

An aerial photograph of a reservoir with a dam in the background. The water is a deep blue, and the surrounding land is a mix of dry, brownish soil and sparse green vegetation. The title text is overlaid in a large, bold, blue font.

Understanding Environmental Considerations and Vulnerabilities for a Stronger Region

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

Central Texas Catalyst Summit
Austin Area Research Organization
Austin, Texas; December 4, 2023

water quantity

water quality

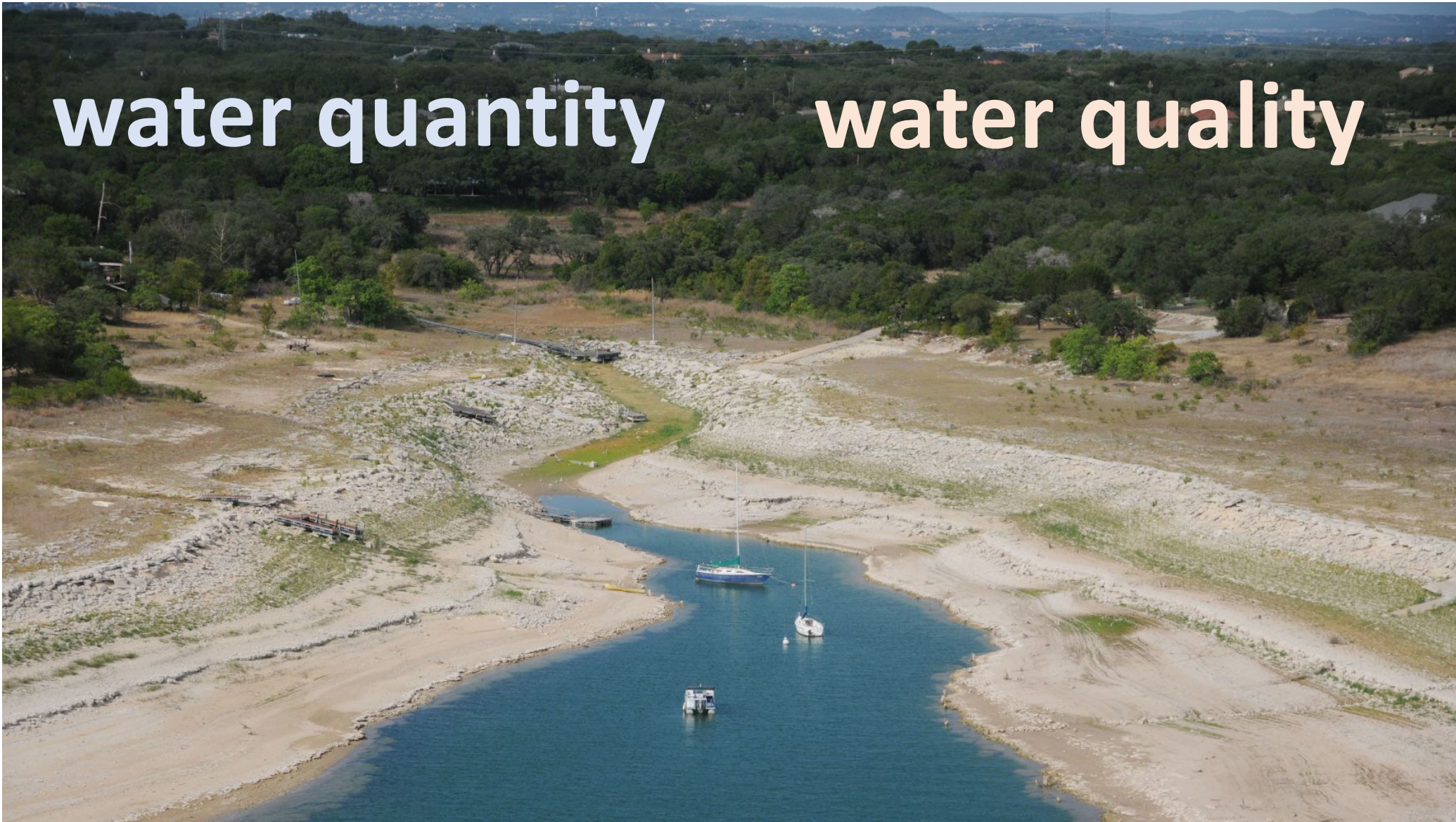
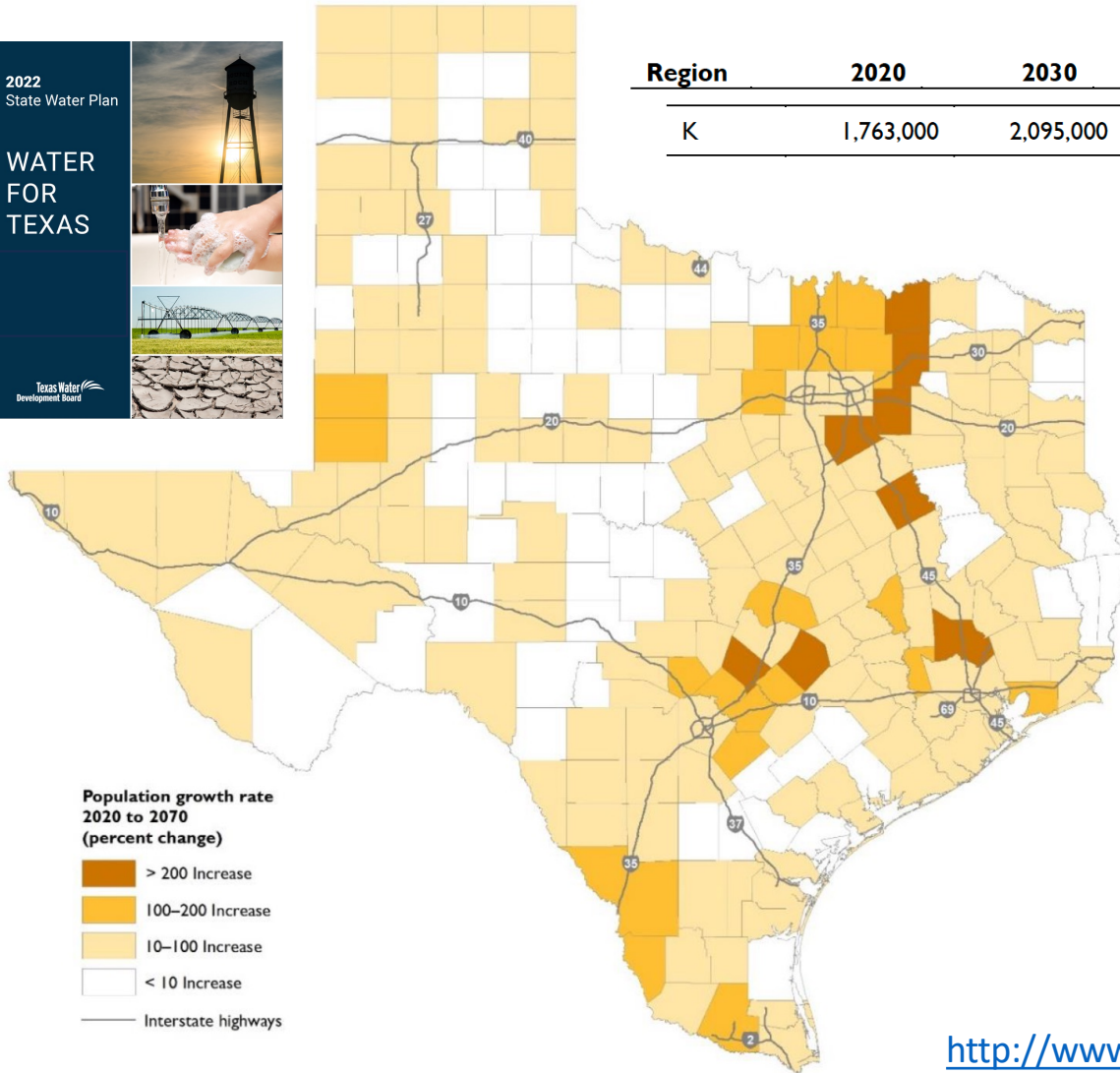
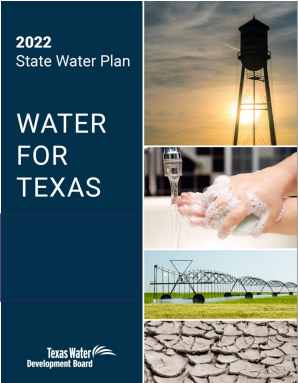
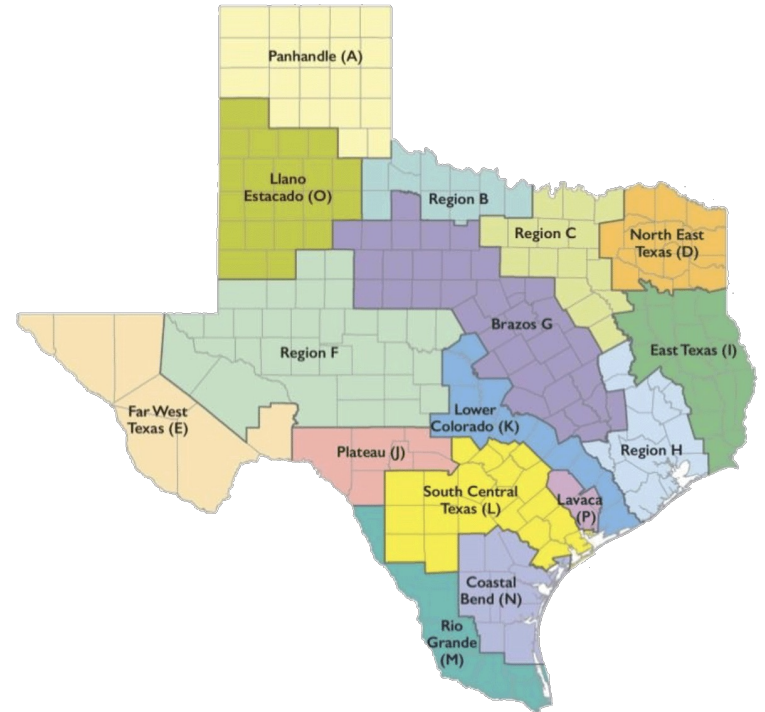


