



WATER FORWARD
INTEGRATED WATER RESOURCE PLAN

Austin Integrated Water Resource Planning Community Task Force

Packet Index

August 7, 2018

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Austin Integrated Water Resource Planning Community Task Force
August 7, 2018 – 4:00 p.m.
Waller Creek Center, Room 104
625 East 10th Street
Austin, Texas 78701

For more information go to:
[Austin Integrated Water Resource Planning Community Task Force](#)

AGENDA

Voting Members:

Sharlene Leurig - Chair	Marianne Dwight	Sarah Richards
Jennifer Walker – Vice Chair	Diane Kennedy	Lauren Ross
Todd Bartee	Perry Lorenz	Robert Mace
Clint Dawson	Bill Moriarty	

Ex Officio Non-Voting Members:

Austin Water: Greg Meszaros
Austin Energy: Kathleen Garrett
Austin Resource Recovery: Sam Angoori
Neighborhood Housing and Community Development: Rebecca Giello
Office of Innovation: Kerry O'Connor
Office of Sustainability: Lucia Athens
Parks and Recreation: Sara Hensley
Watershed Protection: Mike Personett

1. CALL TO ORDER – August 7, 2018, 4:00 p.m.

2. CITIZEN COMMUNICATION

The first 10 speakers signed up prior to the meeting being called to order will each be allowed a three-minute allotment to address their concerns regarding items not posted on the agenda.

3. APPROVAL OF MEETING MINUTES

- a. Approval of the meeting minutes from the June 5, 2018 Task Force meeting (5 minutes)

4. STAFF BRIEFINGS, PRESENTATIONS, AND OR REPORTS

- a. Recent Activities and Near-Term Schedule Update – City Staff (30 minutes)
 - a. Task Force Discussion and Input
- b. Staff Presentation on Draft Plan Report Version 3 - City Staff (60 minutes)
 - a. Task Force Discussion and Input

5. SUBCOMMITTEE REPORTS

6. VOTING ITEMS FROM TASK FORCE

- a. Discuss and consider action on changes to proposed meeting dates (10 minutes)

7. FUTURE AGENDA ITEMS

8. ADJOURN

Note: Agenda item sequence and time durations noted above are subject to change.

The City of Austin is committed to compliance with the American with Disabilities Act. Reasonable modifications and equal access to communications will be provided upon request. Meeting locations are planned with wheelchair access. If requiring Sign Language Interpreters or alternative formats, please give notice at least 2 days (48 hours) before the meeting date. Please call Austin Integrated Water Resource Planning Community Task Force, at 512-972-0194, for additional information; TTY users route through Relay Texas at 711.

For more information on the Austin Integrated Water Resource Planning Community Task Force, please contact Marisa Flores Gonzalez at 512-972-0194.

MINUTES



The *Austin Integrated Water Resource Planning Community Task Force* convened in a Special Called Meeting on June 5, 2018 at Waller Creek Center, Conference Rm 104, 625 E 10th Street, in Austin, Texas.

Members in Attendance:

Jennifer Walker – Vice Chair	Todd Bartee	Sarah Richards
William Moriarty	Lauren Ross	
Diane Kennedy	Clint Dawson	Perry Lorenz

Ex-Officio Members in Attendance:

Chris Herrington, Lucia Athens, Kathleen Garrett, Josh Rudow

Staff in Attendance:

Kevin Critendon, Daryl Slusher, Teresa Lutes, Marisa Flores Gonzalez, Mark Jordan, Helen Gerlach, Geneva Guerrero, Mary Zambrano, Mark Jordan, Sarah Hoes, Heather Cooke,

Additional Attendees:

Ron Anderson, Wendy Gordon, Craig Smith, Richard Hoffpauir

1. CALL TO ORDER

Jennifer Walker, Acting Chair, called the meeting to order at 4:10 p.m.

2. CITIZEN COMMUNICATION: GENERAL

David Foster from Clean Water Action shared comments related to the timing of strategies and interaction with CodeNext, as well as communication with Council.

Bill Bunch shared comments related to timing of strategies, interaction with CodeNext, and comments on the Lady Bird Lake inflows strategy.

3. APPROVAL OF MEETING MINUTES

The meeting minutes from the May 1, 2018 Austin Integrated Water Resource Planning Community Task Force regular meeting were approved on Member Moriarty's motion and Member Ross second Member Richards abstained on a 7-0-1-3 vote with Member Leurig, Member Mace and Member Dwight were absent.

4. STAFF BRIEFINGS, PRESENTATIONS, AND/OR REPORTS

- Update on Near Term Schedule by City staff, followed by Task Force discussion and input.
- Presentation on Draft Plan Report by City staff, followed by Task Force discussion and input.

5. SUBCOMMITTEE REPORTS

None

6. VOTING ITEMS FROM TASK FORCE

7. FUTURE AGENDA ITEMS

None

Acting Chair Jennifer Walker adjourned the meeting at 6:51 pm.

