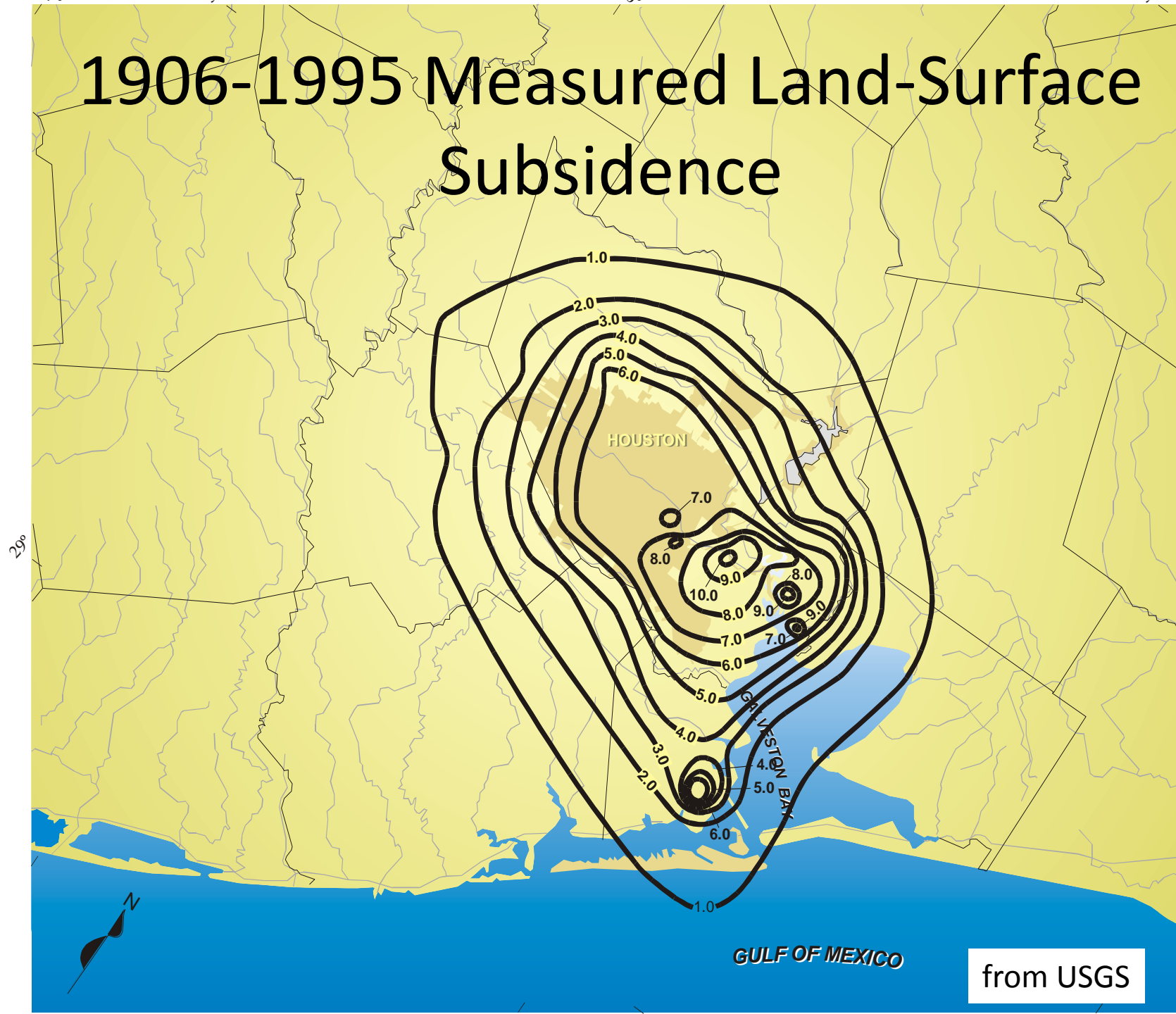
A road (below right) that provided access to the San Jacinto Monument was closed due to flooding caused by subsidence.