Figure 4-4. Projected population growth (2020–2070)



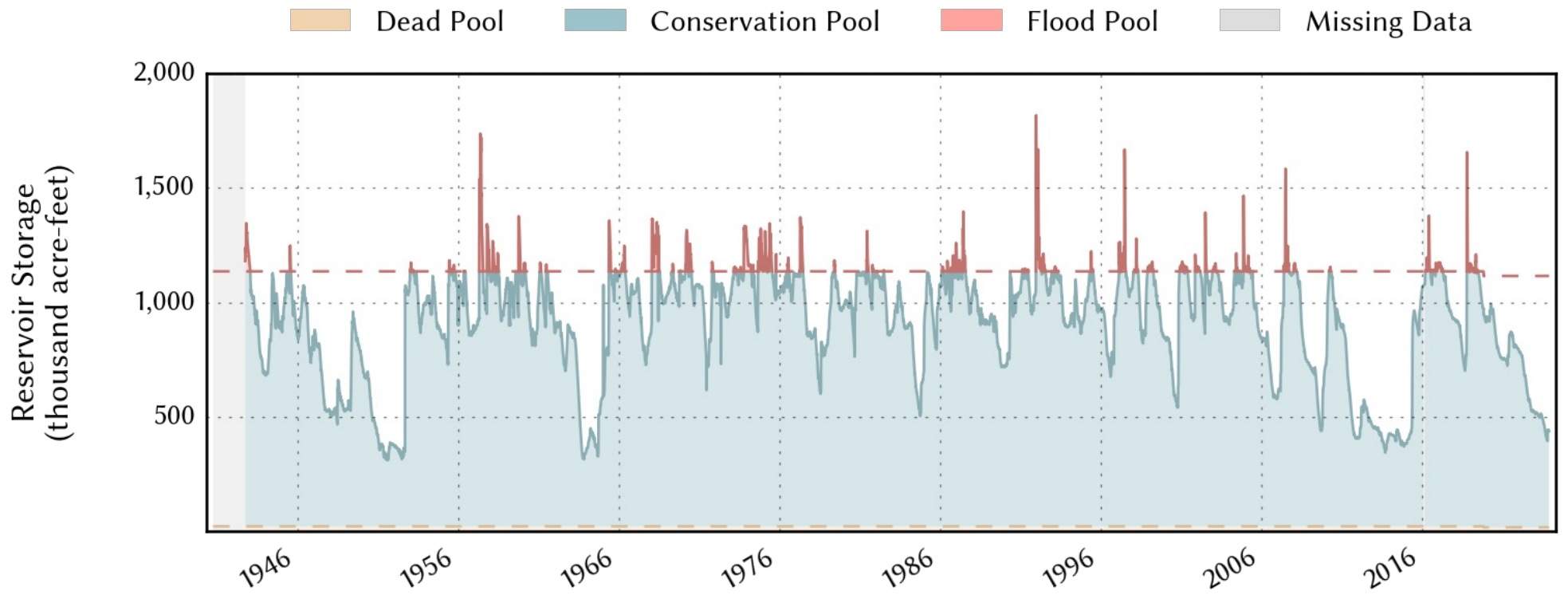
Region	2020	2030	2040	2050	2060	2070	Percent growth from 2020
K	1,763,000	2,095,000	2,417,000	2,697,000	2,971,000	3,290,000	87

