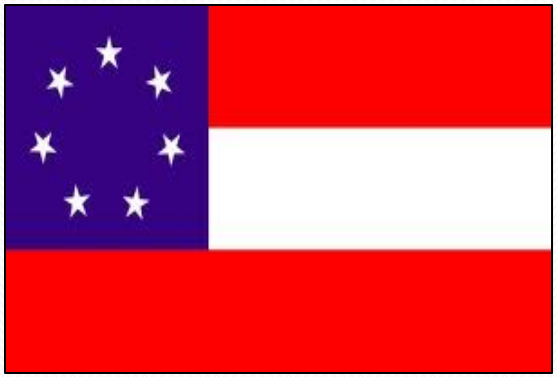
# The Edwards Aquifer Recovery Implementation Program

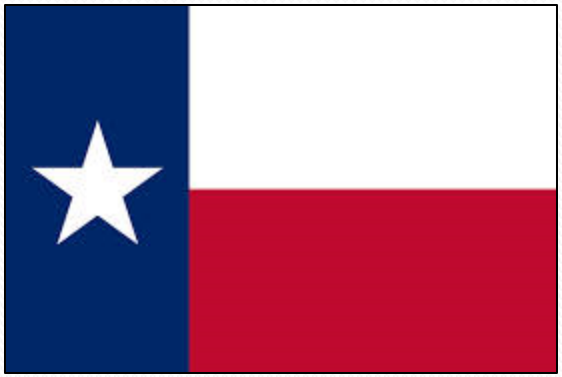
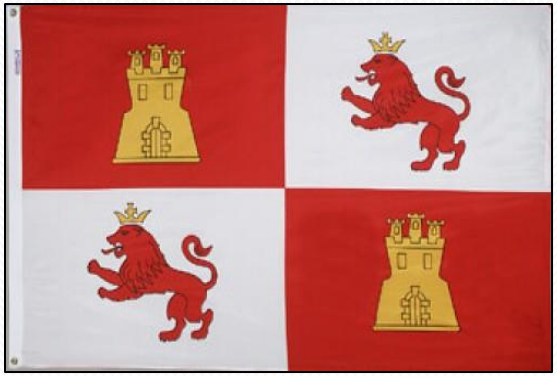
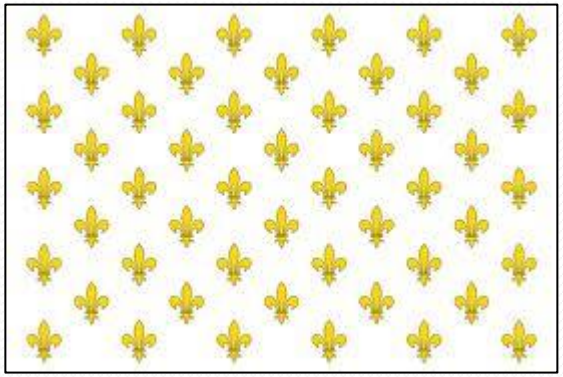
## A Community-based Solution

A Partnership and Community Collaboration Academy
Case Study
April 09, 2014

# Water Law in Texas

Water law in Texas reflects the area's history including the influence of six different legal codes since Spain first claimed the area in 1519.



