

# **Water Supply Challenges Facing the Lower Colorado River Basin**

Gulf Coast Economic Development Board

**October 14, 2011**

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# Overview

- **Who is LCRA?**
- **Population growth in lower basin**
- **Drivers of demand in lower basin**
- **Current sources of supply**
  - **Impacts of recent droughts**
- **Future water supply plans**
  - **Region K**
  - **LCRA's Water Supply Resource Plan**
  - **LCRA's Water Supply Strategies for Agriculture**

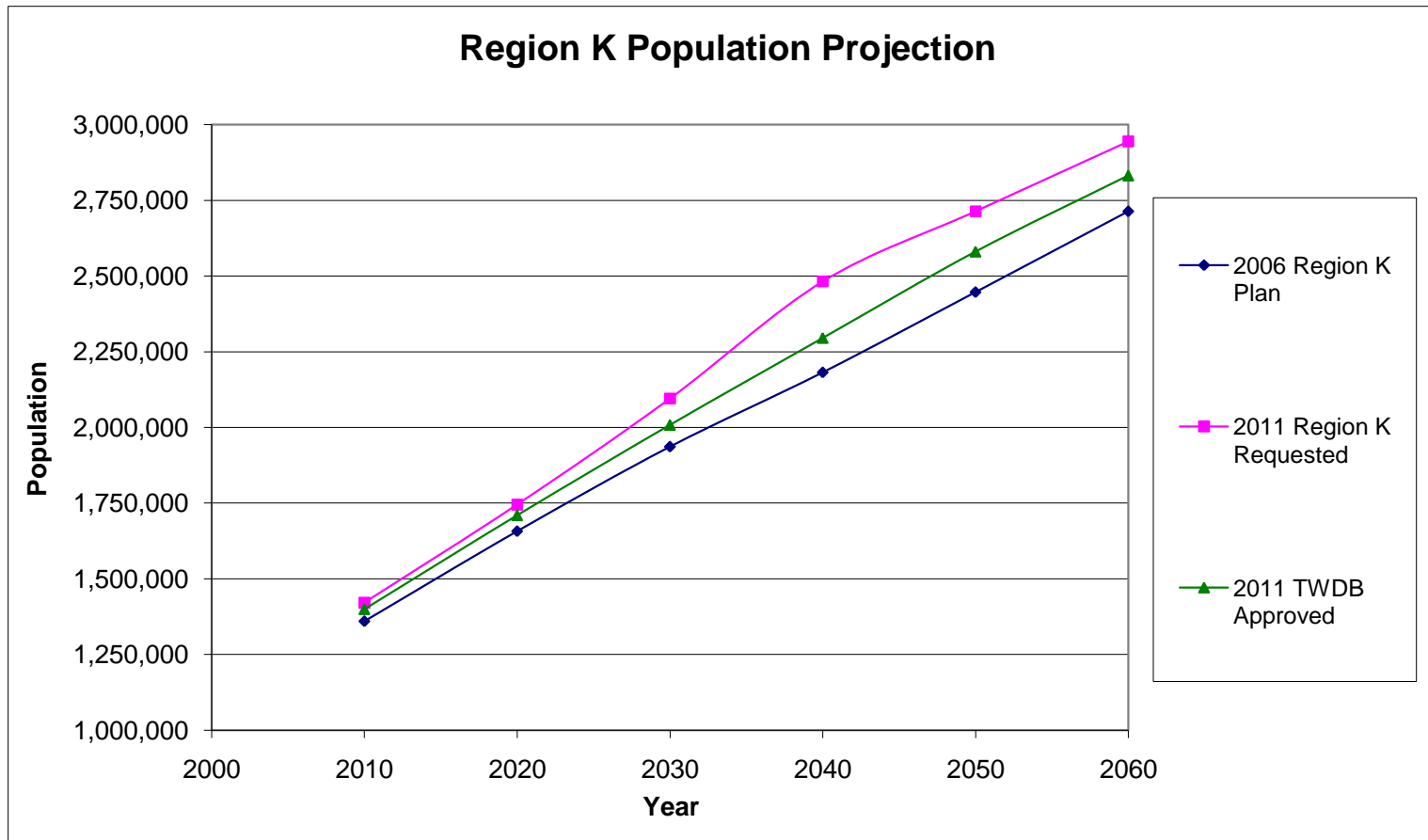
# LCRA at a Glance

LCRA serves the people of Texas

- Water
- Electric
- Community Services



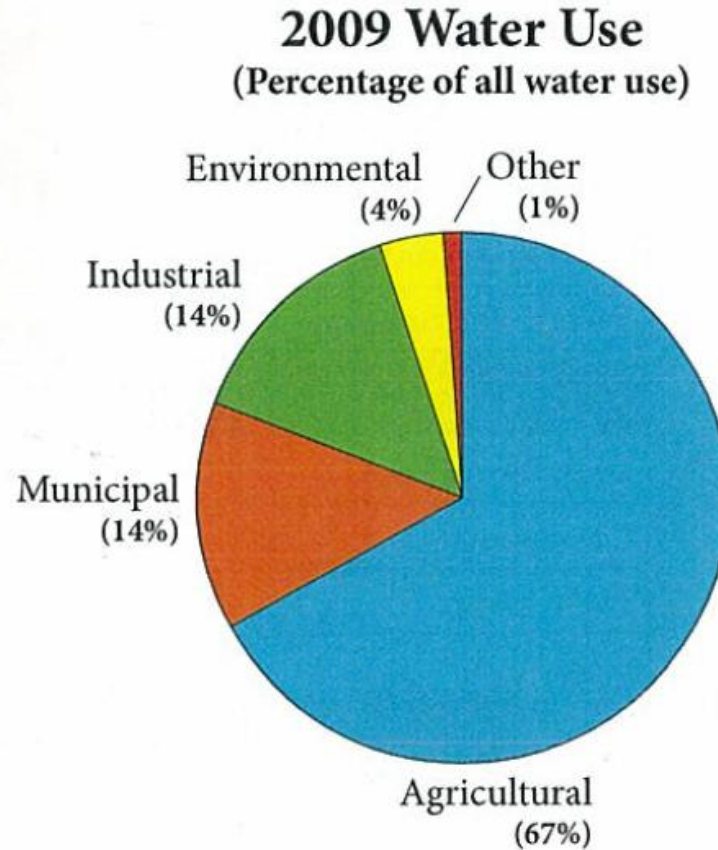
# Population Growth in Lower Colorado River Basin



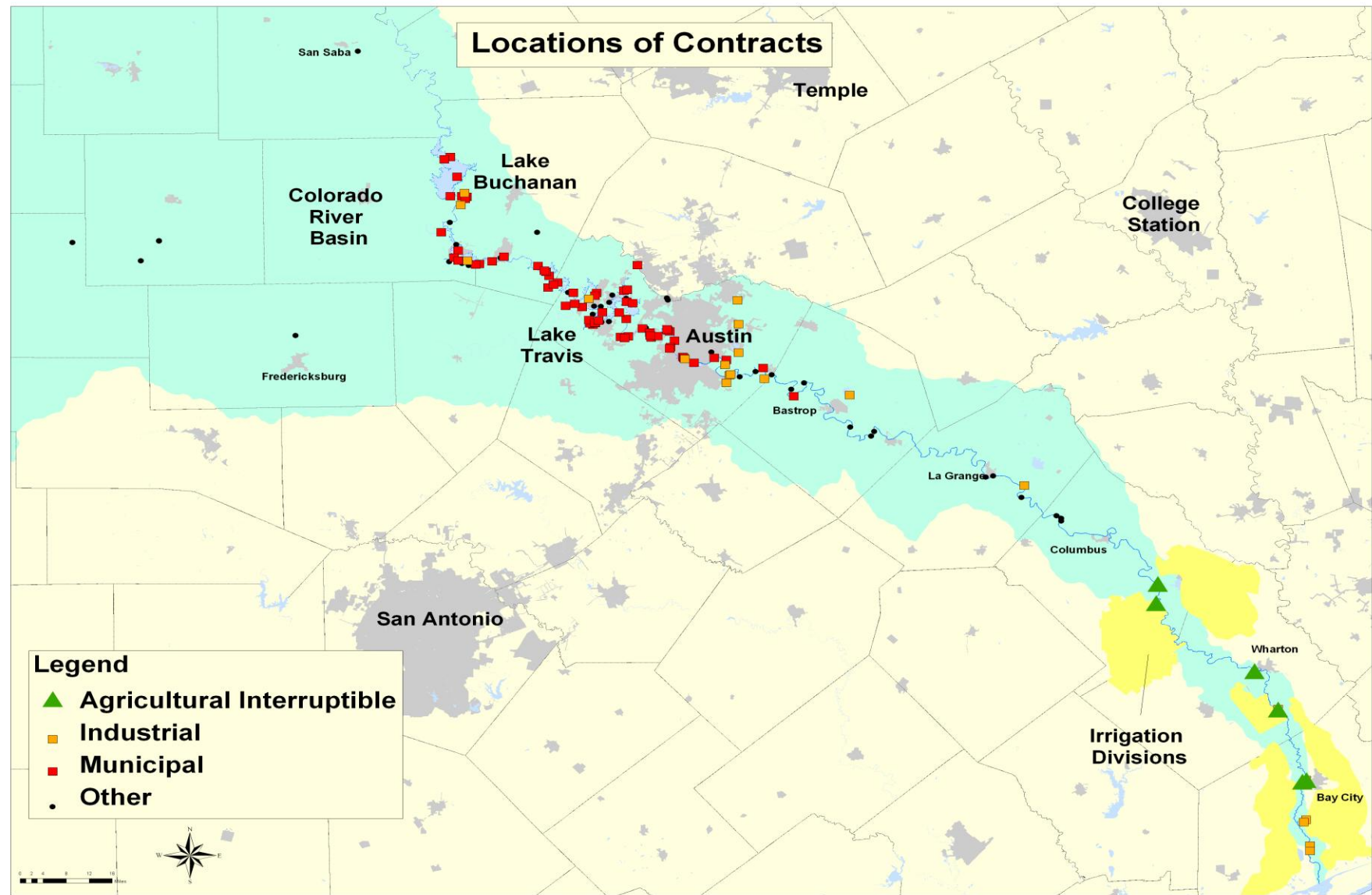
# Where is Population Growth Occurring?

