Rainwater Harvesting Training for Permitting Staff in Counties & Municipalities in Texas

Offered Pursuant to Local Government Code §580.004

Texas Water Development Board
1700 North Congress Avenue
P.O. Box 13231
Austin, TX 78711
www.twdb.texas.gov/innovativewater/rainwater/training/index.asp

What is rainwater harvesting?

Rainwater harvesting is defined as the capture and storage of rainwater for subsequent use

(34 Texas Administrative Code Section 3.318(a)(5))

Brief history of rainwater harvesting

→Evidence of rainwater collection systems in Jordan dates back to at least 3000 BC.

→Ruins of cisterns built as early as 2000 BC are still standing in Israel.

→In Texas, Mescalero Apaches used natural rainwater catchment systems near El Paso nearly 10,000 years ago to collect rainwater.

References:
The Brethren of Cisterns by Robert Bryce
The Texas Manual on Rainwater Harvesting (TWDB, 2005)

Why harvest rainwater?

→Rainwater is of superior quality.

- zero hardness, sodium-free, and nearly neutral pH

→Rainwater harvesting is a water conservation practice.

→Rainwater harvesting can reduce stormwater runoff.

Important considerations

→**Applicable laws**

→Supply and demand

→Capital costs and maintenance

Rainwater harvesting laws

Click links contained within to open webpages from the

Texas Administrative Code,

Texas Constitution, or

Texas Statutes.