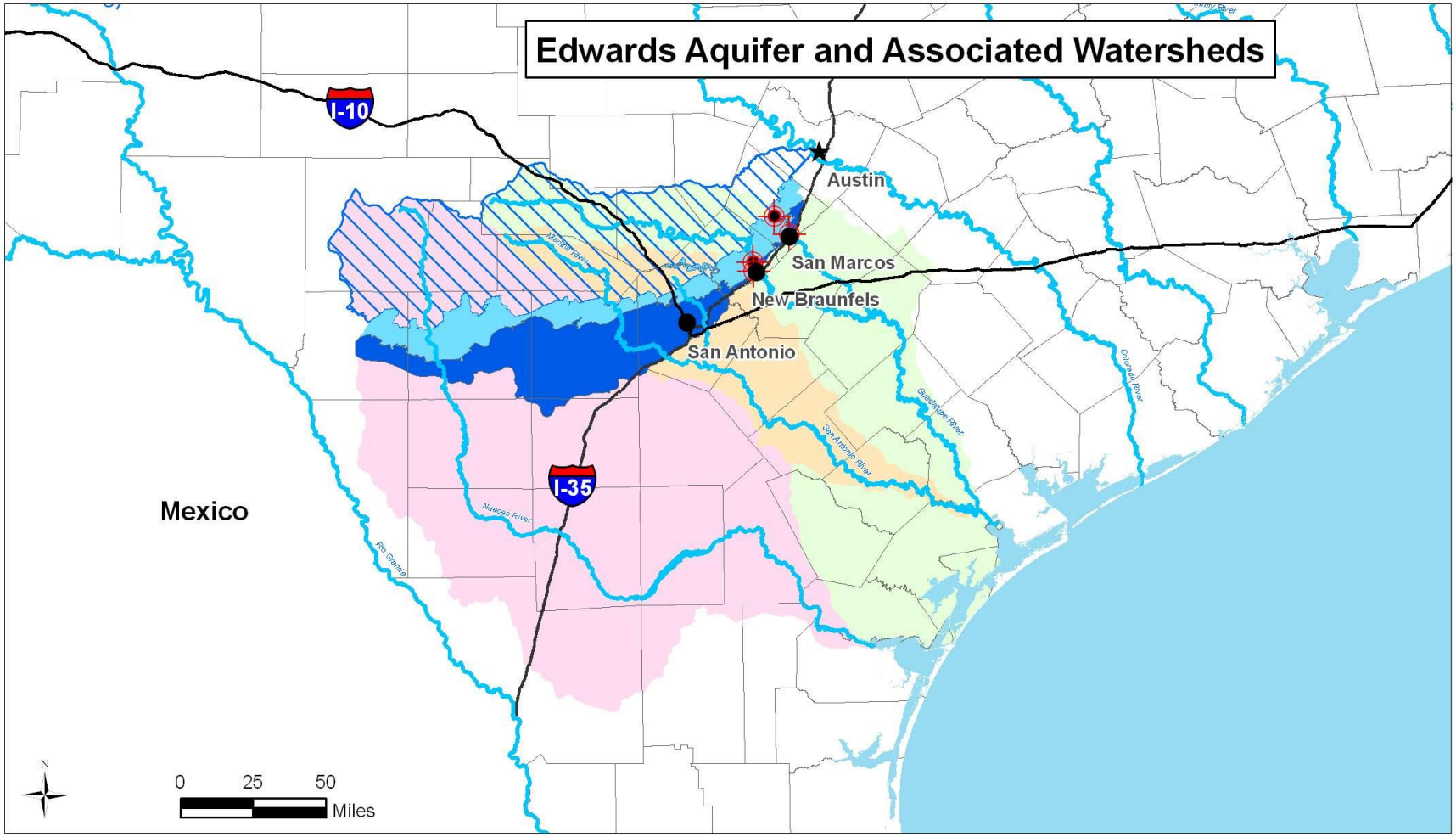





# In Texas, Water ≠ Water

Texas law does not recognize any connection between groundwater and surface water.

Though these waters are interconnected and inseparable, the State treats groundwater and surface water as discrete entities.

Surface water is considered property of the state and is highly regulated, while groundwater has long been managed under the “rule of capture.”