PRESENTATION



WATER FORWARD

INTEGRATED WATER RESOURCE PLAN

Water Forward Task Force Meeting

August 7, 2018

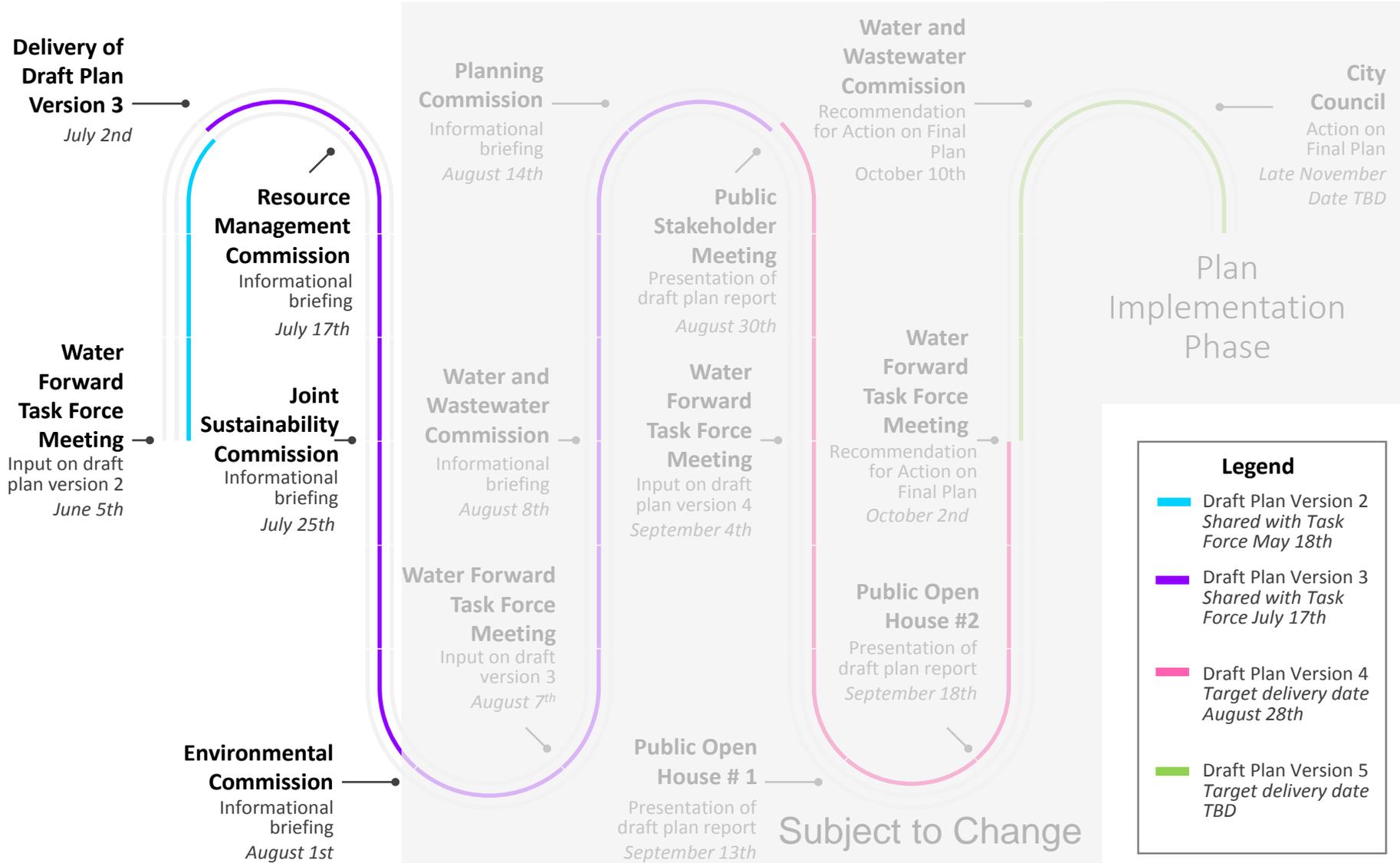


Agenda

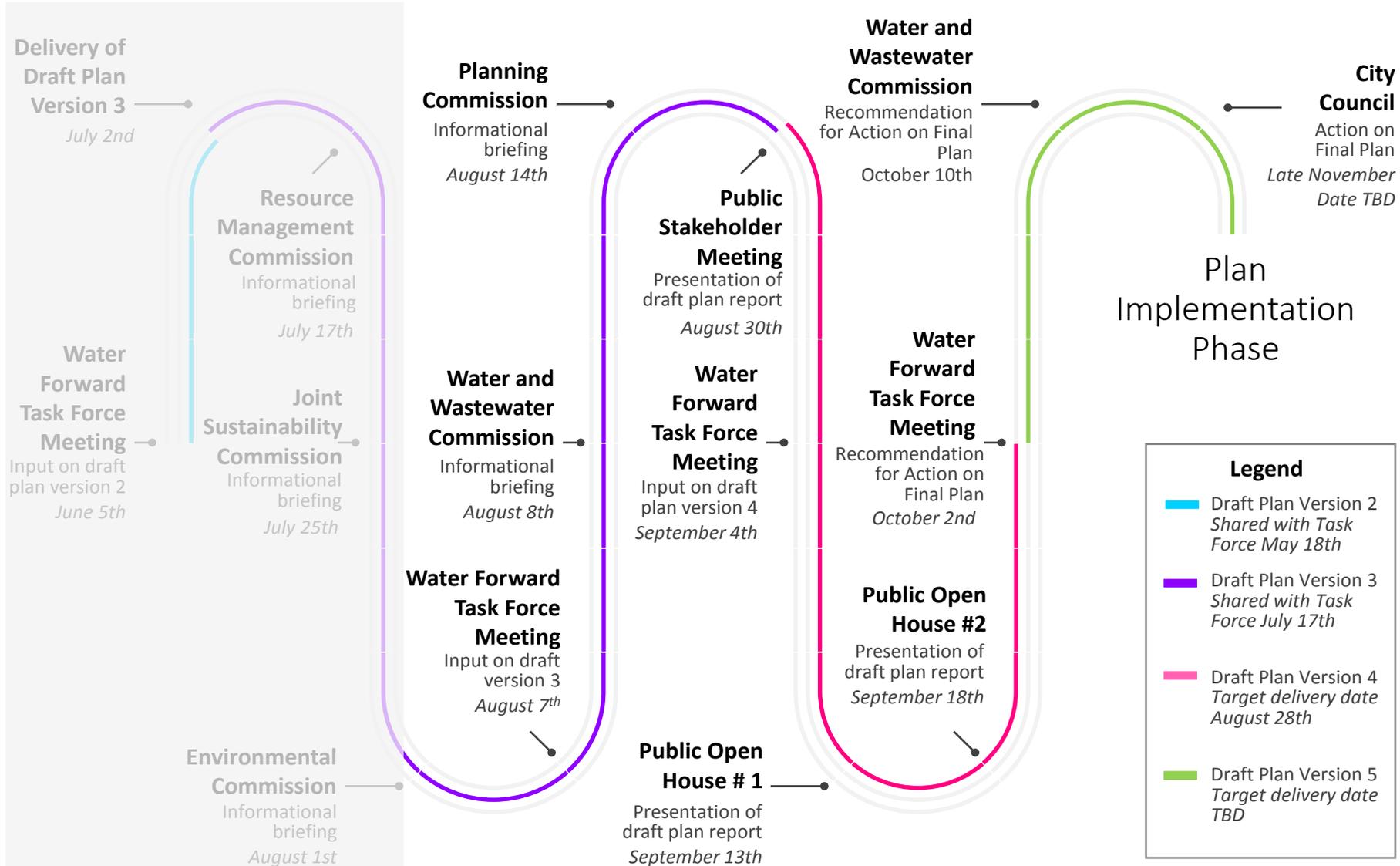
- Recent Activities and Near-Term Schedule Update
 - Task Force Discussion and Input
- Staff Presentation on Draft Water Forward Plan Report V3
 - Task Force Discussion and Input

Recent Activities and Near-Term Schedule Update

Recent Activities



Looking Forward – Subject to Change



Potential Meeting Date Adjustments

- September 4th Task Force meeting
 - This will be the day after Labor Day
 - Proposed dates: September 5th or September 11th
- October 2nd Task Force meeting
 - Some members unavailable
 - Proposed date: October 9th

Draft Water Forward Plan Report V3

Draft Water Forward Plan Report V3 Highlights

- We will be discussing Version 3 of the draft plan report
 - Provided via email July 17th
 - Printed copies available for Task Force and public
 - Also posted to Boards and Commissions site
- Executive Summary included
- The majority of appendices included in this version
- Comment Log documented Task Force input on V2 and AW responses and/or changes that were included in V3

Task Force Input on Draft Water Forward Plan Report

- Approach to gathering feedback at this meeting
 - Plan to go through each section in body of report as well as appendices
 - Asking for Task Force input based on previously provided review questions and other input that you would like to provide
- Task Force can also provide written comments after the meeting
 - Request that written comments on this version be provided by August 17th
- Staff goal to provide Version 4 of the draft plan report by August 28th

Section 1 – Executive Summary

AT A GLANCE

- *Need for an Integrated Water Resources Plan (IWRP)*
- *The Water Forward Planning Process*
- *Water Forward Recommendations*
- *Water Forward Program Benefits*
- *Adaptive Management Plan and Implementation*

- **Review Questions**

- Did this section present a clear case for why the IWRP is needed?
- Was the process used to develop the IWRP understandable?
- Were the recommendations clearly presented?