land subsidence

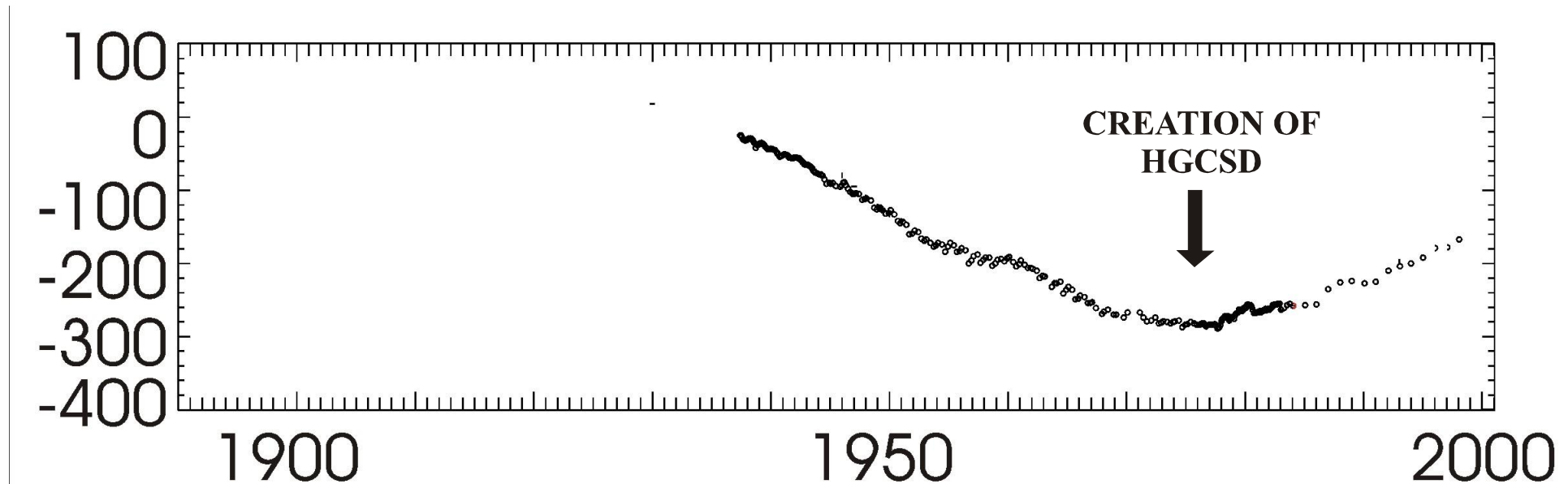


photos from USGS's Circular 1182

1906-1995 Measured Land-Surface Subsidence



Water Level Trend in Houston area