Spring Locations

**Edwards Aquifer Zones**

- Artisian
- Recharge
- Contributing
- Guadalupe River watershed
- Nueces River watershed
- San Antonio River watershed

**Edwards Aquifer downstream associated species**

| | | |
|---|---|---|
| Birds | Whooping crane (Grus americana) | Endangered |
| Clams | False spike (Quincuncina mitchelli) | Under Review |
| Clams | Smooth Pimpleback (Quadrula houstonensis) | Under Review |
| Clams | Texas Fawnsfoot (Truncilla macrodon) | Under Review |
| Clams | Texas Pimpleback (Quadrula petrina) | Under Review |
| Clams | Texas heelsplitter (Potamilus amphichaenus) | Under Review |
| Clams | Golden orb (Quadrula aurea) | Under Review |

# The Primary Water Source for Central Texas

The Edwards Aquifer runs approximately 180 miles from near the Rio Grande to the heart of Central Texas and is more than 40 miles wide in places.

The Edwards Aquifer is a limestone karst aquifer that rapidly recharges and discharges water through an interconnected system of caves and tunnels.

Numerous springs flow from the Edwards Aquifer, including two of the largest in the southwestern US: Comal Springs and San Marcos springs.

**The Edwards Aquifer supplies the water needs of over 2 million people, including the nation's 7th largest city (San Antonio).**