projected population growth

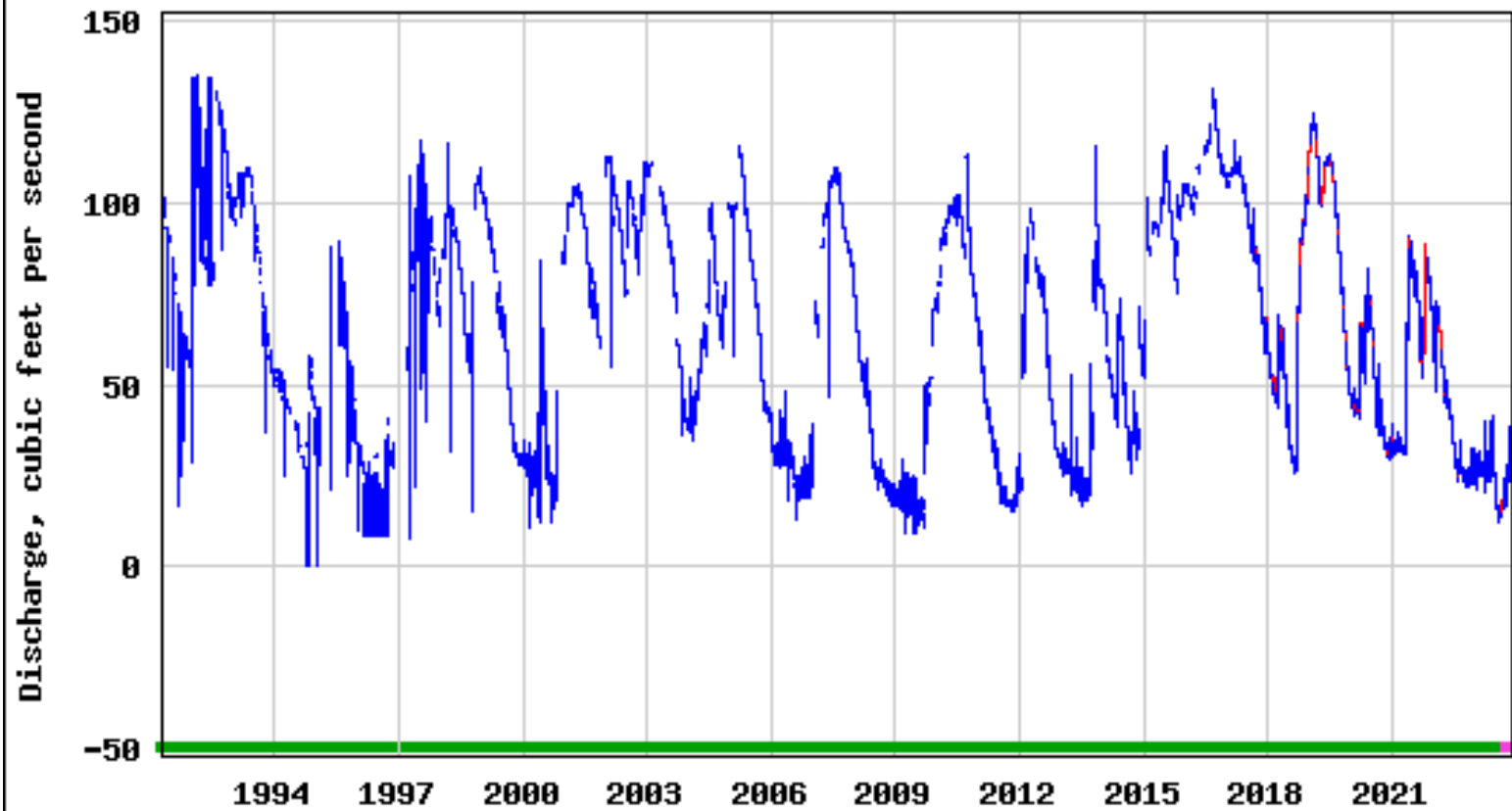


<http://www.twdb.texas.gov/waterplanning/swp/2022/index.asp>

Lake Travis



USGS 08155500 Barton Spgs at Austin, TX

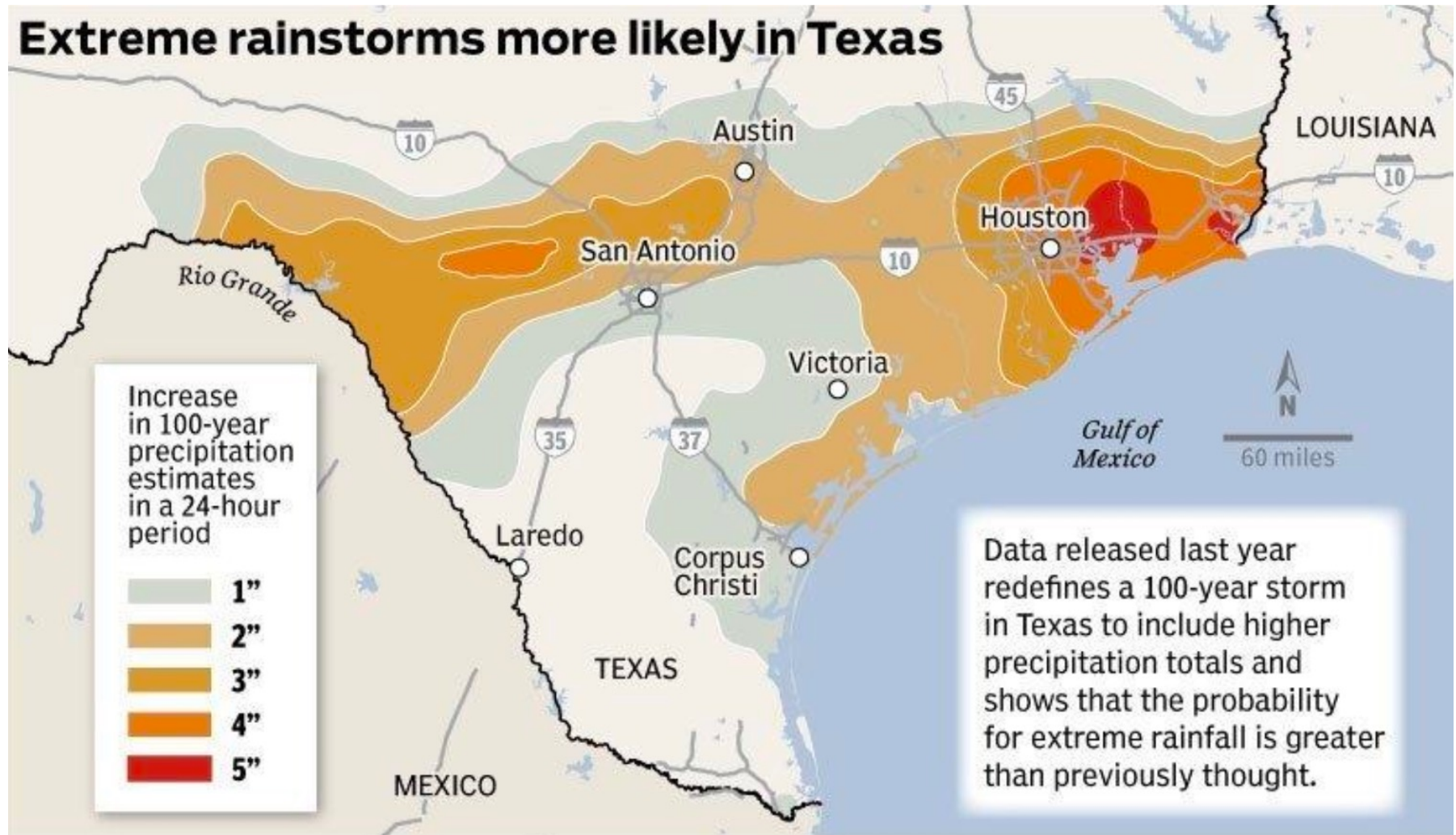


— Discharge
— Estimated discharge

— Period of approved data