County	2000 Census	2010 Census	Population Change
Bastrop	57,733	74,171	16,438
Blanco	8418	10,497	2079
Burnet	34,147	42,750	8603
Colorado	20,390	20,874	484
Fayette	21,804	24,554	2750
Gillespie	20,814	24,837	4023
Llano	17,044	19,301	2257
Matagorda	37,957	36,702	-1255
Mills	5151	4936	-215
San Saba	6186	6131	-55
Travis	812,280	1,024,266	211,986
Wharton	41,188	41,280	92
Total	1,083,112	1,330,299	247,187

# How is LCRA's Water Currently Being Used?

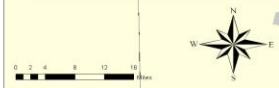


# Locations of Contracts



**Legend**

- ▲ Agricultural Interruptible
- Industrial
- Municipal
- Other



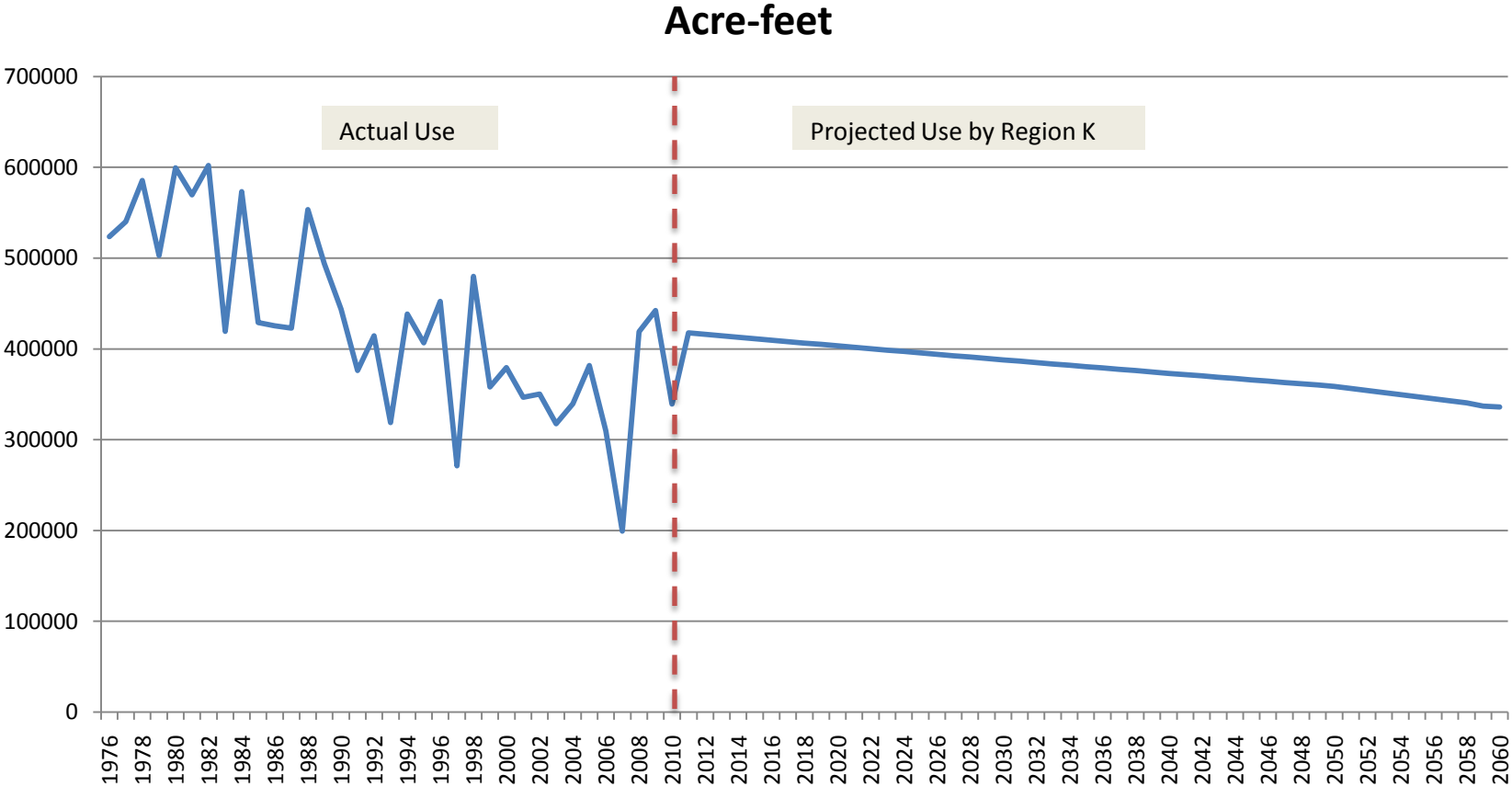
# Total Water Use in Colorado, Wharton & Matagorda Counties for Agricultural Purposes