# The Edwards Aquifer is like a Leaky Bucket

**With a bunch of straws in it…**

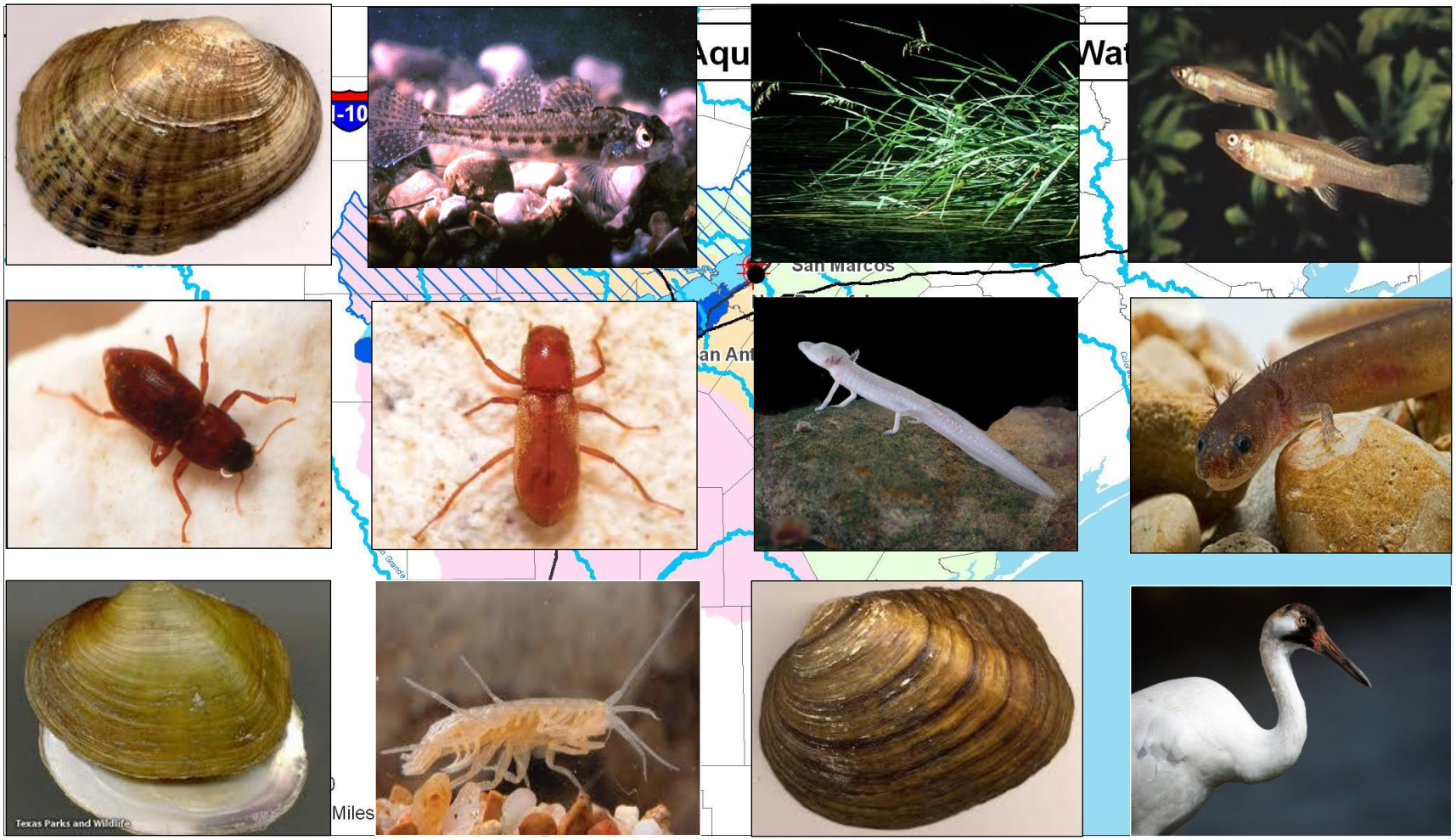
# The Endangered Species Act

The ESA was passed into law in 1973:

*"to provide a means whereby the **ecosystems** upon which endangered species and threatened species depend **may be conserved**"*

*"It is further declared to be the **policy of Congress that Federal agencies shall cooperate with State and local agencies** to resolve water resource issues in concert with conservation of endangered species"*

-ESA, Section 2 (b) and (c)

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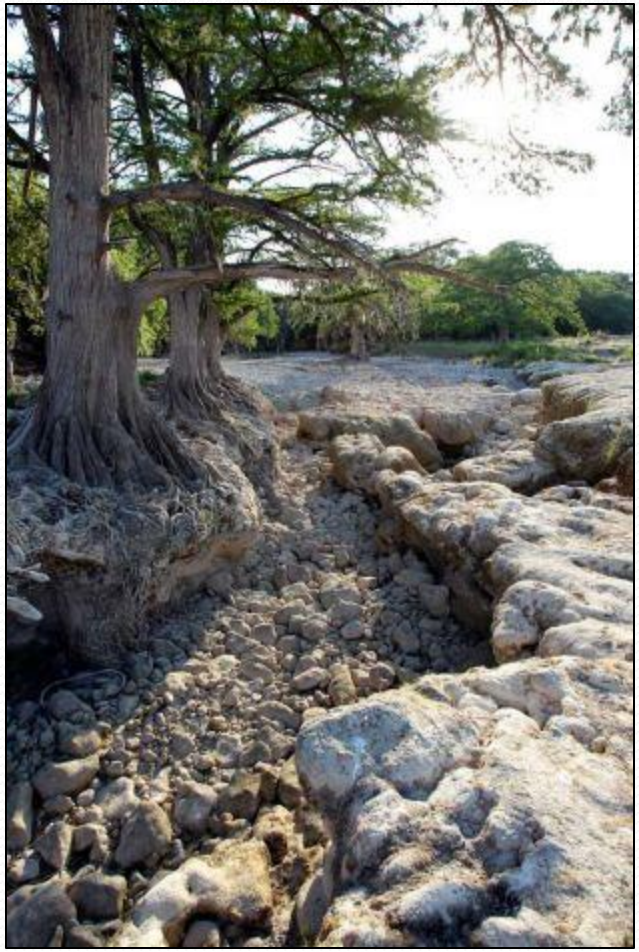
# South Central Texas and Drought



Droughts are common in the region, though they are typically short in duration and of low intensity.

Most droughts in the area last for less than a year, and dendrochronology data suggests that droughts of three years or longer have only occurred four times since 1700.

Three of those four events occurred during the 1700's, but the most severe occurred just 60 years ago.

# The Drought of Record

Texas experienced a seven-year drought from 1949 through 1956.

The severe drought conditions, when combined with pumping from the aquifer, resulted in the cessation of springflow at Comal Springs. The Comal River did not flow for more than 4 months. San Marcos Springs dropped to the lowest flows ever recorded.