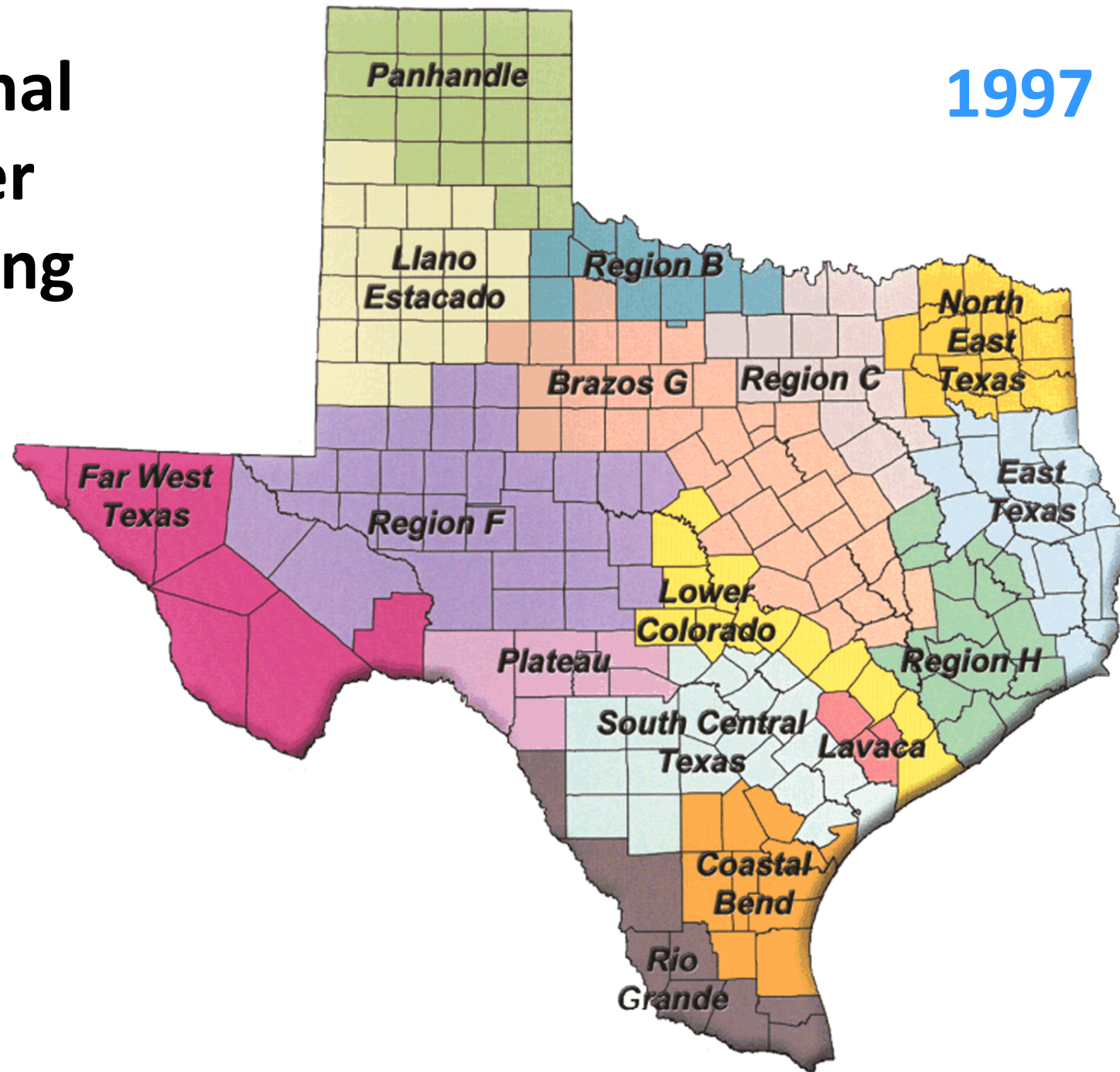


HGCSO = Harris-Galveston Coastal Subsidence District

from U.S. Geological Survey

Regional Water Planning