(includes both surface and ground water)

County	2000	2010	2020	2030
Colorado	210,242	200,822	192,465	184,380
Wharton	191,241	182,985	176,441	170,127
Matagorda	205,990	193,048	186,042	179,353
Total	607,473	576,855	554,948	533,860

# Total Ag Water Use in Colorado, Wharton & Matagorda Counties from LCRA Supplies

(surface water only)

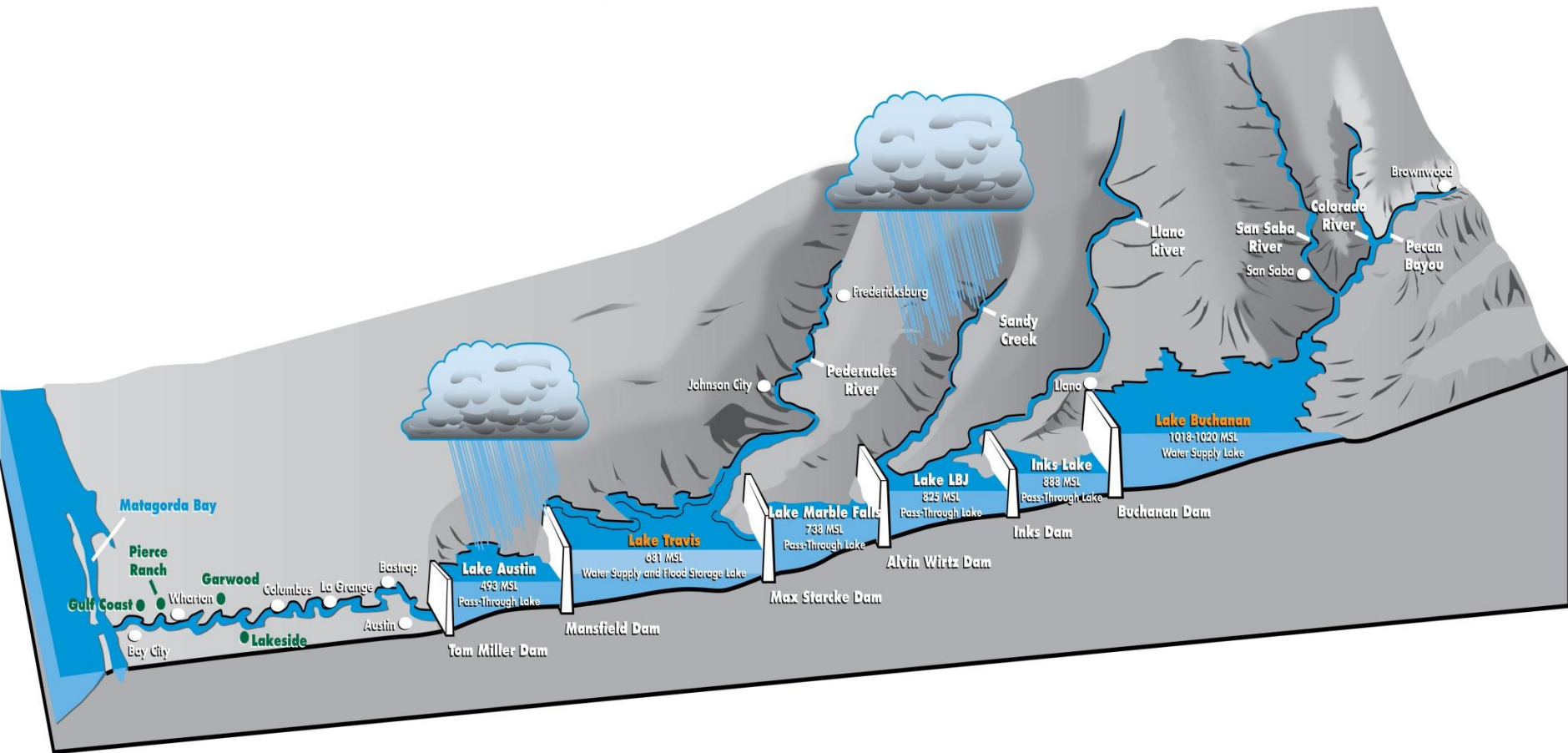


# Surface Water

- **Water owned by state (in trust for public)**
- **Regulated by state (TCEQ) Texas Commission on Environmental Quality**
- **Chapter 11, Texas Water Code**
- **Rules- 30 TAC Chapters 288, 295 & 297**