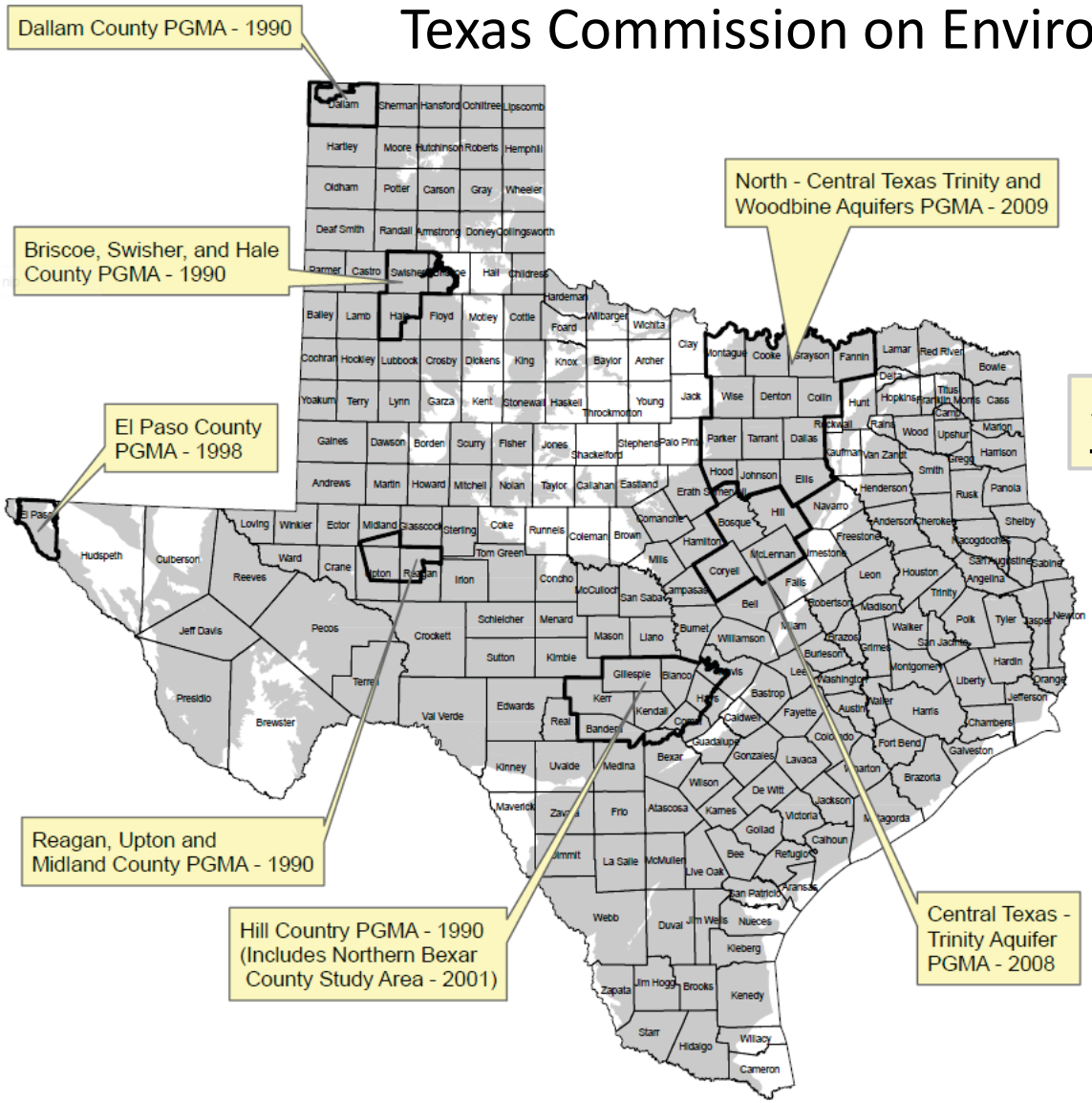
Training for permitting staff

- The Texas Water Development Board (TWDB) shall provide training to appropriate municipal and county permitting staff.
- Required once per five years if
  - within a Priority Groundwater Management Area; or
  - population greater than 10,000; and
  - work relates directly to permits involving rainwater harvesting

(Texas Local Government Code Section 580.004)

Priority Groundwater Management Areas

Texas Commission on Environmental Quality



www.tceq.texas.gov

Statewide support

- municipalities and counties are encouraged to promote rainwater harvesting at residential, commercial, and industrial facilities
- may not deny a building permit solely because the facility will implement rainwater harvesting
- school districts are encouraged to implement rainwater harvesting at facilities of the district