Local communities and wildlife suffered.

This event extirpated the fountain darter from Comal Springs and the Comal River.

# A Brief History of the Conflict

In May of 1991, the Sierra Club sued Texas and the USFWS for failing to enforce the ESA over the state's "rule of capture".

Sometimes referred to as the "Rule of the Largest Pump", this approach allowed any landowner to pump any volume of groundwater they could "put to good use".

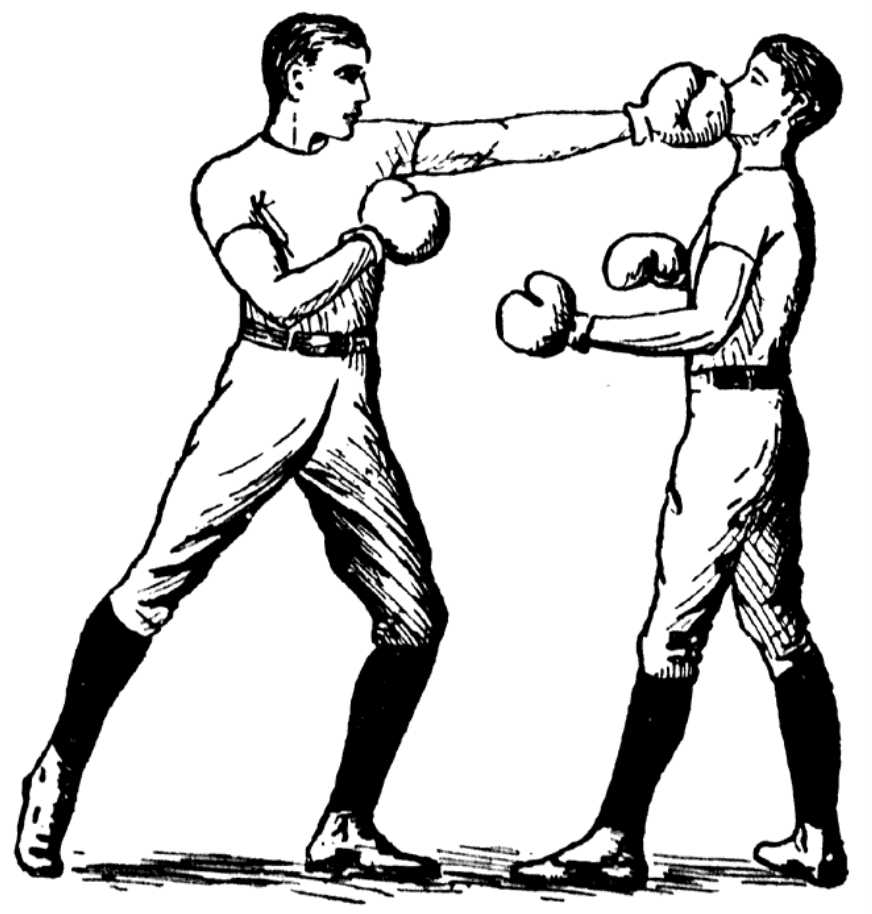
The Living Waters Catfish Farm provided the impetus for the legal action that would change state law and management of the Aquifer.

The facility drilled what was the world's largest water well and began producing up to 40,000 gallons of aquifer water per minute. The catfish farm used as much water as 250,000 people each day.