Section 2 - Introduction

AT A GLANCE

- *Water Forward IWRP Mission Statement*
- *Overview of Austin’s Water Supply System*
- *Water Supply Conditions and Drought*
- *Sustainable Water Resource Management Efforts*

- Review Questions

- Did this section present a clear background on AW’s water system?
- Was the need for the IWRP compelling?
- Were the IWRP guiding principles understandable?

Section 3 – Collaborative Plan Development Process

AT A GLANCE

- *Task Force Involvement*
- *Project Scoping and Team*
- *Public Engagement*
- *Evaluation Process Overview*
- *Plan Objectives and Performance Measures*
- *Options Screening and Characterization*
- *Portfolio Development and Evaluation*

● Section Summary

Water Forward is an integrated water resources planning process used to evaluate potential water supply and demand management options and develop a plan that is representative of Austin community values. This section describes the overall Water Forward process from development of objectives and performance measures, to option screening and characterization, through to portfolio development and evaluation. This section also summarizes the outcome of efforts to gather meaningful public input to inform each stage of the plan development process.

● Review Questions

- Did this section summarize the IWRP collaborative process sufficiently?
- Did this section present a clear background on AW's IWRP planning process?
- Where the objectives and performance metrics presented clearly?
- Was the method for evaluating portfolios understandable?

Section 4 – Water Demands

AT A GLANCE

- *Disaggregated Demand Model*
- *Current Water Use Summary*
- *Future Baseline Water Demand*

● Section Summary

Integrated water resource planning provides a blueprint that ensures residents and businesses in Austin have sustainable access to clean water now and into the future as the city continues to experience growth. To properly plan and manage Austin’s water resources, it is critical to have a reasonable understanding and characterization of how and where water is currently used in the city as well as quantifiable estimates of how much water will be needed in the future. This section describes the primary tool used to characterize and explore water demands, referred to as the Disaggregated Demand Model. This tool was developed by Austin Water staff with indoor end use refinements and other enhancements developed by CDM Smith. Using the tool, current water use is defined, as described in Section 4.2, and future demand is projected, as described in Section 4.3. These sections describe the City’s water demand at the water source (diversions), at the water treatment plant (pumpage), and at the Austin Water customers’ meters (consumption). As climate and weather patterns are a major defining factor in water use levels, Section 4.4 explores future water demands in relationship with projected climate variations.

● Review Questions

- Was the background on the demand model understandable?
- Was sufficient information about the baseline demand forecast provided?
- Was it clear that the baseline demand forecast does not yet incorporate water savings from potential future Water Forward demand management strategies?

Section 5 – Hydrology, Climate Change, and Water Availability Modeling

AT A GLANCE

- *Definition of Water Needs*
- *Hydrologic and Climate Modeling*
- *Summary of Water Needs*

● Section Summary

As part of the Water Forward effort, the planning process included evaluation of multiple future conditions. Four hydrologic scenarios that considered climate change and droughts worse than the drought of record were developed to use for needs identification and portfolio evaluation. Planning for multiple future conditions allows the planning process to address uncertainties in the future related to possible changing climate conditions or droughts that may be worse than what we have experienced since the 1940s. January 1940 marks the beginning of the period of record for most of the Texas Commission on Environmental Quality Water Availability Models used across the state, and also coincides with the general timeframe when Lakes Travis and Buchanan were constructed and began filling. Using data from this period of record allows planning for a repeat of what has been experienced in these last 77 years. However, an important part of the Water Forward process involved identifying portfolios that aligned with the Water Forward goal of ensuring a diversified, sustainable, and resilient water future. Therefore, hydrology, climate change, and water availability modeling was performed to evaluate a range of possible scenarios to assess the impact of futures which might be different than what we have experienced.

● Review Questions

- Did this section present a clear definition of identified water needs?
- Was the process to perform the hydrologic, climate change, and water availability modeling presented in an understandable way?

Section 6 – Water Conservation and Demand Management Strategies

AT A GLANCE

- *Water Conservation History*
- *Broader Strengthening of Conservation Programs During the Drought*
- *Current Water Conservation Measures*
- *Water Conservation and Demand Management Strategies for the Future*

● Section Summary

Water conservation programs (i.e., demand management) have long been and will continue to be a critical element in Austin Water’s management of water resources. Austin Water also continually evaluates its water conservation programs to determine whether they should be modified, phased out, or new programs implemented to achieve evolving conservation goals and to ensure pursuit of cost-effective strategies that reach all customers. This section: describes Austin Water’s historical water conservation efforts, in Section 7.1; discusses Austin Water’s current conservation measures, Section 7.2; and presents the selected demand management options under consideration for future project portfolios in support of the IWRP, Section 7.3.

● Review Questions

- Was the information on the current Water Conservation Program presented in a clear way?
- Did these sections present the demand-side management strategies with sufficient detail to make them understandable?