# LCRA's Current Water Supplies



**Run-of-River Rights = 636,750 AFY**

- Garwood 133,000 AFY
- Gulf Coast 262,500 AFY
- Lakeside 186,250 AFY
- Pierce Ranch 55,000 AFY

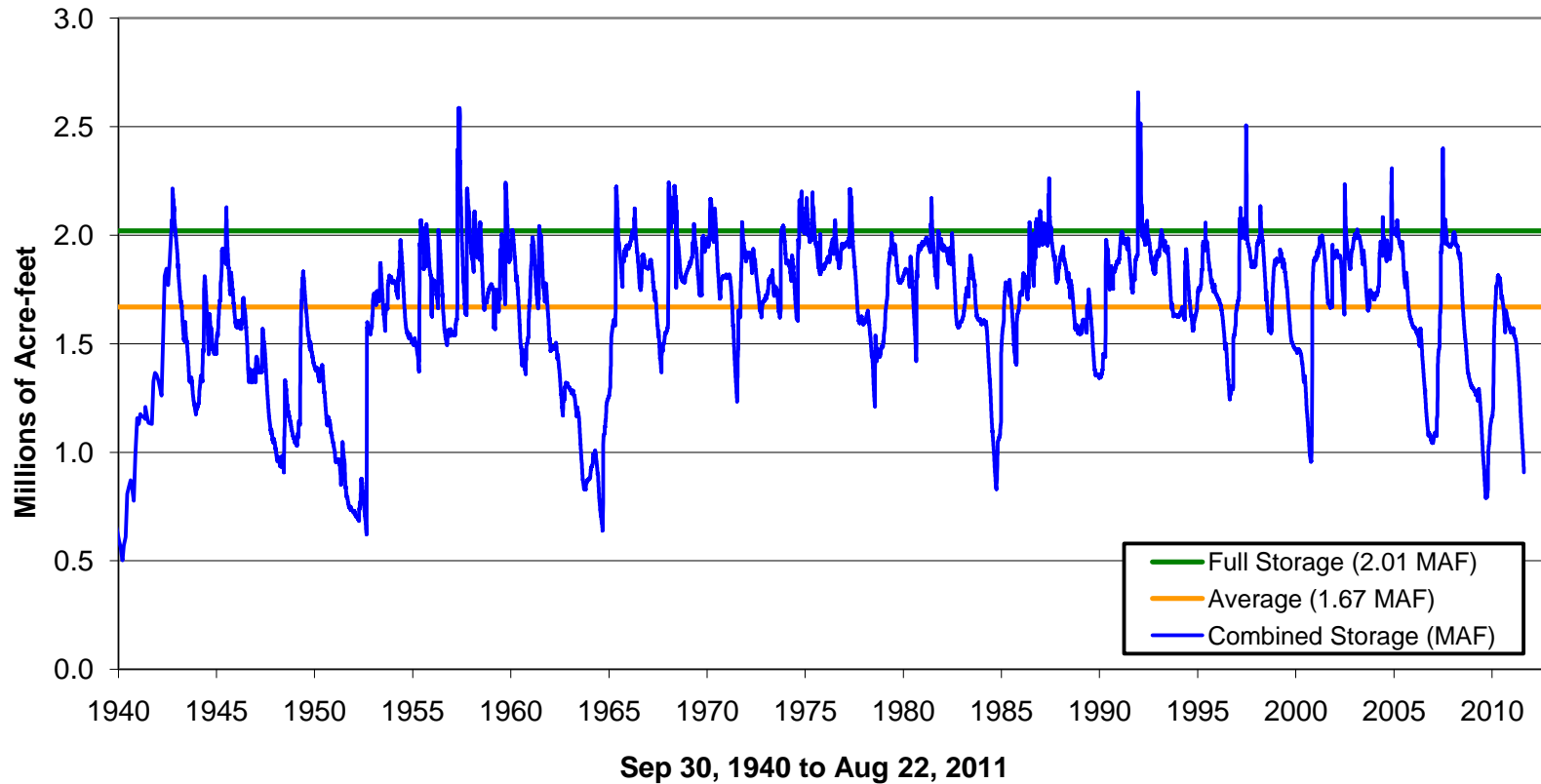
Estimated Firm Supply Range: 200,000-500,000 AFY

**Lakes Buchanan and Travis**

Firm Yield = 445,226 acre-feet per year (AFY)