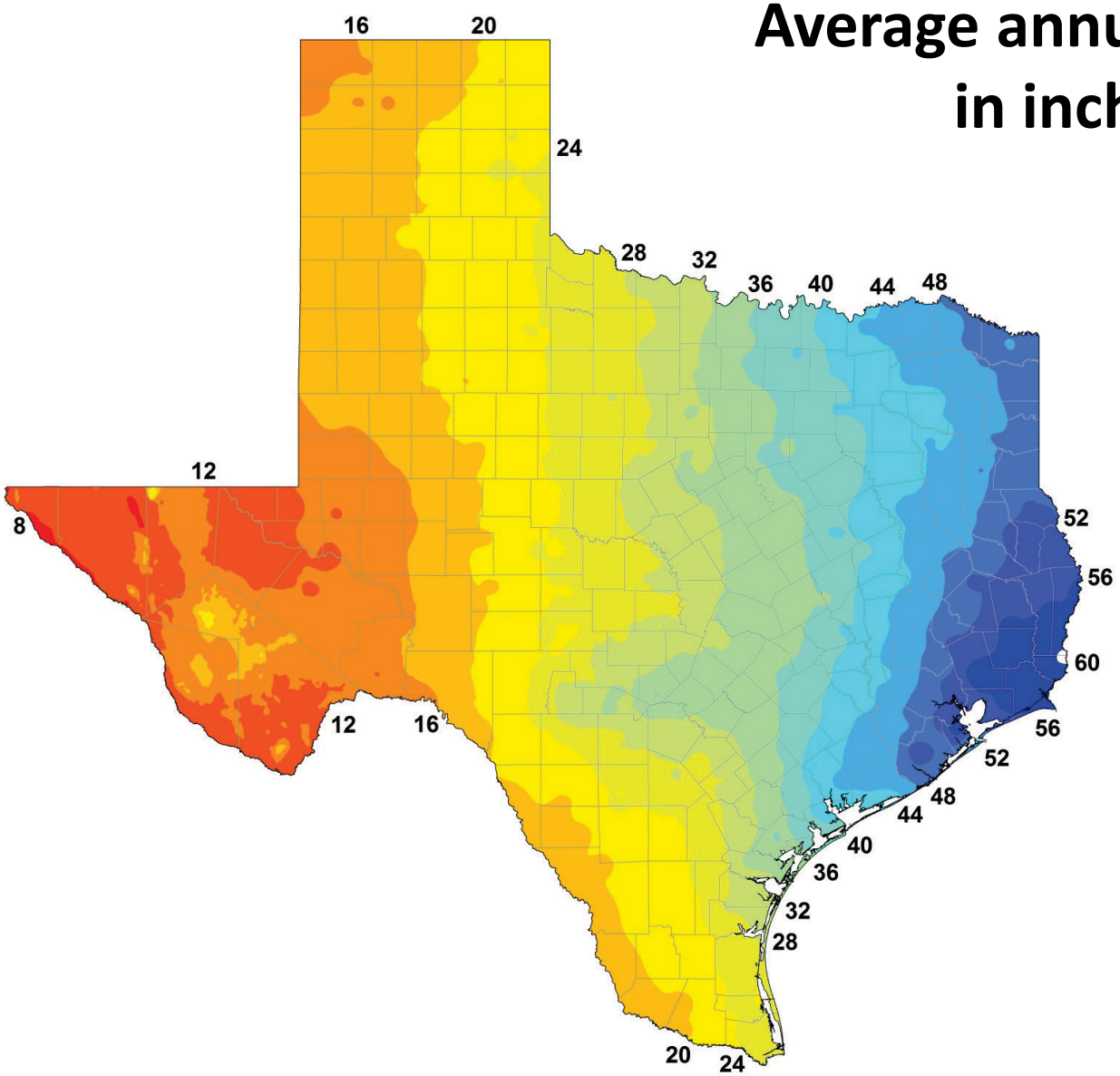
(Texas Local Government Code Section 580.004)

Statewide support

- a property owners' association may not prohibit installation but can reasonably regulate color, placement, and related details
- new state buildings must incorporate rainwater harvesting if
  - roof area is at least 50,000 square feet; and
  - is located in an area of this state with average annual rainfall of at least 20 inches

(Texas Property Code Section 202.007)
(Texas Government Code Section 447.004)

Average annual rainfall in inches



Health and safety standards

- recommended standards relating to the domestic use of harvested rainwater by the TCEQ
- must include cross-connection safeguards if connected to a public water supply
  - backflow prevention assembly or an air gap

(30 Texas Administrative Code Section 290.44)

(Texas Health and Safety Code Section 341.042)

Health and safety standards

Backflow prevention device, McMahan residence, Dallas, Texas.

Health and safety standards

- homeowner connected to a public water supply must give written notice prior to installation
- installation of a system for potable use must be by a licensed master plumber or journeyman plumber who holds an endorsement issued by the Texas State Board of Plumbing Examiners as a water supply protection specialist

(Texas Health and Safety Code Section 341.042)

Financial incentives

- a local taxing unit may grant an exemption or other relief from ad valorem taxes on property on which a water conservation initiative has been implemented
- equipment, services, or supplies when used solely for rainwater harvesting are exempt from sales & use tax

(34 Texas Administrative Code §3.318)

(Tax Code §§151.314, 151.315, and 151.355)

(Texas Constitution, Article 8)

Important considerations

→Applicable laws

→**Supply and demand**

→Capital costs and maintenance

Supply and demand

- Demand
  - How will you use the water?
  - Potable vs. nonpotable
    - sole source or auxillary?
  - How much water will you need?