# “Whiskey is for Drinking, Water is for Fighting”

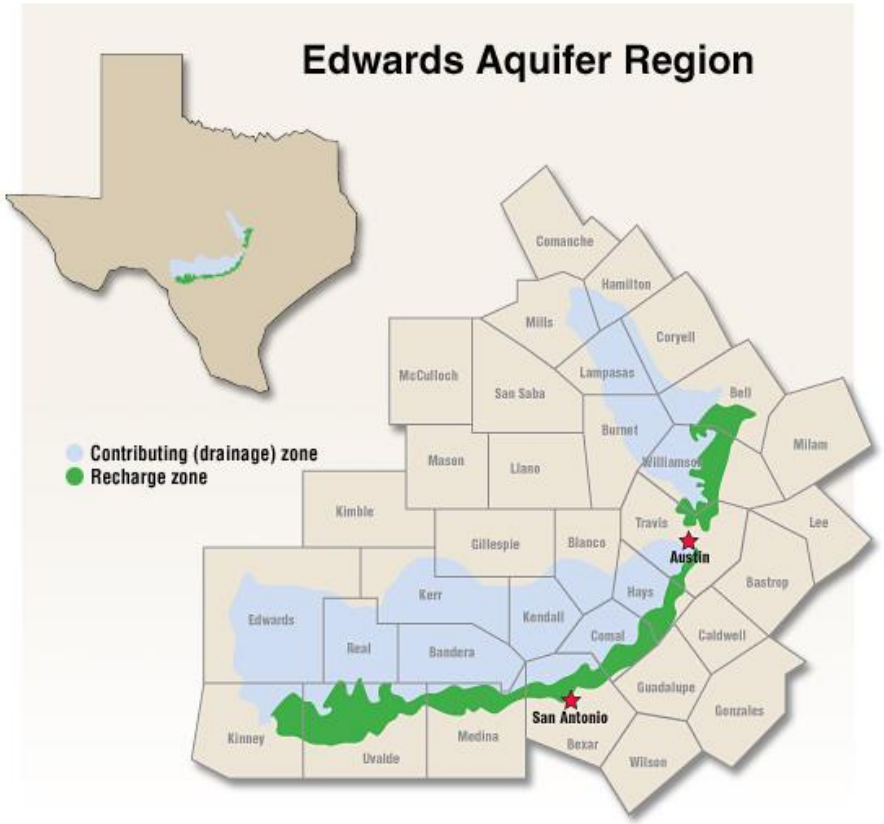
The fighting continued, mostly in courts of law, for years…

Meanwhile, the Texas population was experiencing one of the fastest rates of growth in the nation.



# The Edwards Aquifer Recovery Implementation Program (EARIP)

The Service initiated a stakeholder-based effort in 2006 seeking to balance human needs with the recovery of listed species dependant on the springs and river ecosystems associated with the Edwards Aquifer




From the contributing zone of the Edwards Aquifer, water flows south and east across the recharge zone. The Edwards is a karst aquifer, characterized by sinkholes, sinking streams, caves, large springs, and a large subsurface drainage system. The aquifer is so permeable that groundwater levels respond quickly to rainfall.

*TCEQ map for general illustration only; not official boundaries.*

# More than 40 Stakeholders…

### *Industry*
Alamo Cement Company
Dow Chemical

### *Utilities*
Bexar Metropolitan Water District
CPS Energy
East Medina Special Utility District
New Braunfels Utilities
San Antonio Water System

### *Commercial Entities*
Gilleland Farms

### *Non-Profit Organizations*
Aquifer Guardians in Urban Areas (AGUA)
Greater Edwards Aquifer Alliance (GEAA)
Greater San Antonio Chamber of Commerce
Guadalupe Basin Coalition
Guadalupe County Farm Bureau
Preserve Lake Dunlap Association
Regional Clean Air and Water Association
San Marcos River Foundation (SMRF)
South Texas Farm and Ranch Club
Texas Bass Federation
Texas Living Waters Project (NWF, Sierra Club, Galveston Bay Foundation)
Texas Wildlife Association

### *Local Governmental Entities*
Bexar County
City of Garden Ridge
City of New Braunfels
City of San Marcos
City of Victoria
Comal County

### *Private Individuals*
John M. Donahue, Ph.D
Larry Hoffman
Mary Q. Kelly

### *River Authorities*
Guadalupe-Blanco River Authority
Nueces River Authority
San Antonio River Authority

### *State Governmental Entities*
Texas Commission on Environmental Quality
Texas Department of Agriculture
Texas Parks and Wildlife Department
Texas Water Development Board