Section 7 – Water Supply Strategies

AT A GLANCE

- *Current Water Supply System*
- *Future Water Supply Options*

● Section Summary

The Colorado River is Austin's core water supply through a combination of state-granted water rights and firm water supply contracts with LCRA. The Colorado River has a series of reservoirs, known as the Highland Lakes, that are used by LCRA to store water for municipal, industrial, recreation, and agricultural water needs as well as to meet in-stream flow requirements throughout the river down to Matagorda Bay on the Texas gulf coast. The following section describes the current water supply infrastructure associated with Austin's existing Colorado River water supply. The section also describes future water supply options evaluated as part of the IWRP.

● Review Questions

- Was the information on current water supplies presented in a clear way?
- Did these sections present the supply strategies with sufficient detail to make them understandable?

Section 8 – Portfolio Evaluation

AT A GLANCE

- *Portfolio Definitions*
- *Raw Performance Scorecard*
- *Portfolio Rankings*
- *Summary of Findings*

- **Section Summary**

In order to meet the goals of the IWRP process, including ensuring long-term resiliency, supply diversification, and sustainability in meeting the identified needs, groupings of options called portfolios were developed and evaluated. Portfolios are different combinations of options aimed at meeting needs. Dozens of potential portfolios can be developed by grouping various options. Thus, a structured evaluation process for defining and evaluating portfolios, described in more detail below, was used.

- **Review Questions**

- Were the portfolio themes described sufficiently and clearly?
- Was the summary of metrics used to evaluate the portfolios presented clearly?
- Were the results of portfolio evaluations understandable?

Section 9 – Recommendations

AT A GLANCE

- *Plan Recommendations*
- *Adaptive Management*

- **Section Summary**

The comprehensive evaluation of the five initial and two hybrid portfolios presented in Section 9 identified the Hybrid 1 Portfolio as the highest ranked overall. It represented the best balance in meeting the multiple objectives of the integrated water resource plan. Therefore, the recommended strategy for ensuring a reliable, high-quality and sustainable water supply for Austin Water is the phased implementation of the Hybrid 1 Portfolio.

- **Review Questions**

- Were the IWRP recommendations presented clearly?
- Was the adaptive management approach understandable?

Appendices

- Appendix A: Public Outreach and Participation Summary
- Appendix B: Integrated Water Resources Planning Process Overview
- Appendix C: Water Forward Disaggregated Demand Model
- Appendix D: Climate Change and Hydrology Analysis

- Review Questions
 - Was information in each appendix presented clearly?
 - Did the content in each appendix provide sufficient detail?

Appendices

- Appendix E: Extended Hydrology Analysis and Water Availability Modeling
- Appendix F: Water Needs Identification
- Appendix G: Water Conservation Summary
- Appendix H: Demand Management Options Screening Process

- Review Questions
 - Was information in each appendix presented clearly?
 - Did the content in each appendix provide sufficient detail?

Appendices

- Appendix I: Water Supply Options Screening Process
- Appendix J: Options Characterization Sheets
- Appendix K: Decentralized Option Modeling
- Appendix L: Portfolio Scoring Details

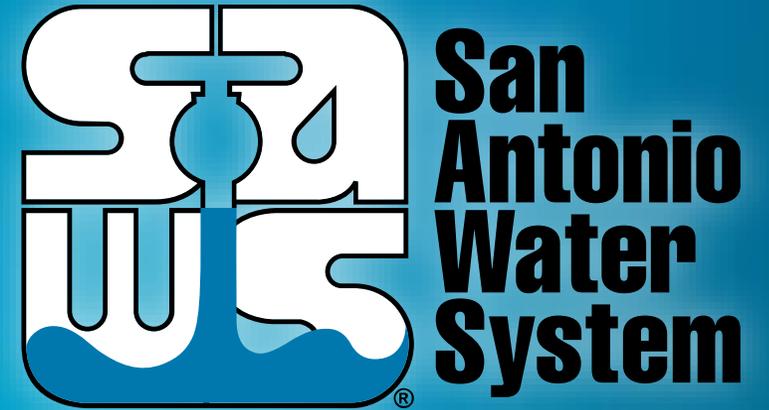
- Review Questions
 - Was information in each appendix presented clearly?
 - Did the content in each appendix provide sufficient detail?