— Period of provisional data

Graph courtesy of the U.S. Geological Survey

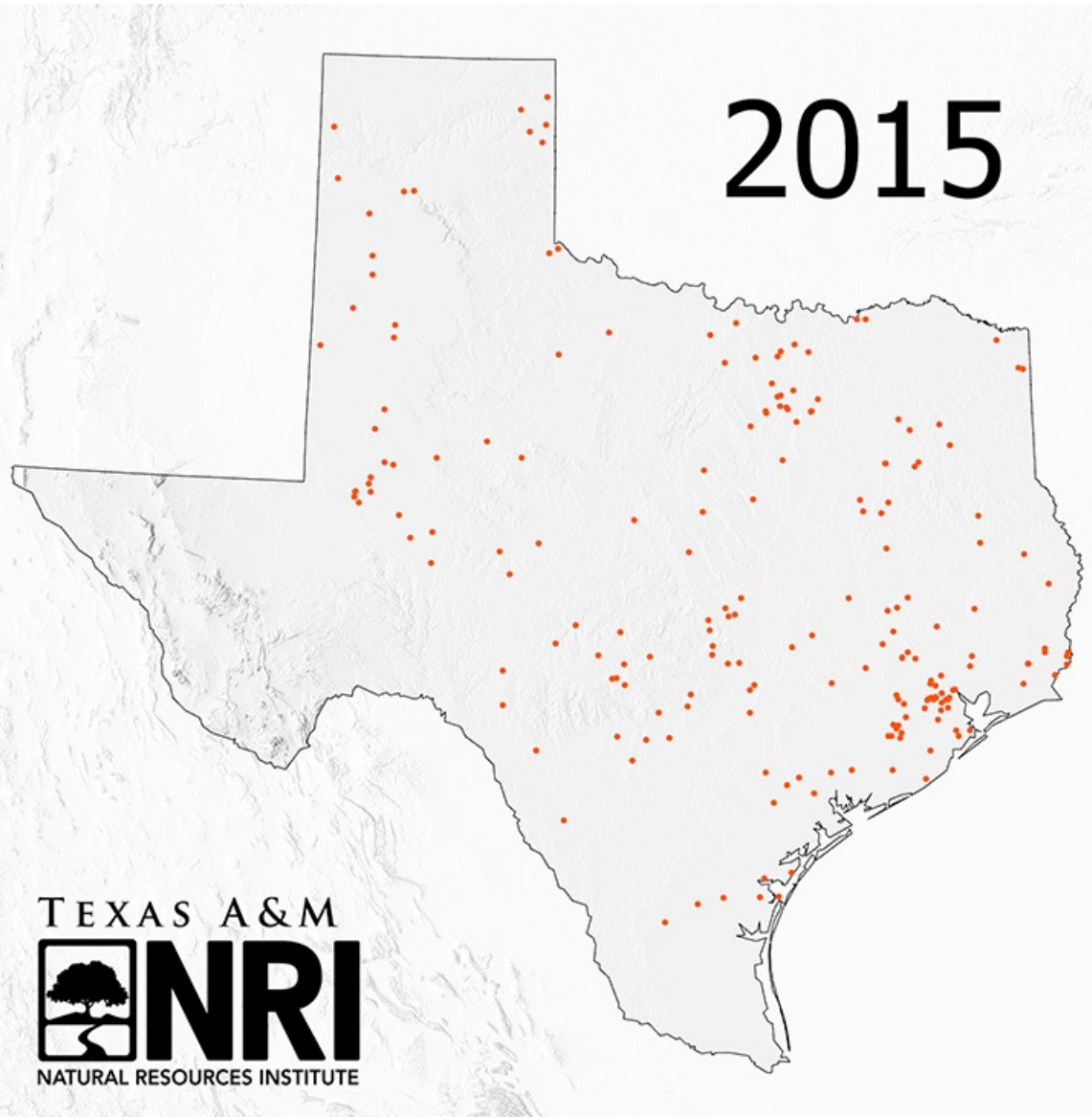
Extreme rainstorms more likely in Texas



Source: National Oceanic and Atmospheric Administration; maps4news.com/©HERE

GATEHOUSE MEDIA

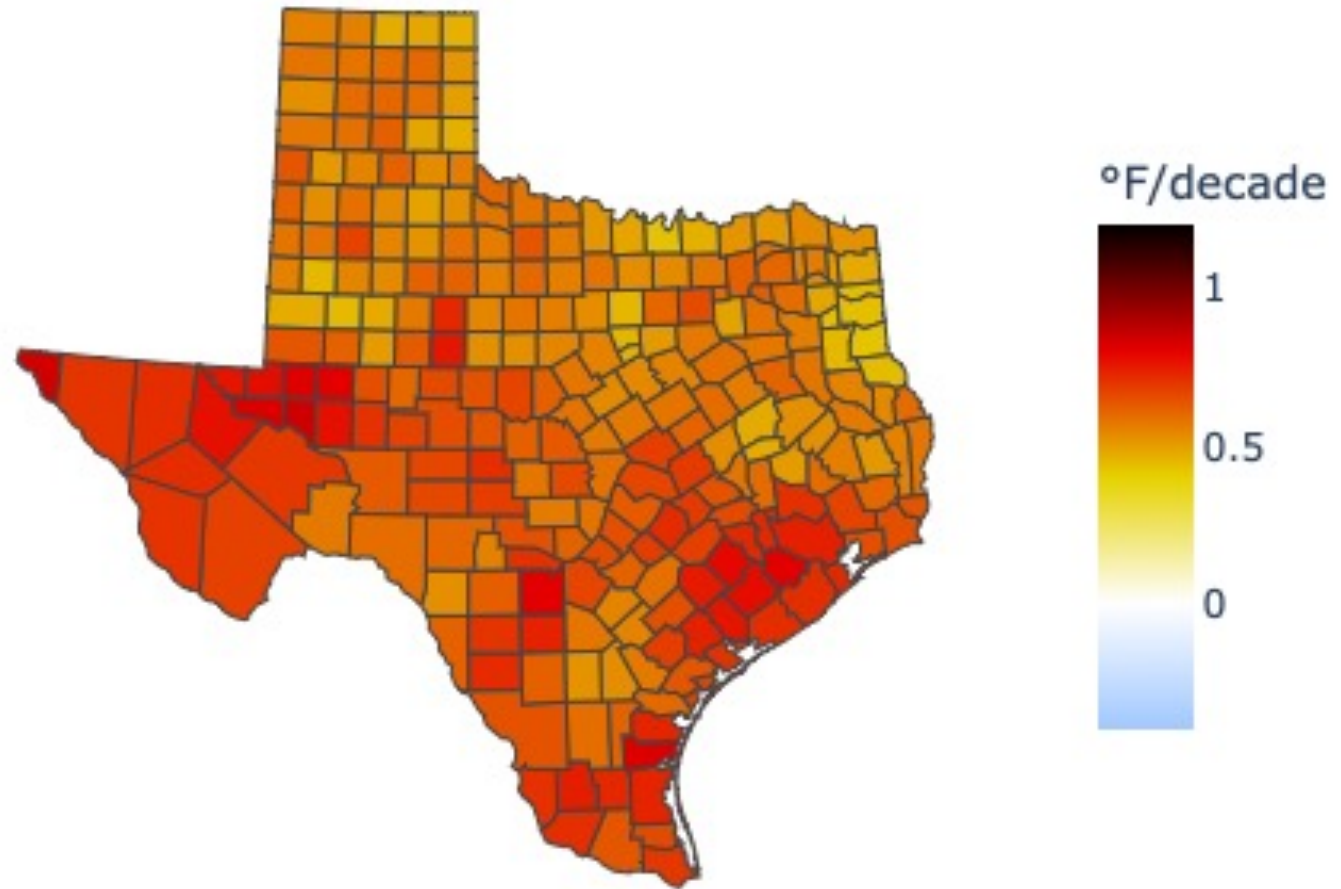