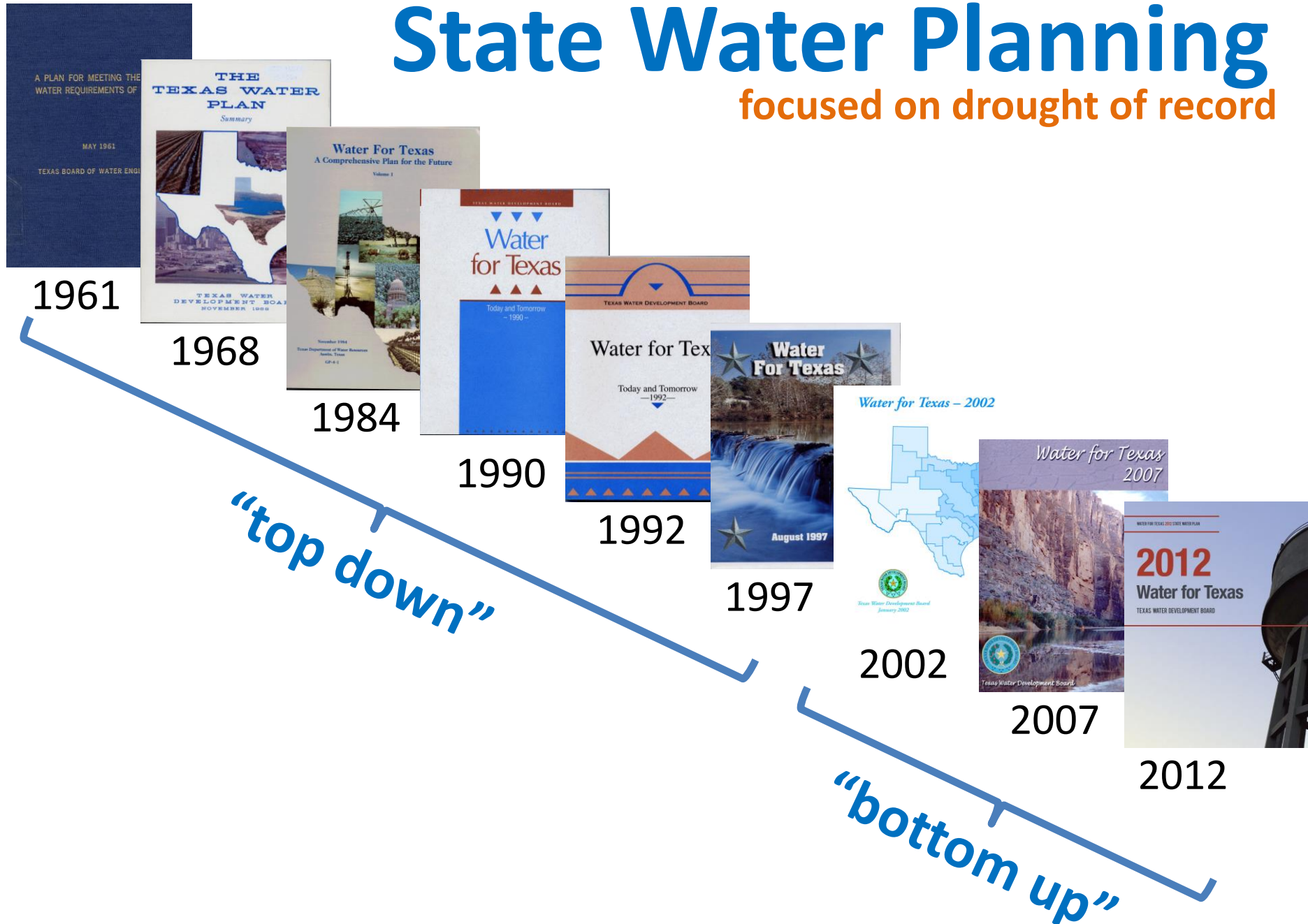
1997





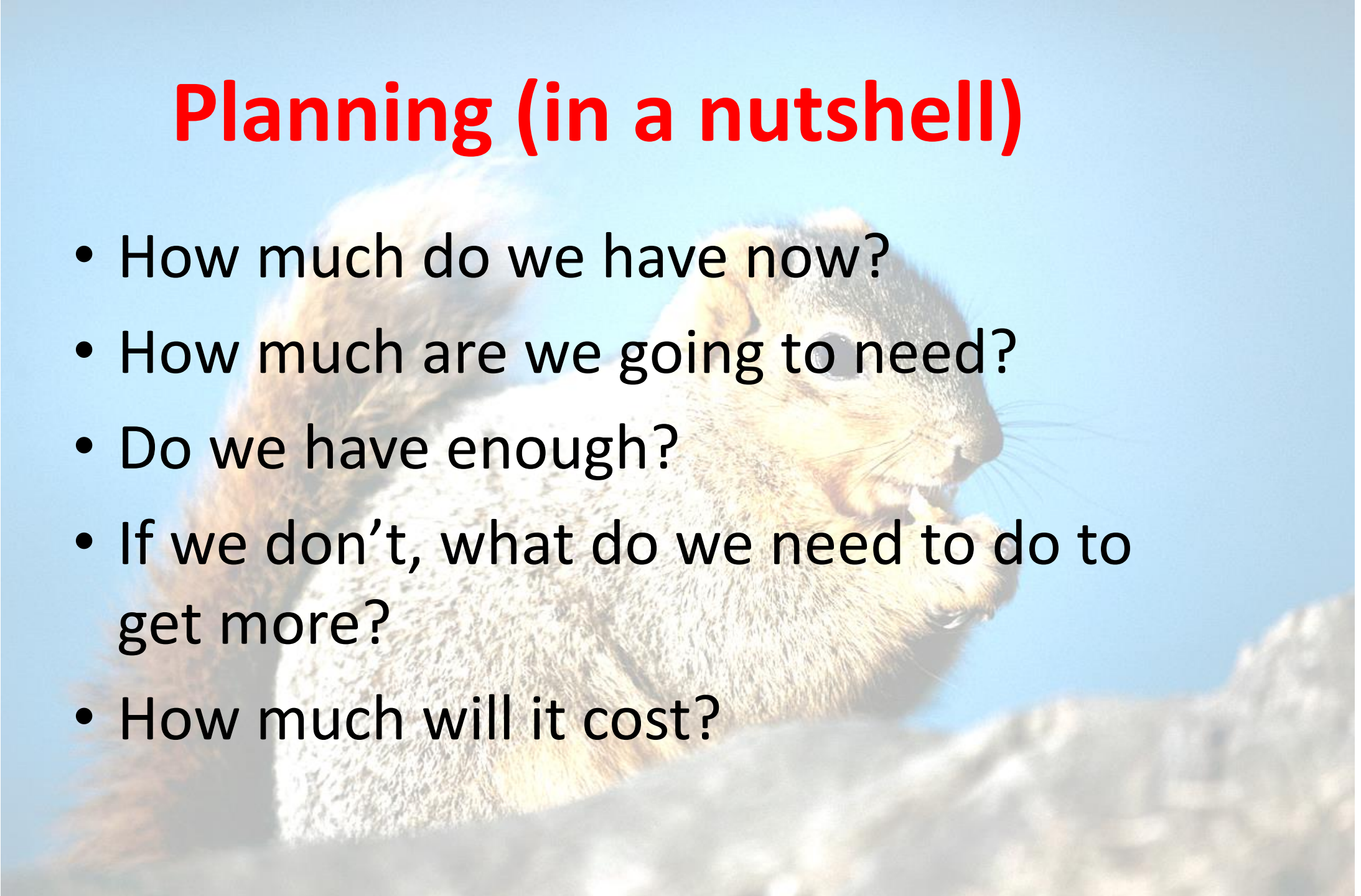
State Water Planning

focused on drought of record



Planning (in a nutshell)

- How much do we have now?
- How much are we going to need?
- Do we have enough?
- If we don't, what do we need to do to get more?
- How much will it cost?