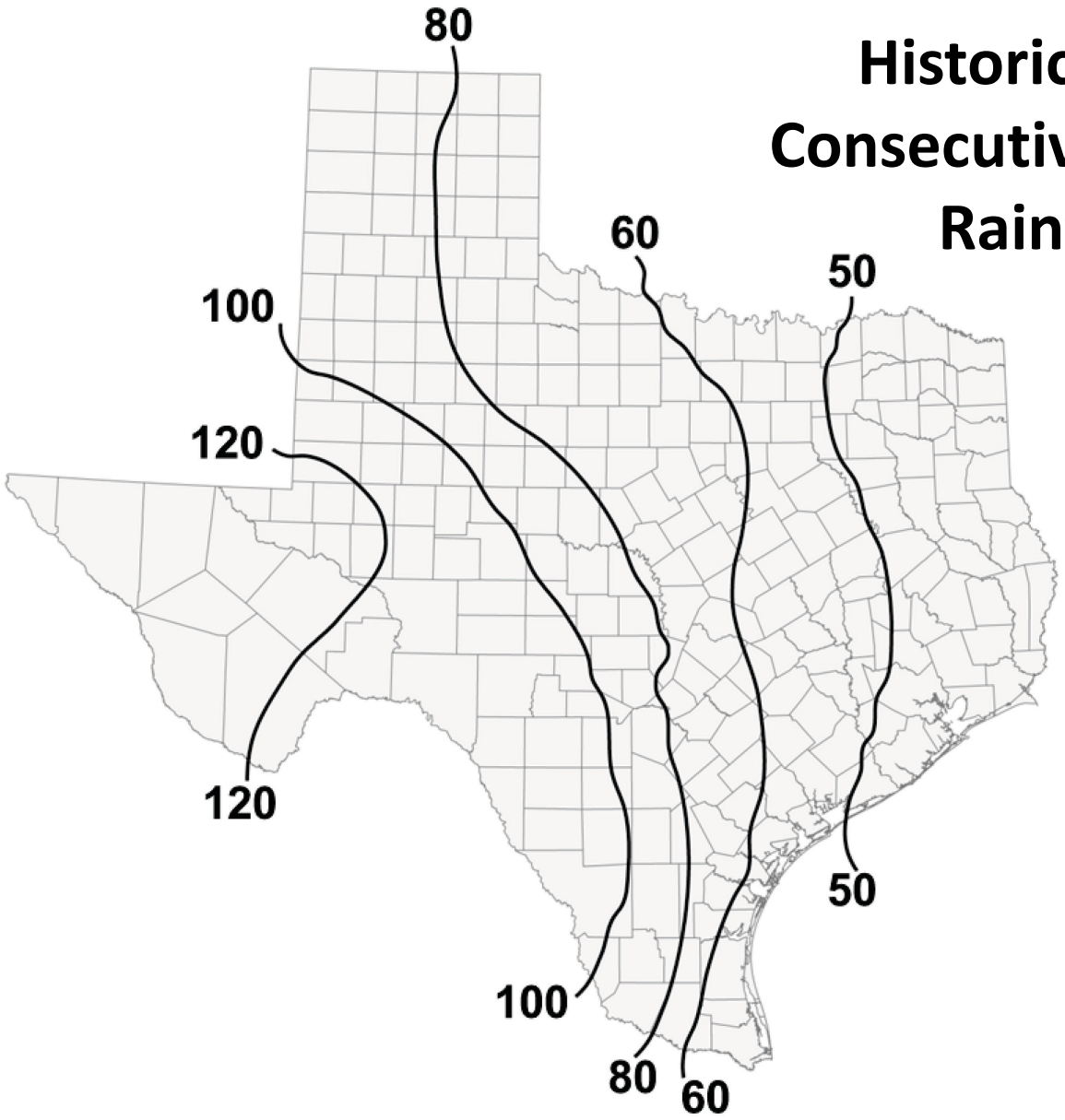
Supply and demand

- Supply
  - Rule of thumb

    about 600 gallons from a 1000 square foot roof per inch of rain

volume of harvested rainwater (gallons)= roof area (ft^2)× rainfall (in)× collection efficiency (0.85)× 0.62 (gal/ft^2/in of rain)