### *Other State Entities*
Edwards Aquifer Authority
South Central Texas Water Advisory Committee
Texas State University

# Agreed to Participate in a Consensus-Based Effort to Seek a Solution

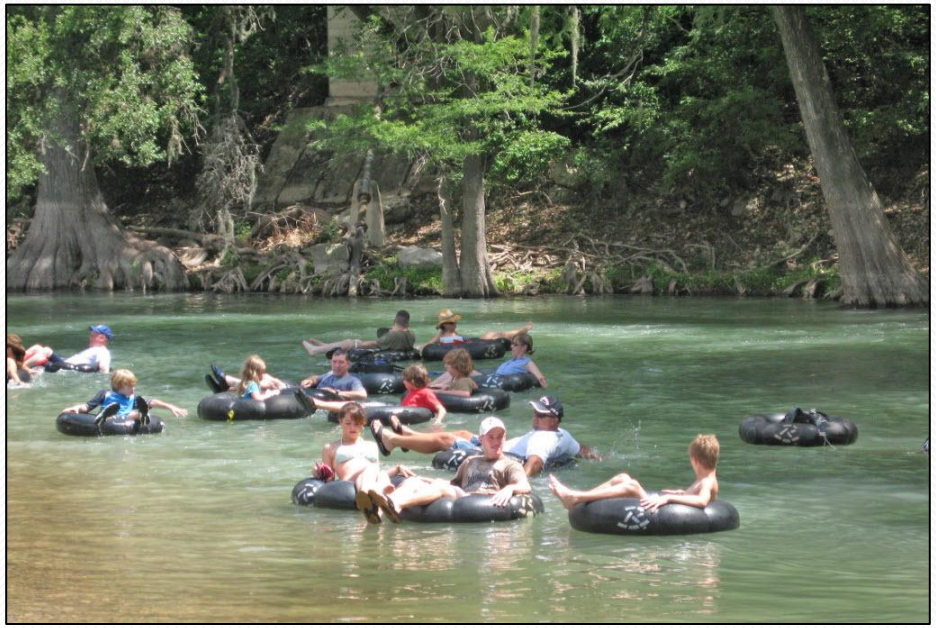
# Covered Activities

The regulation and production of groundwater in accordance with state law for irrigation, industrial, municipal, domestic, and livestock purposes

The use of the Comal River and San Marcos River for recreational uses

Operational and maintenance activities that could affect Comal Springs, San Marcos Springs, and the associated river systems

Activities necessary to manage potential habitat for the covered species within the permit area



# Conservation Measures

**Years of meetings, research, decision analysis, and negotiation eventually resulted in a consensus-based plan supported by all of the stakeholders**

**Actions include:**

- Restoration and enhancement of instream and riparian habitats for the covered species
- Minimization of impacts resulting from recreational uses of the rivers and springs
- Implementation of region-wide step-wise pumping restrictions tied to aquifer levels and springflow rates (“Critical Period Management”)
- Reduce or eliminate pumping most proximate to the springs during droughts by providing alternate water supplies (“ASR, or Aquifer Storage and Recovery” system)
- Reduce aquifer demand through implementation of a voluntary incentive program that pays participating agricultural users to forego pumping during droughts (“VISPO, or Voluntary Irrigation Suspension Program”)
- Reduce demand through programs that retrofit leaking municipal water systems, install high efficiency plumbing fixtures, convert landscape irrigation to treated wastewater use, utilize incentive programs to facilitate retrofit more efficient industrial and manufacturing water use systems, and create rain water harvesting programs (“Regional Water Conservation Program”)
- Water quality protection programs including septic system registration and permitting, prohibition of hazardous material transport within sensitive watersheds, household hazardous waste management programs, impervious cover and storm water mitigation programs
- Implement monitoring and adaptive management programs focused on long-term biological goals and recovery targets
- Support of USFWS research and refugia efforts in partnership with USFWS Fisheries and Ecological Services