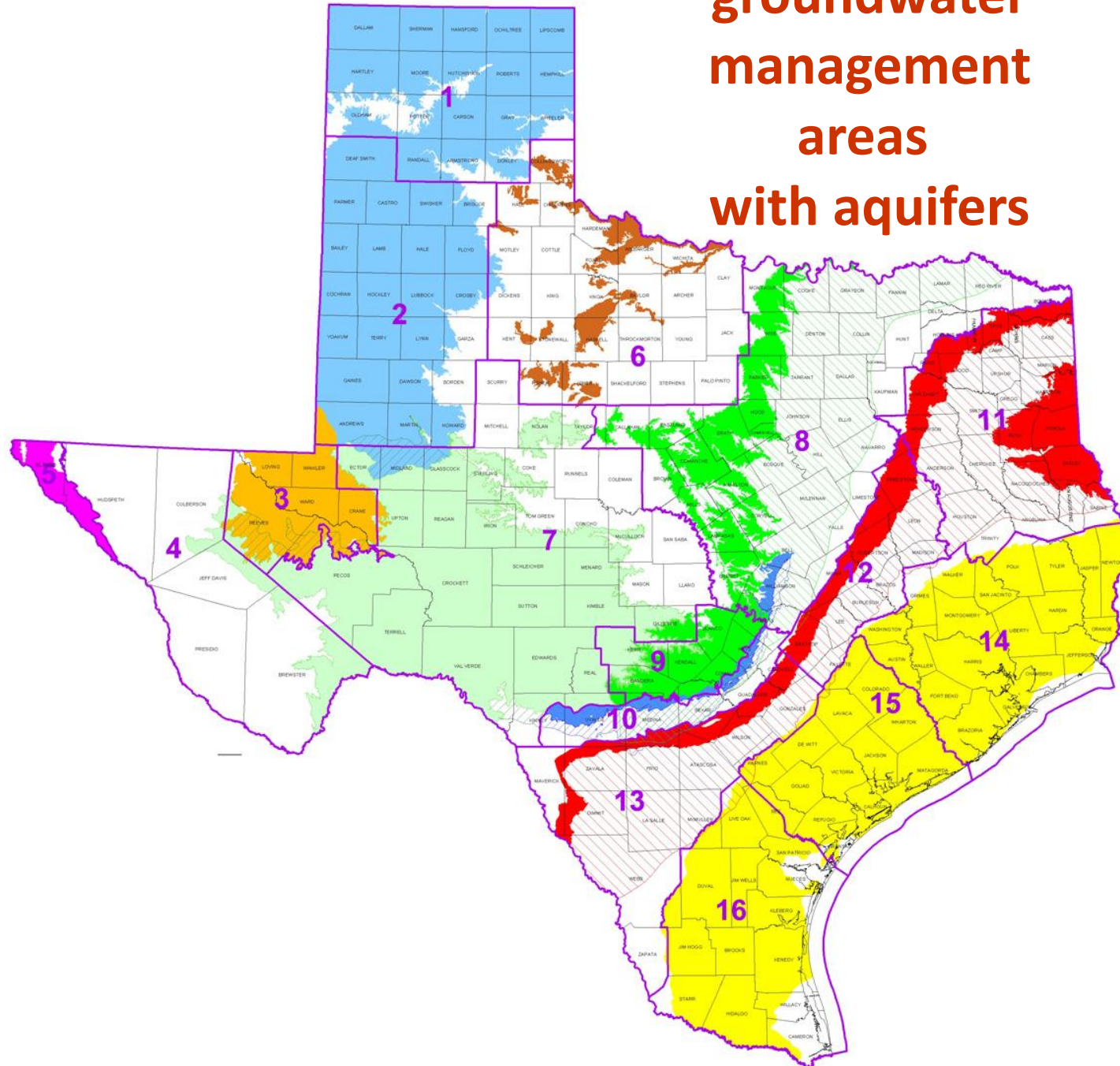


groundwater management areas

The map displays the state of Texas divided into 16 numbered groundwater management areas (GWMA), each outlined in red. The areas are defined by county boundaries and are numbered as follows:

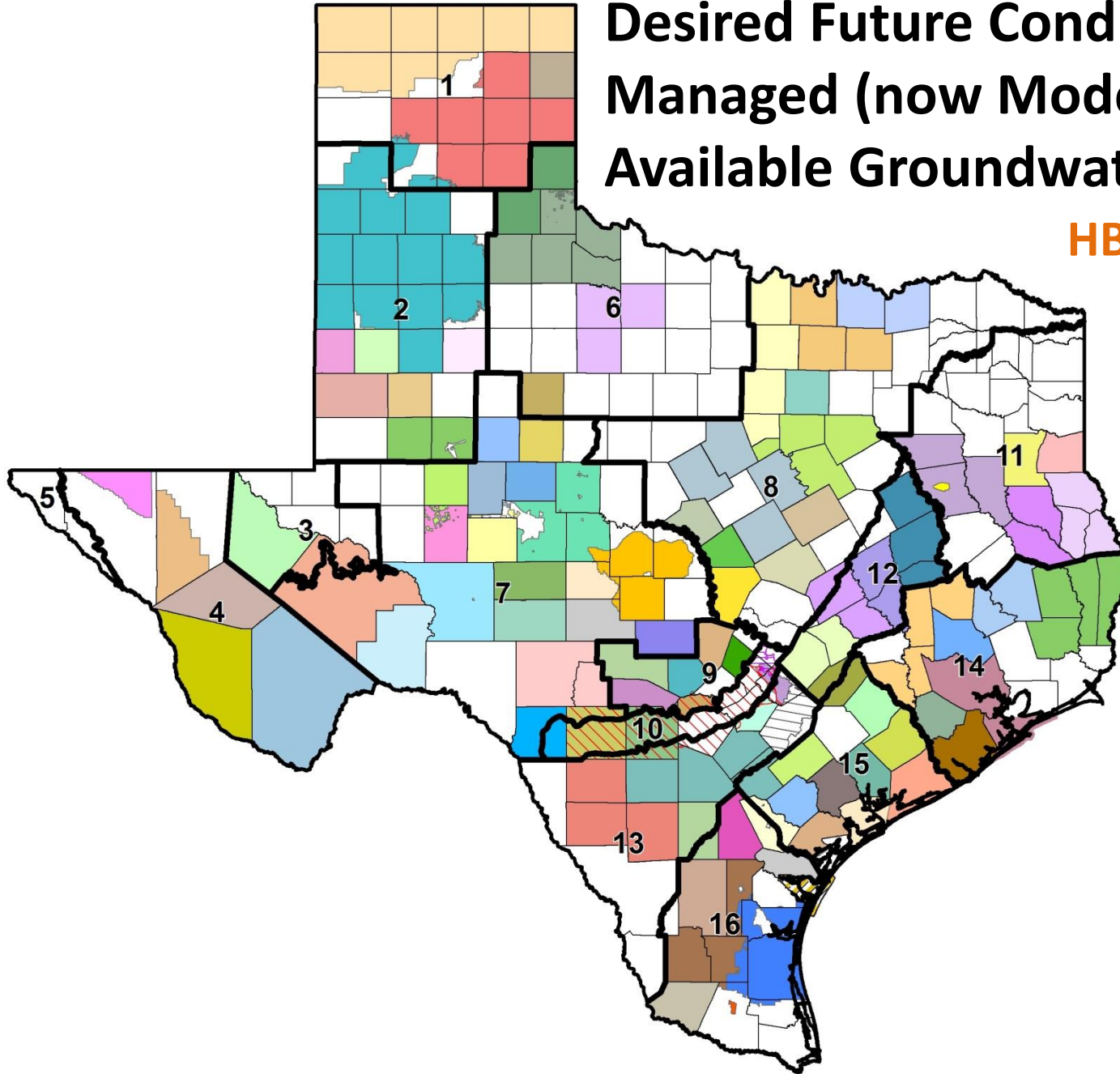
- Area 1:** Includes counties from Dallam to Wheeler.
- Area 2:** Includes counties from Garza to Garza.
- Area 3:** Includes counties from Loving to Loving.
- Area 4:** Includes counties from Brewster to Brewster.
- Area 5:** Includes counties from El Paso to El Paso.
- Area 6:** Includes counties from Garza to Garza.
- Area 7:** Includes counties from Garza to Garza.
- Area 8:** Includes counties from Garza to Garza.
- Area 9:** Includes counties from Garza to Garza.
- Area 10:** Includes counties from Garza to Garza.
- Area 11:** Includes counties from Garza to Garza.
- Area 12:** Includes counties from Garza to Garza.
- Area 13:** Includes counties from Garza to Garza.
- Area 14:** Includes counties from Garza to Garza.
- Area 15:** Includes counties from Garza to Garza.
- Area 16:** Includes counties from Garza to Garza.