# History of Storage in Lakes Buchanan and Travis

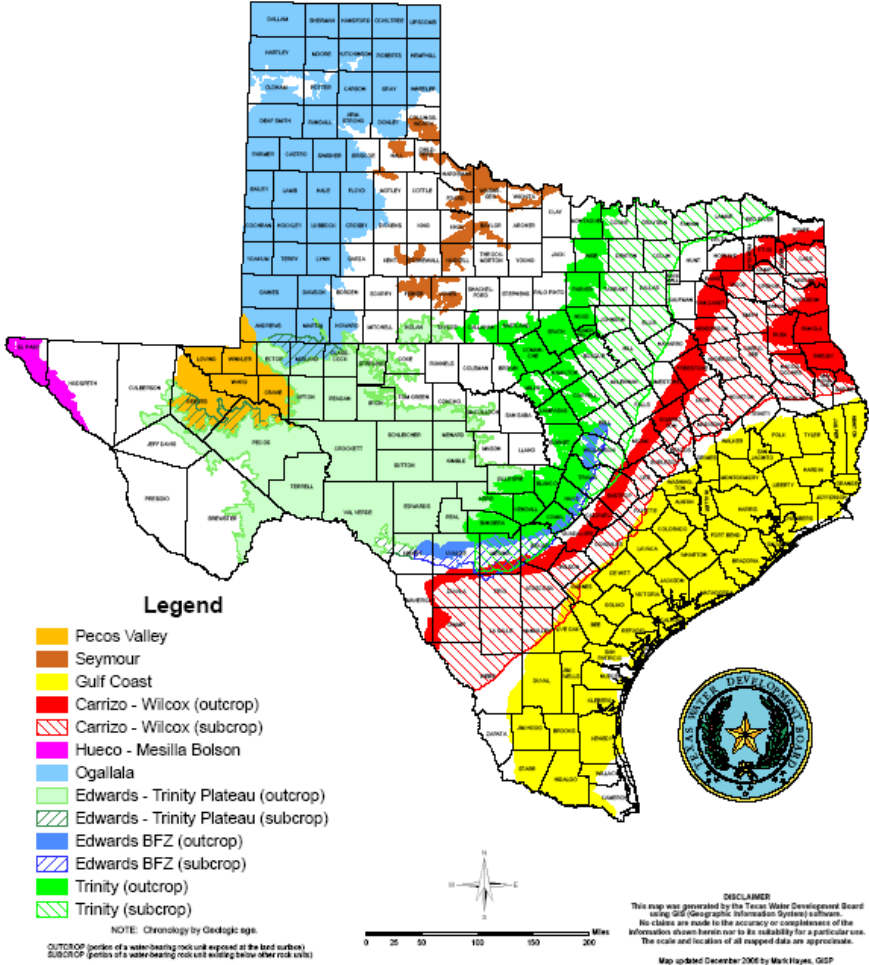
Total Combined Storage in Lakes Buchanan and Travis



# Groundwater

- Rule of Capture (Common law right- from 1904 *East* case)
- Statutory definition-water percolating below the surface of the earth.
- Regulated by Groundwater Conservation Districts (GCD) - since 1949
- Chapter 36, Texas Water Code

# Major Aquifers of Texas



# Groundwater

- **HB 1763**
  - **Groundwater Management Areas (GMAs)**
  - **Desired future condition (DFC)**
    - **GCDs in GMA determine**
      - **By Sept 1, 2010 & every five years thereafter**
      - **By two-thirds vote**
  - **Modeled available groundwater (MAG)**
  - **RWPG must use the MAG**

# Planning for the Future

- **Short-term Planning:**
  - **Water Management Plan (WMP)**
    - 10-year planning horizon (traditionally)
- **Long-term Planning**
  - **State (SB- 1) Regional Plan**
    - 50-year planning horizon
    - LCRA-SAWS Water Project
  - **Water Supply Resource Plan**
    - Water Supply Strategies for Ag

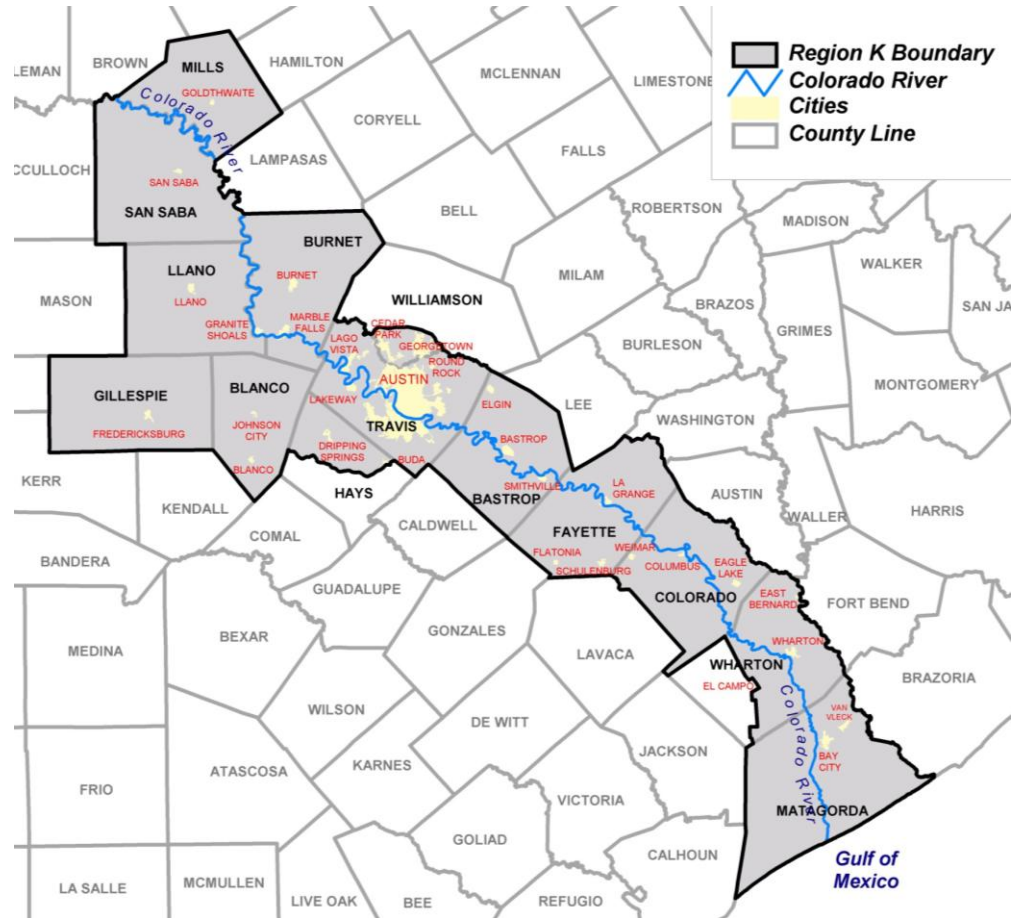
# **Water Management Plan – What is it?**