BACKUP MATERIALS

San Antonio Water Management

Austin Water
May 4, 2018



MAKING SAN ANTONIO
WATERFUL 



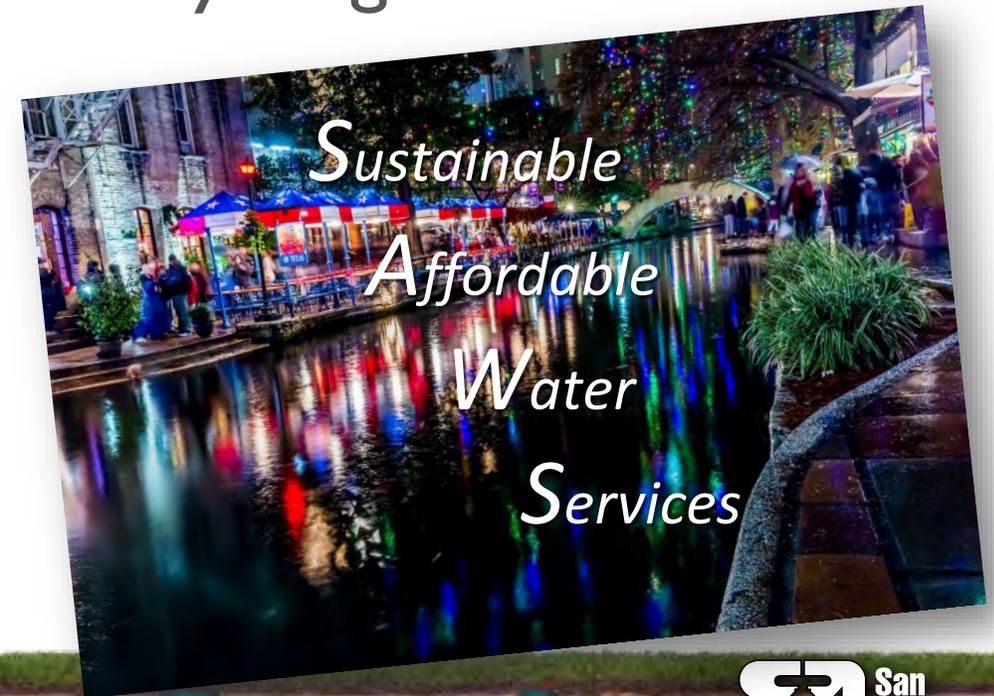
SAWS Overview

One of the nation's largest municipally owned utilities

- Created in 1992
 - Merger of three city departments
 - Separate Board of Trustees
- Serve 1.8 million people
- 12,000+ miles of pipe
- \$2 billion 5-year capital program
- 1,700 employees
- AA+ credit rating

Innovative Successes

- **Largest** groundwater based ASR system in the nation
- **Largest** Direct Recycled System in the nation
- **First** in nation to sell wastewater gas directly to grid
- **Newest** inland desalination plant
- **Best** in the nation water conservation





Where We Were

Historical View

Challenges

San Antonio Express-News

Serving South Texas since 1865

SATURDAY, August 24, 1996

★ Final Edition 50c

Bunton orders pumping limits

City leaders react angrily, plan to file appeal Monday

By **KEN DILANIAN**
EXPRESS-NEWS STAFF WRITER

Flanked by local leaders at a dramatic City Hall news conference, Mayor Bill Thornton vowed Friday to appeal a federal judge's order that he decried as favoring animals over people.

"Today I think it's time we draw a line in the sand to fight for consideration of humans and human rights," Thornton said. "Quite frankly, the court is jacking us around."

Thornton's sentiments were echoed by a variety of city officials who protested an order by Senior U.S. District Judge Lucius D. Bun-

ton III that may require San Antonians to stop watering their lawns in an effort to save five federally protected species at Comal and San Marcos springs.

After years of warnings, threats and voluntary plans, Bunton finally imposed a legally binding court order in response to allegations from the non-profit Sierra Club that San Antonio's Edwards Aquifer water use is violating the Endangered Species Act.

Governments at all levels have failed to properly preserve the Edwards, Bunton wrote, and that failure is killing species in violation

■ See THORNTON/8A



“Today I think it's time we draw a line in the sand to fight for consideration of humans and human rights. Quite frankly, the court is jacking us around.”

— Mayor Bill Thornton

“The Edwards Aquifer region has finally reached the point where the aquifer is unable to provide for the needs of all those who depend upon it during dry years.”

— Senior U.S. District Judge Lucius D. Bunton III



SAWS chief foresees ban on lawn watering by Oct. 1

By **JERRY NEEDHAM**
EXPRESS-NEWS STAFF WRITER

A federal judge ordered restrictions on pumping from the Edwards Aquifer by the city of San Antonio and other defendants Friday, in an endangered species lawsuit filed by the Sierra Club.

Mayor Bill Thornton and City Council members vowed an appeal.

The order by Senior U.S. District Judge Lucius D. Bunton III does not take effect until Oct. 1. Depending on how much rain falls by then, the San Antonio Water System and other large users of aquifer water could be limited to no



The water debate is about a lot more than blind critters.