groundwater management areas with aquifers



Desired Future Conditions and Managed (now Modeled...) Available Groundwater

HB 1763 2005

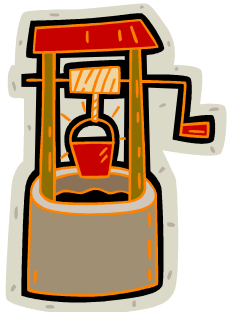




Groundwater Goals



Desired Future Conditions



Modeled Available Groundwater



Desired Future Conditions

- The desired, quantified conditions of groundwater resources (such as water levels, water quality, spring flows, or volumes) at a specified time or times in the future or in perpetuity.



Desired Future Conditions: Examples

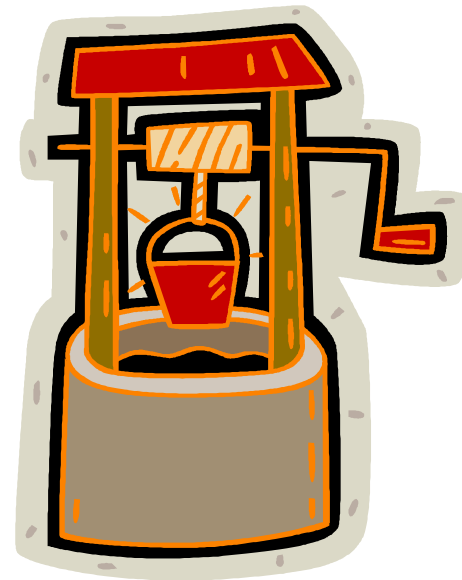
- water levels do not decline more than 100 feet in 50 years
- 50 percent of the water in storage will be available in 50 years
- spring flow is not allowed to fall below 10 cubic feet per second in times during the drought of record for perpetuity

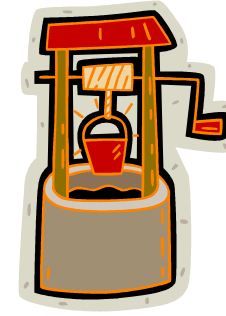
Modeled Available Groundwater

- The amount of water that may be pumped by a district, to the extent possible, for beneficial use in accordance with the desired future condition of the aquifer.

Example:

100,000 acre-feet per year





(policy) + (science) = groundwater
availability



**desired
future
conditions**



**groundwater
availability
models**



**modeled
available
groundwater**



**permitting
and planning**

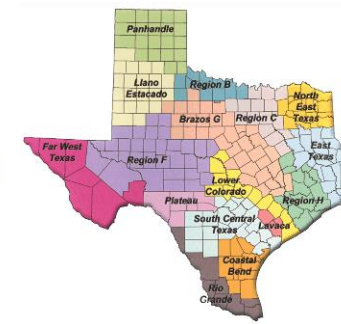
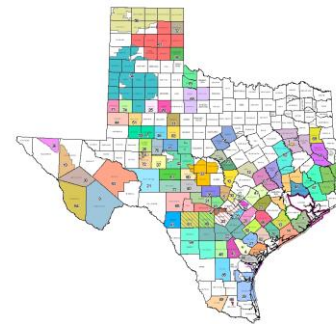
Districts in GMAs
decide **Desired Future Conditions**
and deliver to TWDB



TWDB provides estimates
of **Modeled Available Groundwater**
to districts and regions



Districts and regions include
Modeled Available Groundwater
in plans



GMA = groundwater management area
TWDB = Texas Water Development Board

Senate Bill 660, 2011



**A person with a legally defined
interest in groundwater**



Senate Bill 332

2011



Edwards Aquifer Authority v. Day and McDaniel

2012



photo by Kemp Smith





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Texas Water 

Development Board