2015



TEXAS A&M
NRI
NATURAL RESOURCES INSTITUTE

water wells drilled

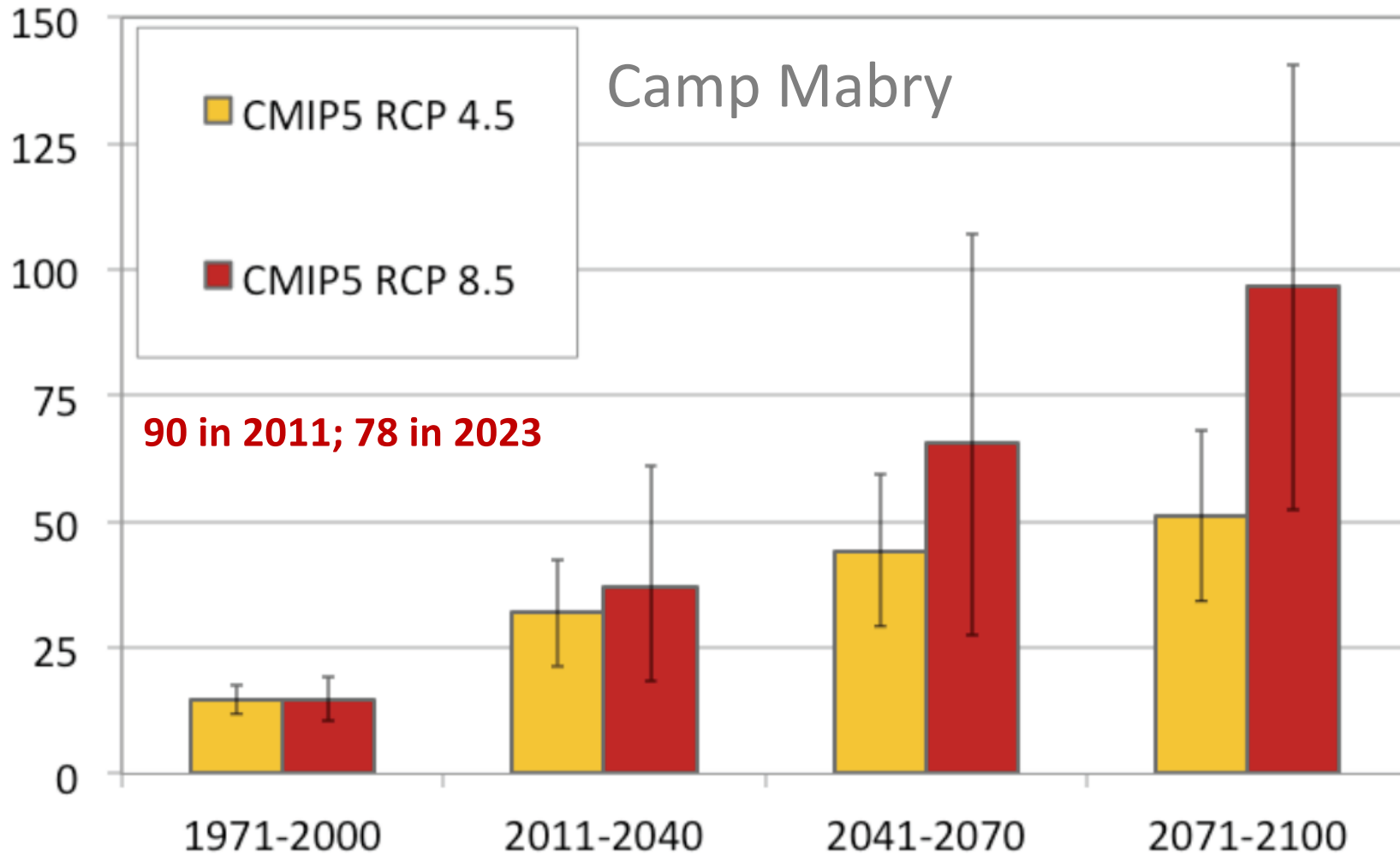
Average Temperature Trend, 1975-2020



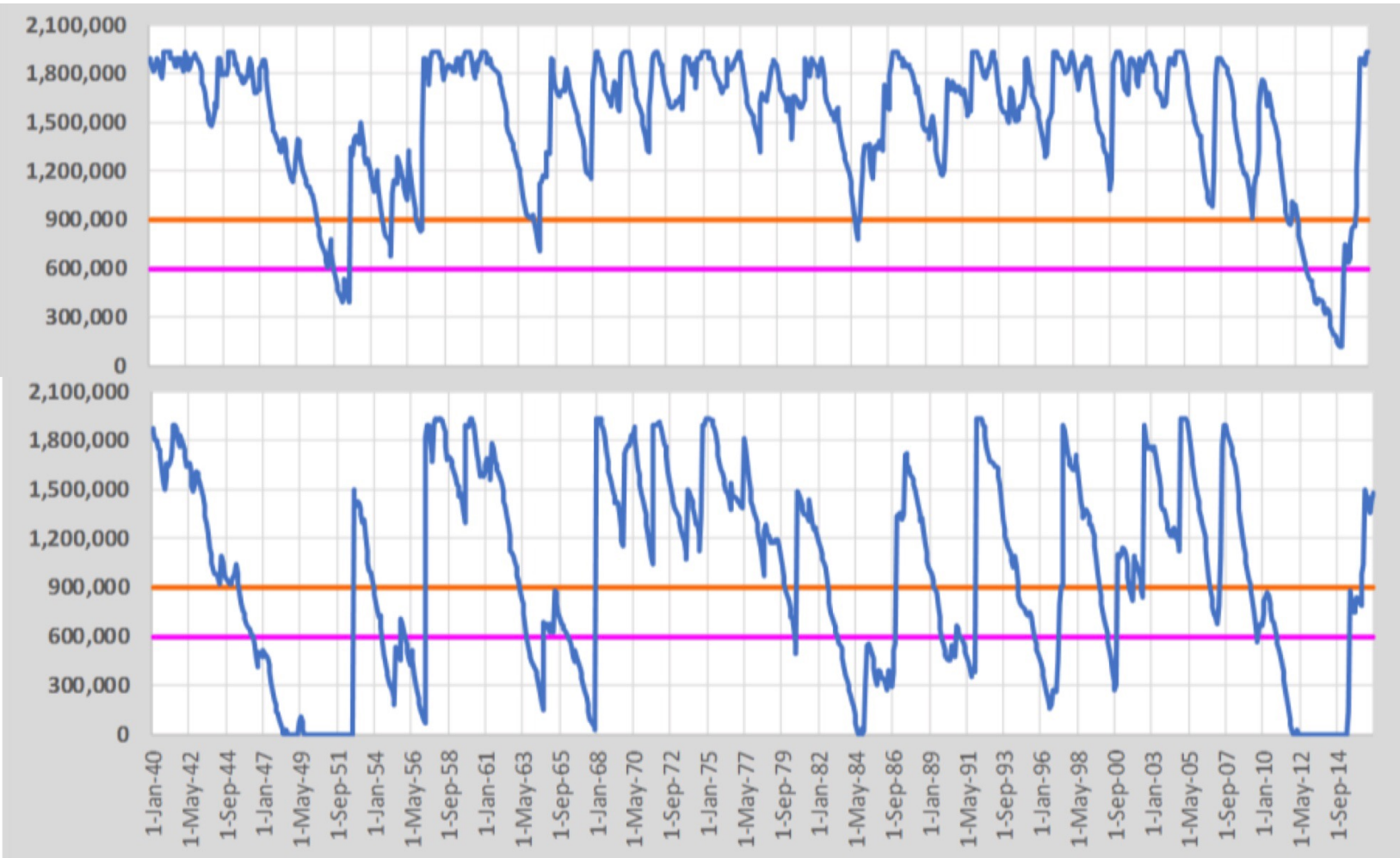
Temperature trends since 1975 according to NCEI nClimDiv data.

Nielsen-Gammon et al. 2021
(2036 Report)