Historical Maximum Consecutive Days Without Rainfall (2005)



Important considerations

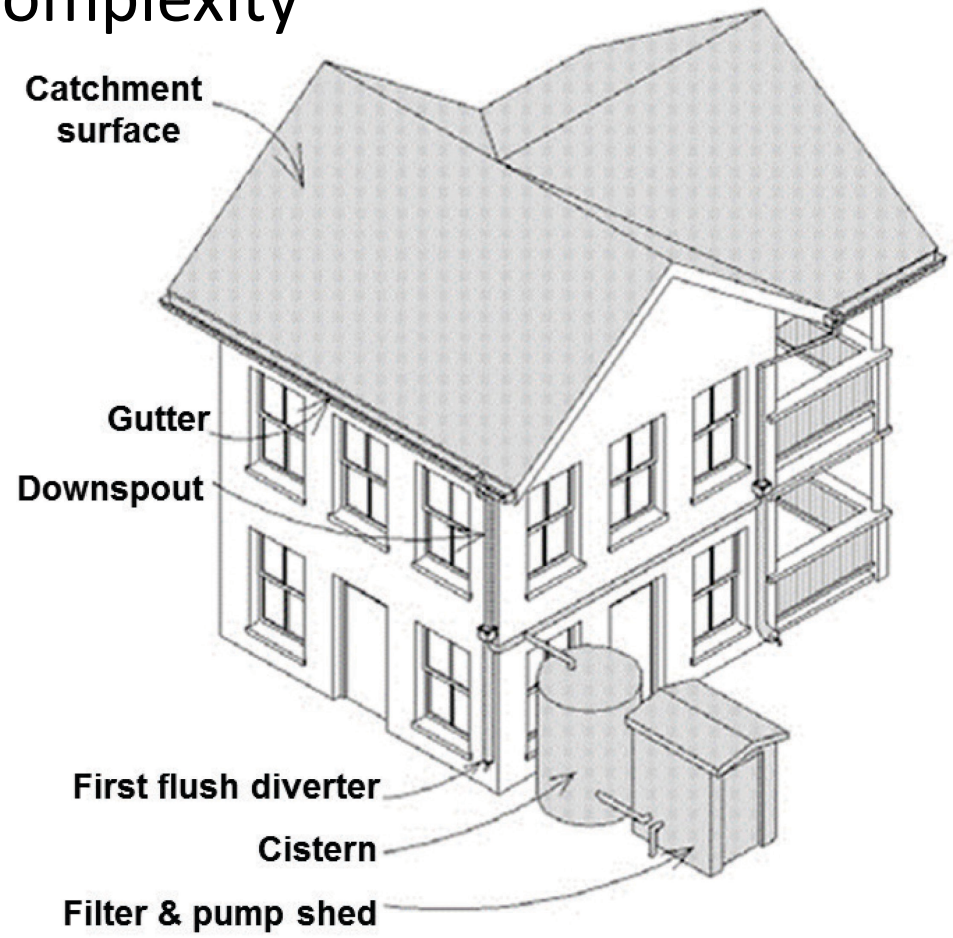
→Applicable laws

→Supply and demand

→**Capital costs and maintenance**

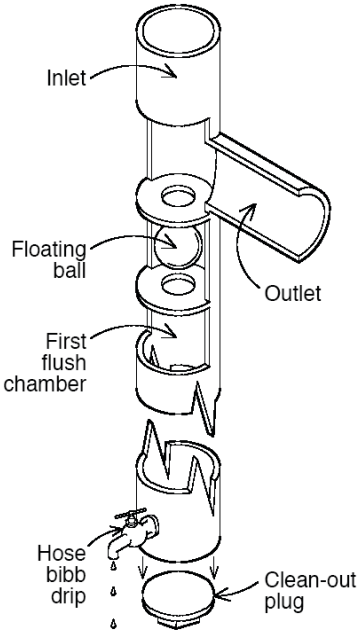
Design considerations

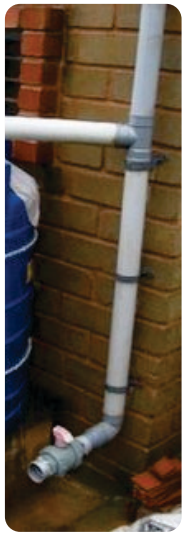
- system complexity



Design considerations

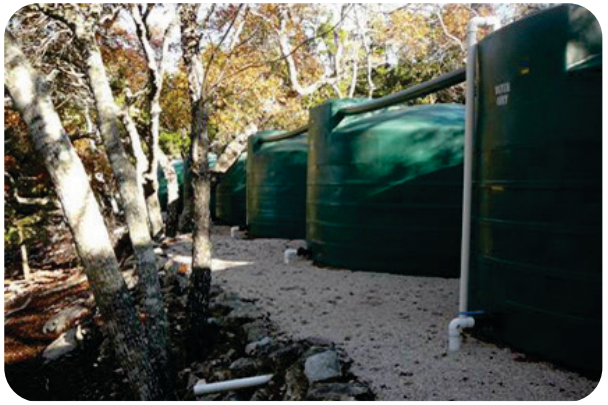
- roof, gutters, downspouts





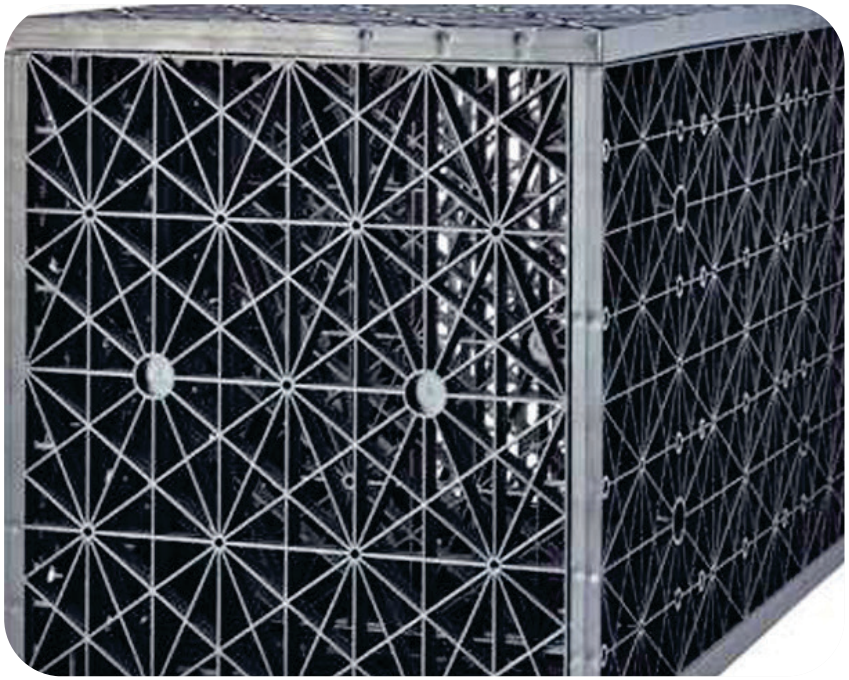
Design considerations

- storage



Large tanks (approximately 80,000-gallon total capacity) at the Willow City Fire Department ; water is used for fighting fire.

Medical Center, Webster (approximately 175,000 gallon capacity) with concrete culverts under parking lot and green roof; water used for irrigation and toilet flushing.



Texas A&M University, College Station (approximately 37,400 gallon capacity); cisterns consist of plastic modular cells buried under garden; non-potable use.

TWDB contact information

Kevin Kluge

Director

Conservation & Innovative Water Technologies

512-936-0829

Kevin.kluge@twdb.texas.gov

www.twdb.texas.gov/innovativewater