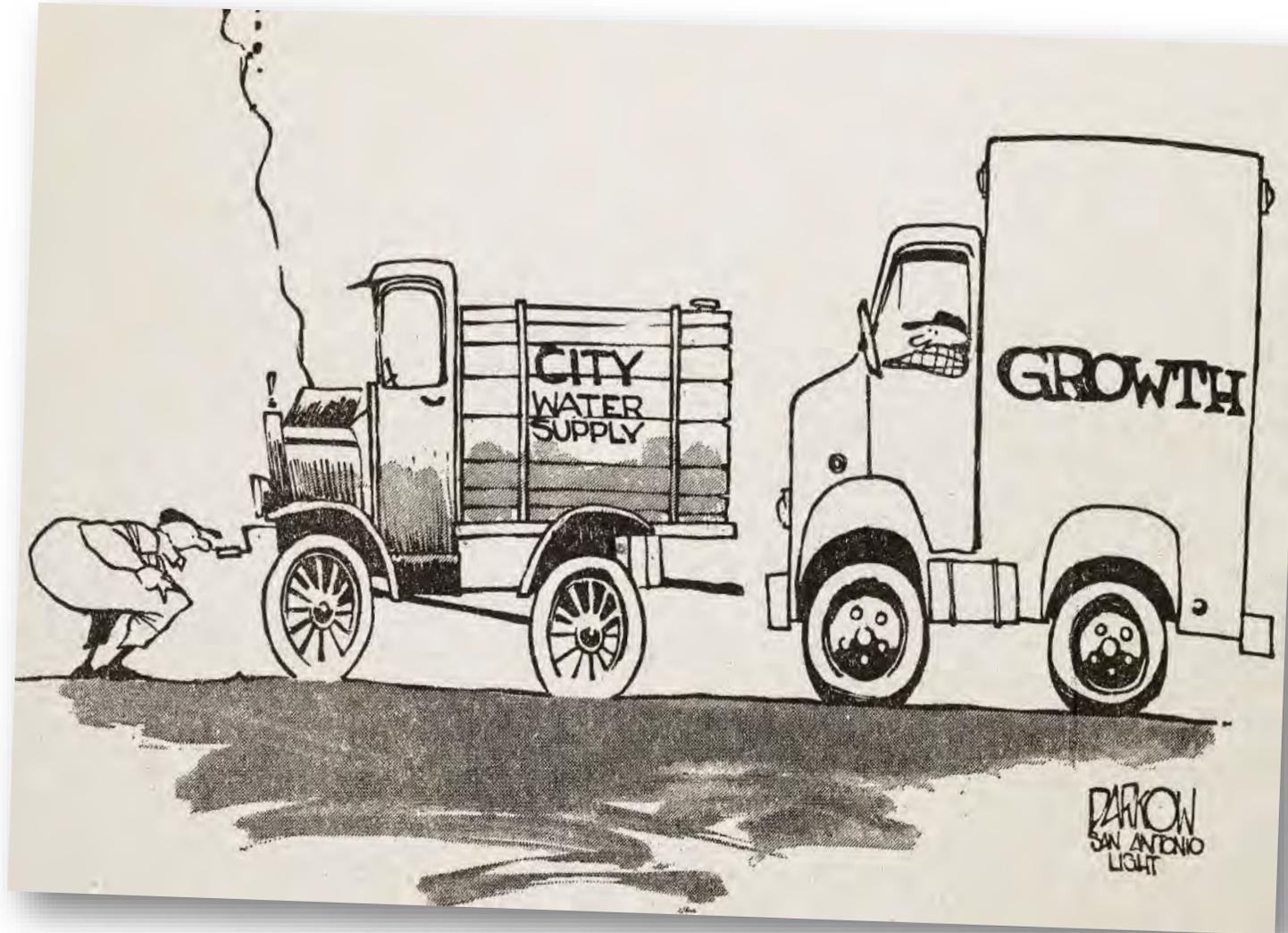
Carlos Guerra/1B

more than 1.2 times their winter average pumpage.

Joe Aceves, SAWS president, said that to meet that limit, the city probably would have to ban any outdoor water use by residen-

■ See FEDERAL/8A

Historical View



Previously Planned Projects

City leaders agree it's time to lay Applewhite to rest

Mayor, water system to take action killing reservoir permits

By Ronda Templeton
Express-News Staff Writer

One day after voters turned up their noses at the proposed Applewhite reservoir for a second time, project supporters said the project finally rests in a watery grave.

Mayor Nelson Wolff said he will ask City Council to pass a resolution abandoning Applewhite along with the permit allowing its construction.

"It's time to tell the Texas Natural Resource and Conservation Commission and the Army Corps of Engineers that we no longer want to pursue the permit," Wolff said.



Carlos Guerra.....

He said he has accepted the decision of San Antonio voters Saturday washed their hands of a 10 percent increase in water rates. "It's time to put Applewhite behind us," Wolff said. "The voters have said the end of it."

Cliff Morton, an avid Applewhite supporter and chairman of the San Antonio Water System board, said only of the water plan, not an indictment of San Antonio's elected officials and business community.

SAWS chief wants to drop Guadalupe plan

CONTINUED FROM 1A

River Authority (GBRA) and the San Antonio River Authority.

It proposes to bring 30.8 billion gallons of water to the city each year as soon as 2012 to address the city's growing needs and diversify its supply sources.