Days with maximum temperature above 100°F



Modeled Storage in Travis and Buchanan in 2115



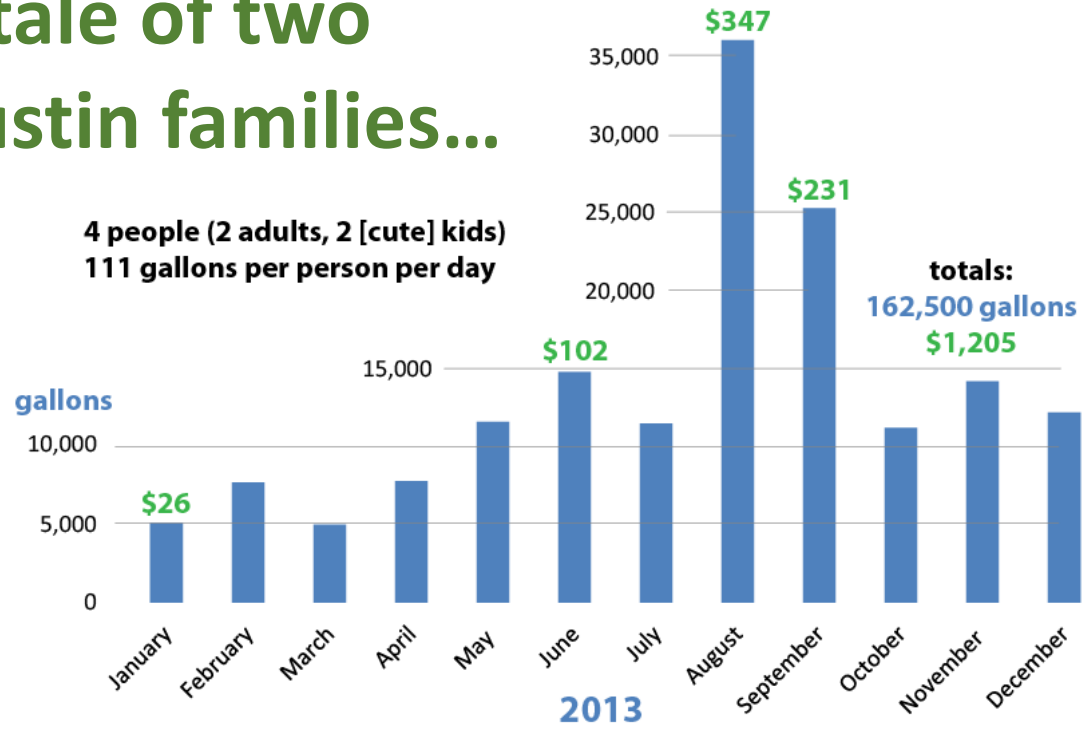
no
climate
change

with
climate
change

*units in acre-feet
from the City of Austin*

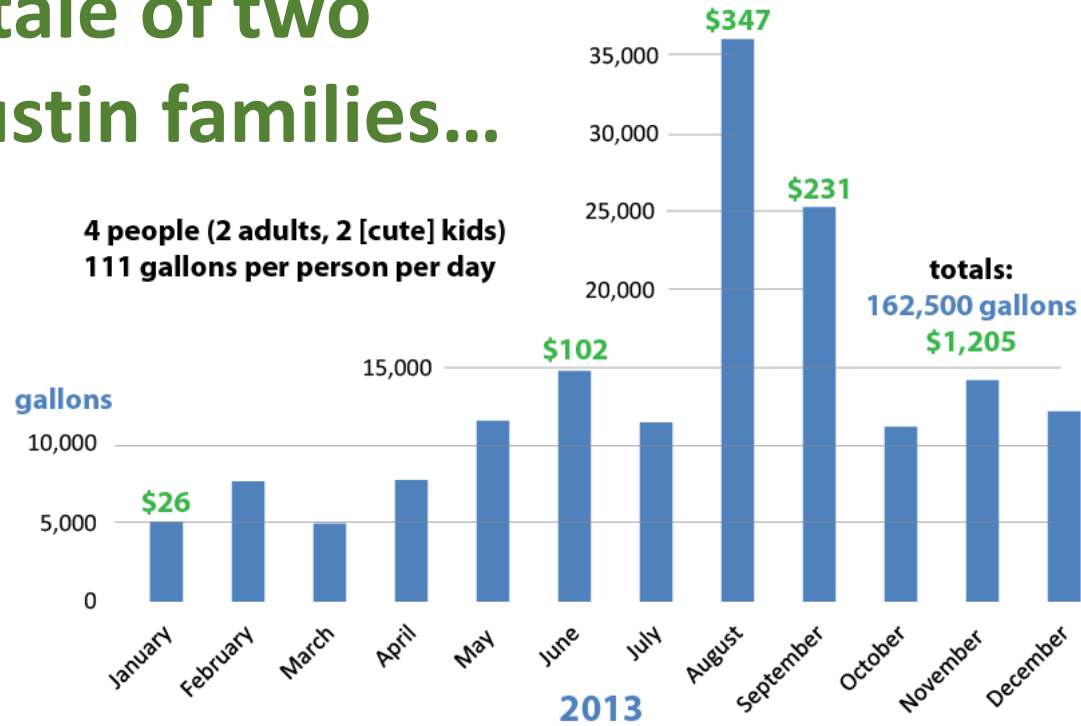
A tale of two Austin families...

4 people (2 adults, 2 [cute] kids)
111 gallons per person per day



A tale of two Austin families...

**4 people (2 adults, 2 [cute] kids)
111 gallons per person per day**



**2 people (2 adults, 8 [cute] cats)
35 gallons per person per day
7 gallons per mammal per day**





**condensate harvesting:
33 million gallons a year**



AUSTIN / NORTH CENTRAL AUSTIN / DINING

Austin restaurant saves thousands on water bills working around restrictions



By Kameryn Griesser | 10:43 AM Sep 13, 2023 CDT
Updated 10:48 AM Sep 13, 2023 CDT



<https://communityimpact.c>

The upscale Mexican restaurant Fonda San Miguel collects water condensation from its four air conditioning units to water their plants every day, saving thousands on utility bills. (Kameryn Griesser/Community Impact)

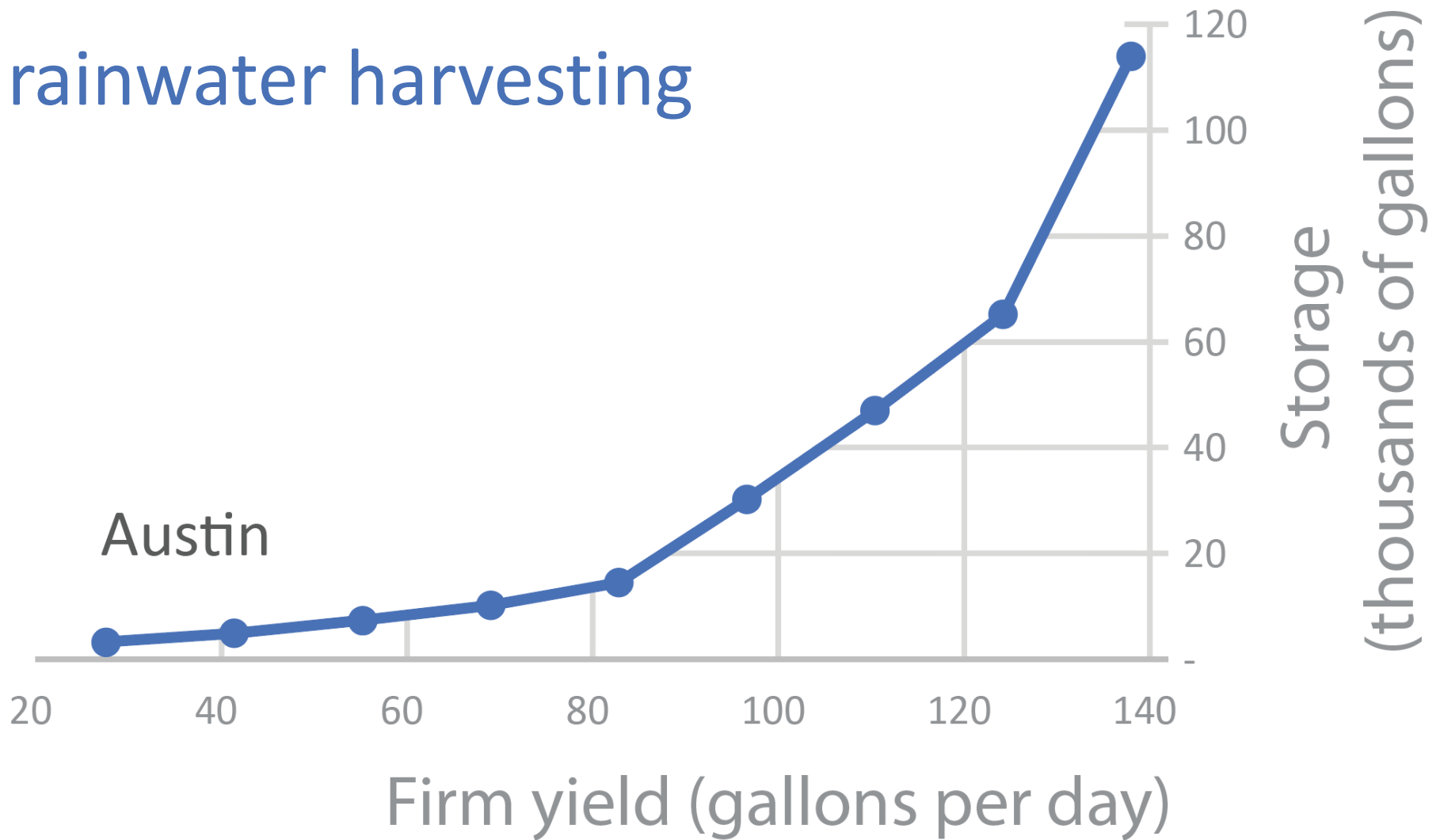
[orking-around-restrictions/](#)