- **Amendment to the water rights for lakes Buchanan & Travis**
- **Pertains to day-to-day operation of lakes Buchanan & Travis**
- **Developed in 1989 & amended 3 times**
- **Any changes proposed must be approved by LCRA Board and TCEQ**
- **Latest update submitted to TCEQ on May 2003- approved in January 2010**
- **Next update in progress**

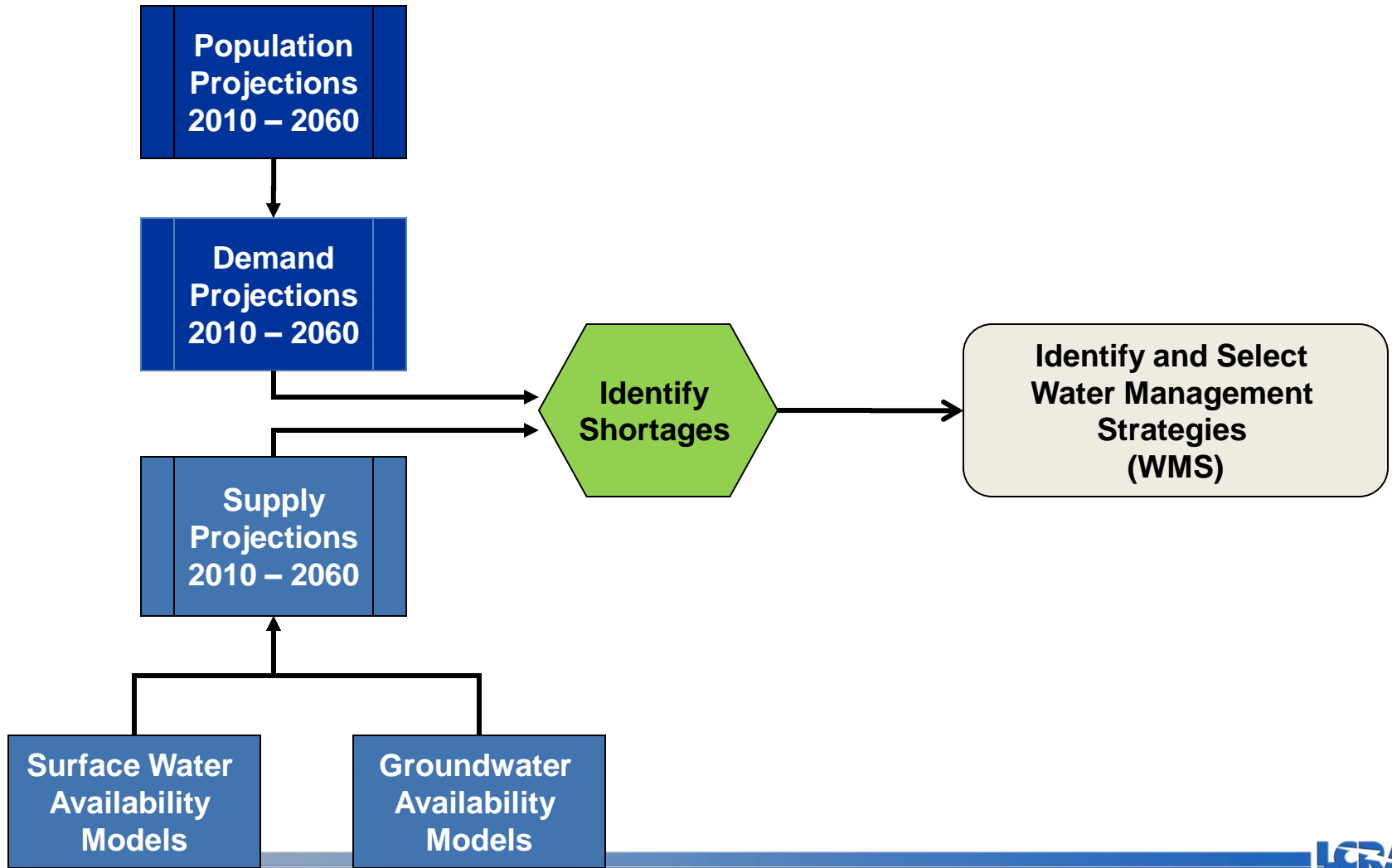
# Water Management Plan

- Allows two types of water use from lakes Buchanan and Travis
  - Firm & Interruptible
- Firm water given priority over interruptible water supply
- Downstream irrigation and environment use majority of interruptible stored water

# SB -1 Regional Planning “Region K”



# Regional Planning Process



# LCRA Municipal Strategies

	2010	2030	2060
Supplies	203,000	212,000	212,000
Strategies			
LCRA contract amendments	2,900	5,200	9,200
Austin contract transfers		6,800	10,000
Elgin			3,000
Goldthwaite	300	300	300
<b>Total</b>	<b>206,200</b>	<b>224,300</b>	<b>234,500</b>

# Agriculture Irrigation New Strategies

Water Management Strategy	2010	2020	2030	2040	2050	2060
Expansion of Gulf Coast Aquifer	0	10,000	10,000	10,000	10,000	10,000
Off-Channel Storage in Reservoirs	0	0	30,000	40,000	40,000	40,000
On-Farm Conservation	0	20,000	20,000	30,000	35,000	35,000
Irrigation District Delivery System Improvements	0	20,000	25,000	40,000	48,000	48,000
Conjunctive Use of Groundwater Resources	0	0	0	0	15,000	15,000
Enhanced Recharge of Groundwater	0	0	0	0	17,200	17,200
<b>Total</b>	<b>0</b>	<b>50,000</b>	<b>85,000</b>	<b>120,000</b>	<b>165,200</b>	<b>165,200</b>

# Steam Electric Strategies

	2010	2030	2060
Ferguson	1,500	1,500	15,000
Lost Pines Power Park	12,000	16,000	19,500
FPP - Austin	13,300	16,700	30,400
FPP - LCRA	15,000	15,000	38,100
STPNOC	32,500	32,500	32,500
White Stallion		30,000	30,000
<b>Demands</b>	<b>74,300</b>	<b>111,700</b>	<b>165,500</b>
<b>Supplies</b>	<b>87,600</b>	<b>91,600</b>	<b>105,820</b>
<b>Strategies</b>			
LCRA contract amendment			2,780
New Austin contract at FPP			26,900