# Timeline

| | |
|---|---|
| 1949-1956 | Texas suffers the most severe drought in recorded history<br>The spring-fed Comal River ceases flowing |
| 1960-1990 | Texas develops first “Statewide Water Plan”, though few proposals are implemented<br>State’s population doubles |
| 1991 | Environmental groups initiate legal action over management of the Edwards Aquifer and state’s “rule of capture”, and resulting “take” of threatened and endangered species |
| 1993 | Federal District Judge agrees with Plaintiffs, directs State to develop an aquifer management plan that ensures continual springflow supporting the system’s listed species even through a repeat of “drought of record” conditions |
| 1993-2006 | Multiple legal challenges and failed attempts to resolve management of the aquifer and species protections |
| 2006 | USFWS Proposes voluntary “Recovery Implementation Plan” approach and invites stakeholders from throughout the region to participate |
| 2007 | Texas Legislature directs 5 state agencies to participate in the emerging process<br>MOA formalizing commitment to consensus-based solution signed by more than 40 stakeholders<br>Group establishes “ground rules”, defines consensus as “solutions everyone can live with”<br>Stakeholders set ambitious schedule, established issue teams to focus on specific concerns and recommend solutions to the stakeholders<br>Digital, print, TV, and radio news media regularly attend and report on the well-attended monthly public meetings |

# Timeline

| | |
|---|---|
| 2009 | Professional facilitation team engaged to help stakeholders address most difficult issues |
| | Stakeholders agree that a USFWS Habitat Conservation Plan (HCP) and Endangered Species Act Permit will be needed to secure assurances and legal protections for participating stakeholders and government agencies |
| | Multiple proposed solutions begin to emerge, group agrees to fund multiple research and modeling efforts to identify most promising options |
| 2010 | Modeling results demonstrate that no single solution can maintain springflows during severe droughts without devastating regional economic impacts |
| | A “multiple solutions” approach begins to emerge, and researchers and modelers are tasked with optimizing scale, spatial and temporal factors under various drought conditions |
| 2011 | The Stakeholders agree to a series of linked minimization and mitigation measures that will ensure continual springflows and begin drafting an HCP that formalizes commitments to implement these actions |
| | Texas experiences the most severe one-year drought ever recorded |
| 2012 | A Draft Environmental Impact Statement is completed and announced in the Federal Register |
| | A 90-day comment period and 7 public hearings are conducted throughout the region to solicit additional input |
| | Public comments are incorporated into final documents and recommendations are submitted to the USFWS Regional Office |
| 2013 | USFWS issues the Federal Fish and Wildlife Permit and the EARIP Partnership begins implementing the HCP on March 18th, 2013 |

# Summary

Balancing water demands for people and wildlife resulted from a multi-year consensus-based effort involving stakeholders from throughout the region

The program is implementing stakeholder-developed measures to conserve threatened and endangered species

The EARIP developed an aquifer management plan that will ensure springflows through a repeat of DOR-like conditions that years of legal fighting could not deliver

The U.S. Fish and Wildlife Service is committed to continuing to partner with the EARIP stakeholders to implement the plan

# Keys to Success

Get past ***positions*** and focus on ***interests***:  Stakeholders have to agree upon common goals, and must “own” their reasons for participating

Build and maintain ***relationships***:  Conservation requires people, and people are willing to partner with those they trust.

Establish ***ground rules***:  Take the time to decide how to decide. We agreed to come to decisions by consensus, which we defined as solutions that everyone could live with.

# 2013 Partnership in Conservation Awards Ceremony

# For more information about the EARIP, please contact:

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**www.fws.gov/southwest/es/AustinTexas/index.html**

**Or visit:**
**www.eahcp.org**

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**http://www.eahcp.org/index.php/eahcp_video**