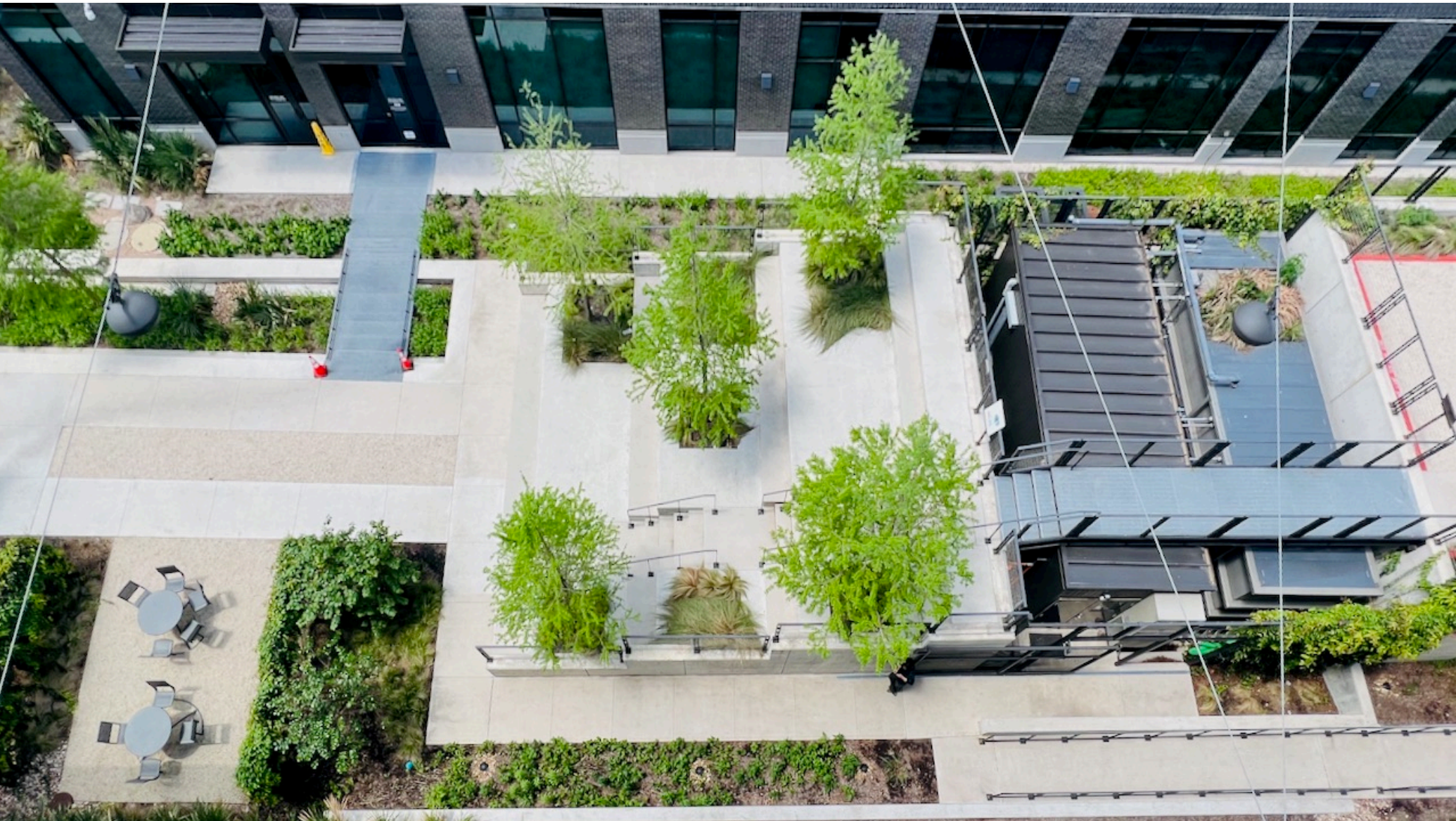
- First One Water school in Texas
- Rainwater and AC condensate collection
- On-site treatment and reuse system
- Will reduce use of the Trinity Aquifer by 90 percent
- Will save \$800,000 over 30 years in utilities

Wimberley One Water School

<https://www.youtube.com/watch?v=LMmIVsBN83g>

rainwater harvesting



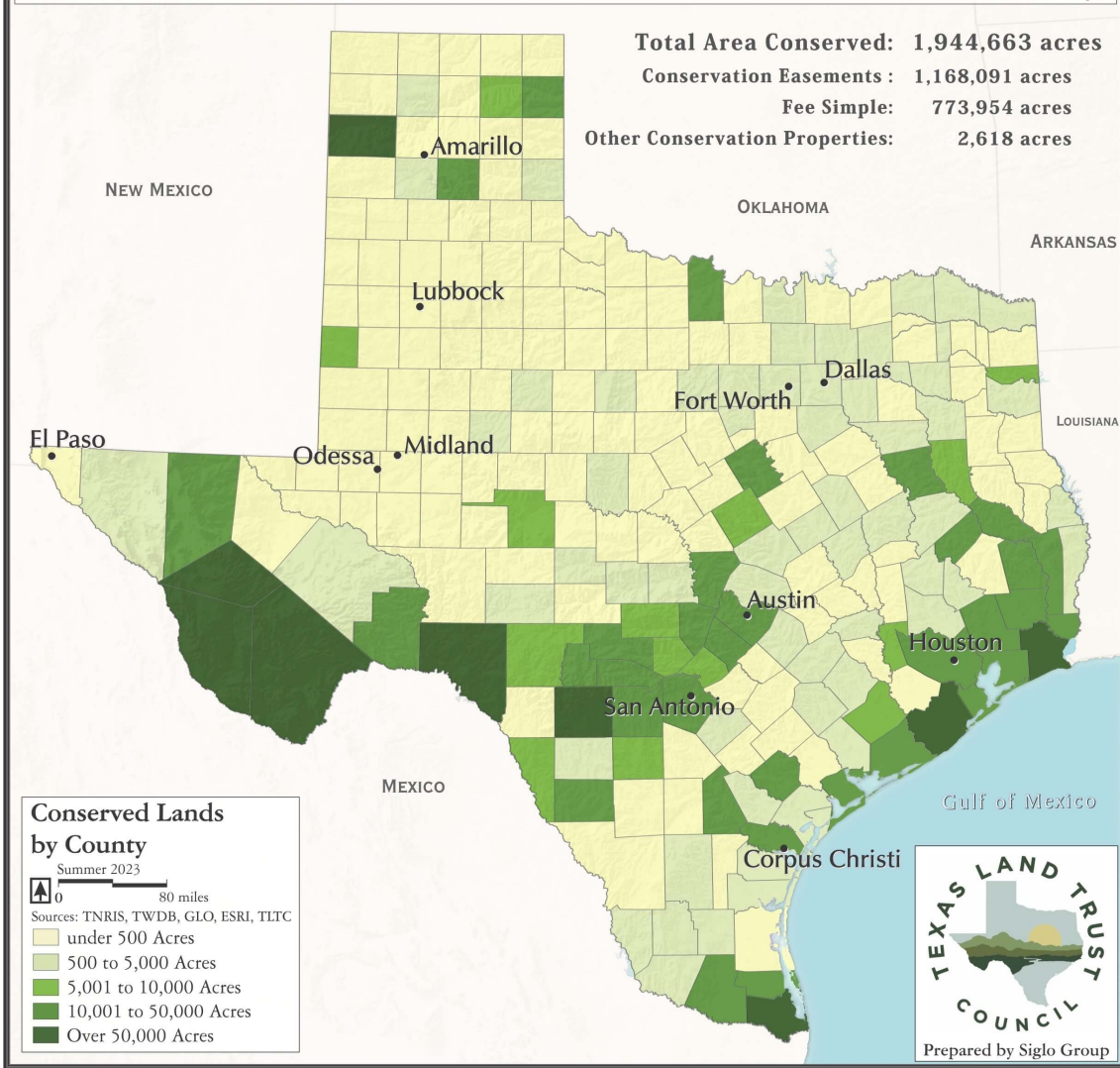




“I guess that means I get to drink my beer twice...”