New White Stallion contract		30,000	30,000
<b>Total</b>	<b>87,600</b>	<b>121,600</b>	<b>165,500</b>

# Planning for future generations

## Water Supply Resource Plan

- A roadmap for how LCRA can meet water needs in the future, considering the potential costs.



Public input meetings

# **Water Supply Resource Plan**

## **Water Supply Strategies**

- **Strategy I – Using existing supplies**
- **Strategy II – Using existing supplies plus enhanced conservation**
- **Strategy III – Using existing supplies, plus current conservation and new projects**

# Water Supply Resource Plan

- **Strategy II – Using existing supplies plus enhanced conservation (80,000 acre-feet per year after 40-years)**
  - **enhanced conservation only**
  - **enhanced conservation plus 118,000 acre-feet of agricultural conservation**
  - **enhanced conservation plus 70,000 acre-feet of demand reduction through wastewater reuse**

# Water Supply Resource Plan

- **Strategy III - Using existing supplies plus current conservation (40,000 acre-feet per year) plus new supply projects:**
  - off-channel reservoir(s)
  - off-channel reservoir with pipeline to Travis County area
  - brackish groundwater desalination in Matagorda County,
  - Bastrop County Aquifer Storage & Retrieval (ASR)
  - import groundwater to Travis County area

# Water Supply Strategies for Agriculture



PERIOD OF RECORD

DROUGHT

## ON FARM

- Land-leveling
- Multiple inlets
- Convert canals to pipes

Up to 40,000 af/yr

## IN - DIVISION

- Vegetation control
- Canal lining/ piping
- Automated control gates and delivery structures
- SCADA

Up to 40,000 af/yr

## RESERVOIR PROJECTS

- Channel dams @ pump stations
- Off-channel at each irrigation division (10 to 20,000 af each)
- Other locations

Up to 40,000 af/yr

## ENHANCED GROUNDWATER RECHARGE

- Conjunctive use of surface and groundwater supplies
- Water banking for recovery during drought periods

Up to 100,000 af/yr

AG WATER SUPPLY

# Questions



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