Texas Land Trust Council Conservation Lands Inventory

Total Area Conserved: 1,944,663 acres
Conservation Easements : 1,168,091 acres
Fee Simple: 773,954 acres
Other Conservation Properties: 2,618 acres



Conserved Lands by County
 Summer 2023

0 80 miles

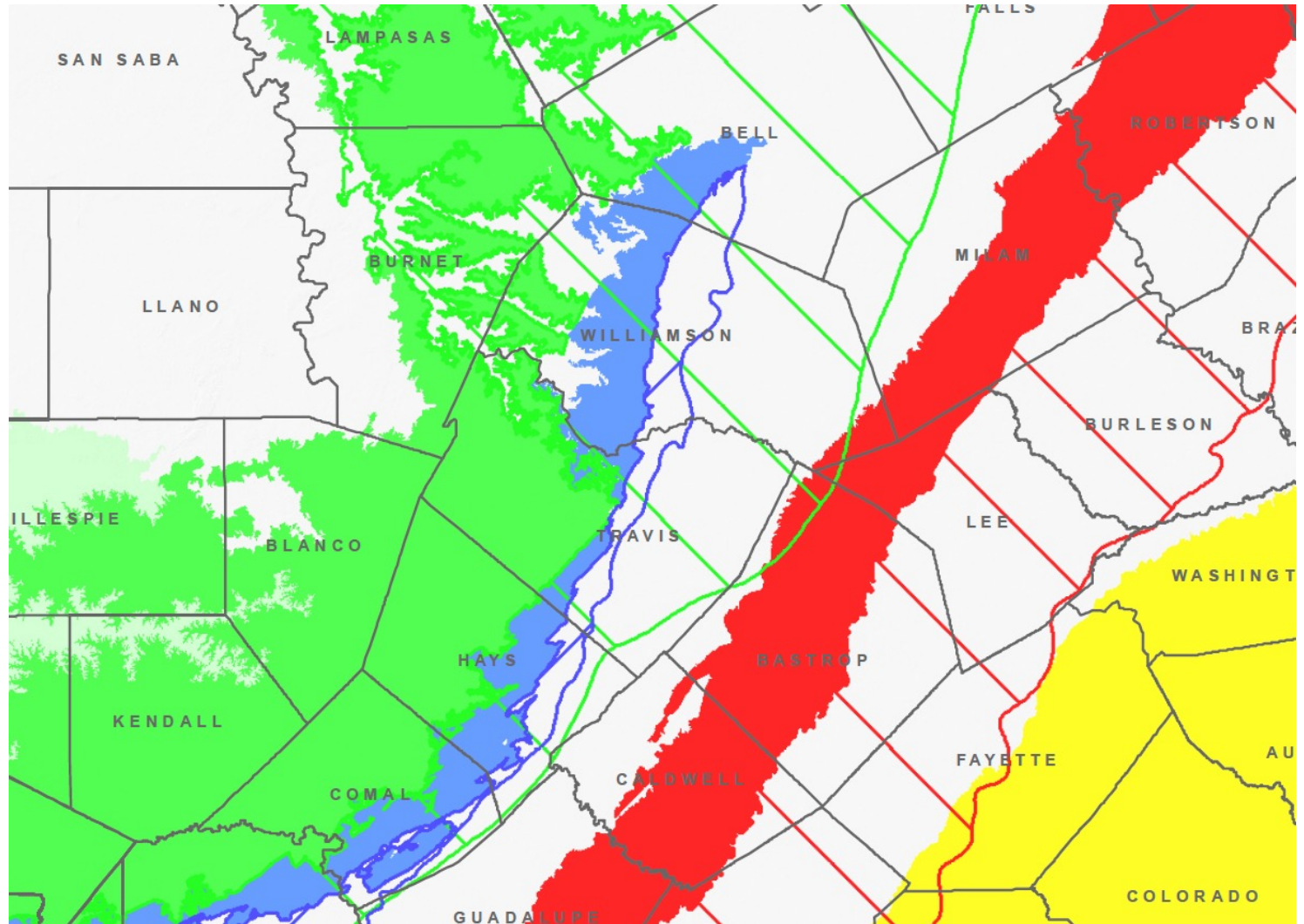
Sources: TNRIS, TWDB, GLO, ESRI, TLTC

- under 500 Acres
- 500 to 5,000 Acres
- 5,001 to 10,000 Acres
- 10,001 to 50,000 Acres
- Over 50,000 Acres



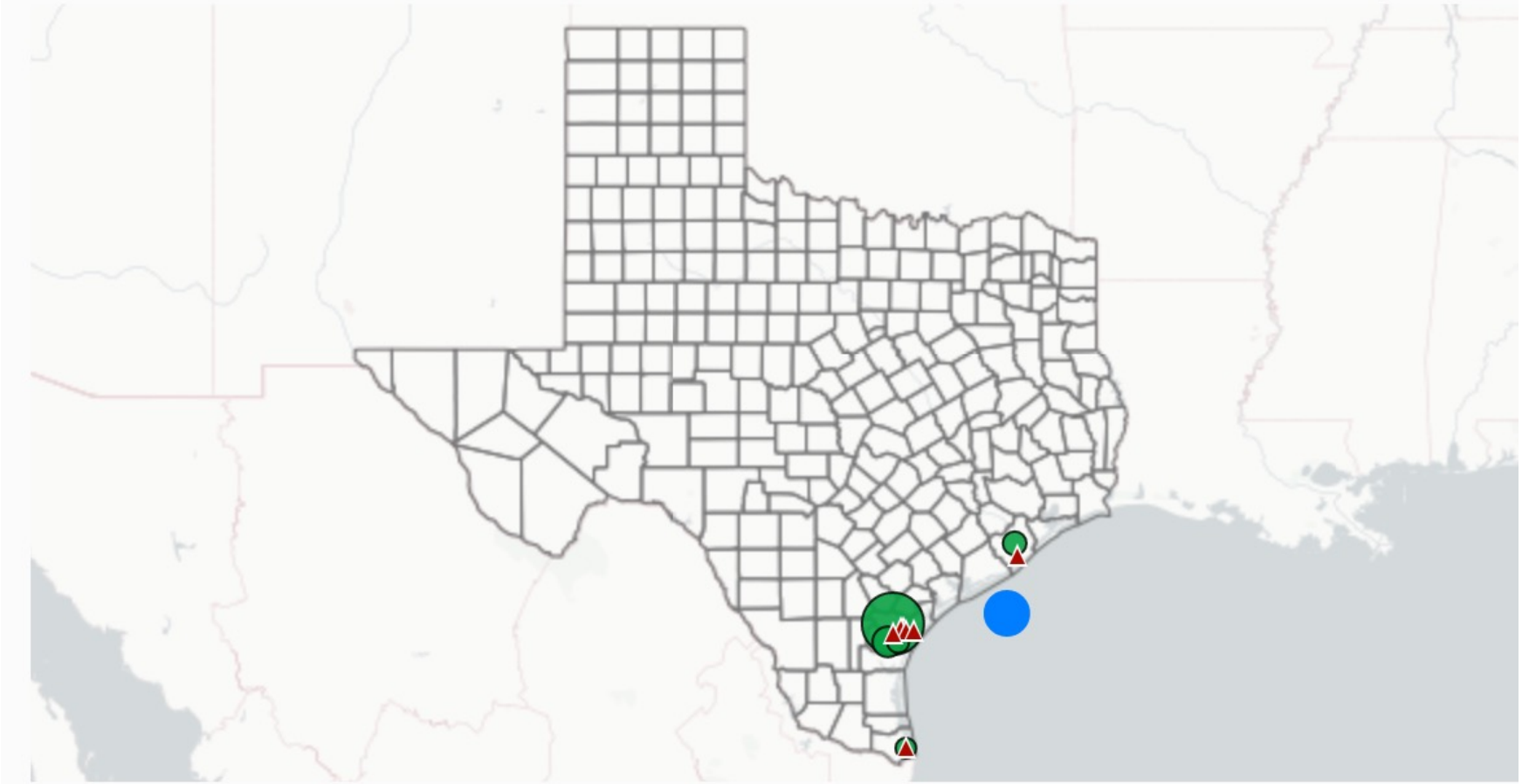
major aquifers in Central Texas

Trinity
Edwards
Carrizo-Wilcox
Gulf Coast



WMS TYPE - SEAWATER DESALINATION

Water User Groups - 2070 - Strategy Supplies (acre-feet/year)





WATER FORWARD


INTEGRATED WATER RESOURCE PLAN



<https://www.austintexas.gov/department/water-forward>



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Discussion

An aerial photograph of a reservoir with a dam in the background. The water is blue, and there are several boats on the surface. The surrounding land is dry and rocky, with some sparse vegetation. The text "What are the take-aways from this break-out?" is overlaid in blue font.

What are the take-aways
from this break-out?

10 minutes