"It's disappointing," said Bill West, general manager of the GBRA. "Water today has become so complicated that it has to be addressed in a regional, multi-party process.

"We were disappointed that the attitude toward the project has changed from SAWS' perspective. The signs all point toward pure economics for SAWS without consideration to the rest of the region. I'm concerned about the implications there."

West said he's concerned that San Antonio is slipping back into overdependence on the Edwards Aquifer for its water supply, jeopardizing the supply for those on the Guadalupe who depend on springflows.

"One of our major reasons for participating in that project was to protect the springflow (from the Edwards Aquifer) and that appears not to be an objective of SAWS," he said.

The city and region have historically relied on the Edwards for all drinking water. A 1993 state law created the Edwards Aquifer Authority to regulate its use, guaranteeing historic users certain amounts and limiting overall pumping to 450,000 acre-feet a year.

That authority is finishing up

its permitting of water rights and the amounts guaranteed to users totaled 570,000 acre-feet. Pending legislation -- Senate Bill 3 -- would raise the pumping cap to match those rights. The Lower Guadalupe Water Supply Project was designed to capture excess flows on the lower Guadalupe, supplement them in dry times with groundwater, and pump them back to San Antonio.

The project, especially the groundwater component, has drawn heated opposition downstream. Some critics in San Antonio have said that the Edwards should be managed better rather than pumping springflows back uphill.

SAWS has spent about \$5 million dollars on environmental studies related to the project.

which would affect freshwater flows into San Antonio Bay and the food supply for the wintering whooping cranes.

"As stewards of the water supply for the residents of San Antonio, we have to balance the competing objectives of having a completely unlimited water supply and having affordability in rates," Chardavoyne said Tuesday, adding that he and the task force still are analyzing other projects.

The utility is proceeding with a \$333 million project that would bring 18 billion gallons of water to the city each year from well fields sunk into the Carrizo Aquifer in western Gonzales County as soon as 2008.

jneedham@express-news.net

LCRA board act sours S.A. water supply deal

SAWS feels partner wrongly pulled plug on Colorado River project.

Just when the atmosphere seems peaceful in the world of water supply projects, another conflict appears.

Recently, the San Antonio Water System board of trustees voted to declare the Lower Colorado River Authority in breach of a contract for a project to bring Colorado River water to San Antonio.

SAWS officials said the

SAWS originally expected 150,000 acre-feet from the supply project with the LCRA, but that estimate was downsized to 90,000 acre-feet in 2006.

LCRA's decision came after SAWS invested \$40 million in studies and environmental work. Under the contract, SAWS has the right to end the project and get half of the funds back.

At this stage, the notion of the two agencies working together on a successful water project seems unlikely.

Additionally, the estimated cost of water from the LCRA project was increasing as the yield dropped.

Still, SAWS officials see value in owning a pipeline that runs almost to the coast because desalinated sea water is likely to be a key source in the future.

SAWS officials say they have hope for reviving the LCRA deal, but the best move for SAWS is to get its half of the \$40 million back plus damages for LCRA's breach of contract.

The most promising parts of SAWS' new 50-year water supply plan don't rely on the LCRA deal, and it is time to move forward with projects that have better prospects.

Previously Planned Projects

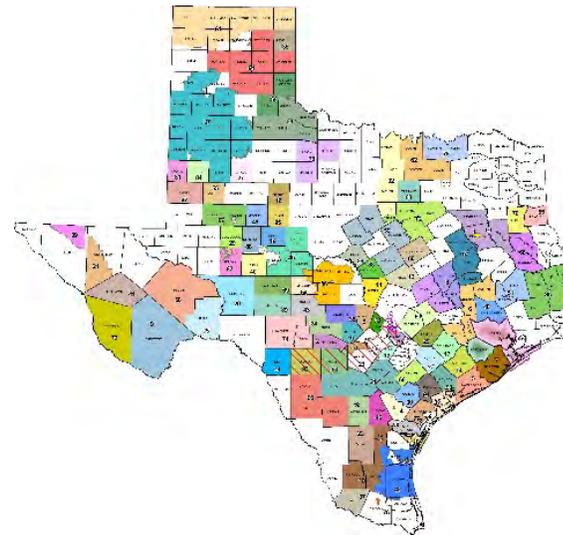
Project Name	Year Planned	Planned Yield (Ac-Ft)	Yield
Canyon Lake	1976	50,000	0
Applewhite Reservoir I	1980s	48,000	0
Applewhite Reservoir II	1990s	60,000	0
Simsboro Groundwater	1998	55,000	0
Lower Guadalupe Project	2001	94,500	0
LCRA – SAWS Water Project	2002	150,000	0

Projects Successfully Completed...Sort of...

Project	Year Planned	Year Completed	Planned Yield (AF)	Yield
Regional Carrizo Project	2000	2013	56,000	11,688
Brackish Desalination Project	2004	2017	*29,000	13,000

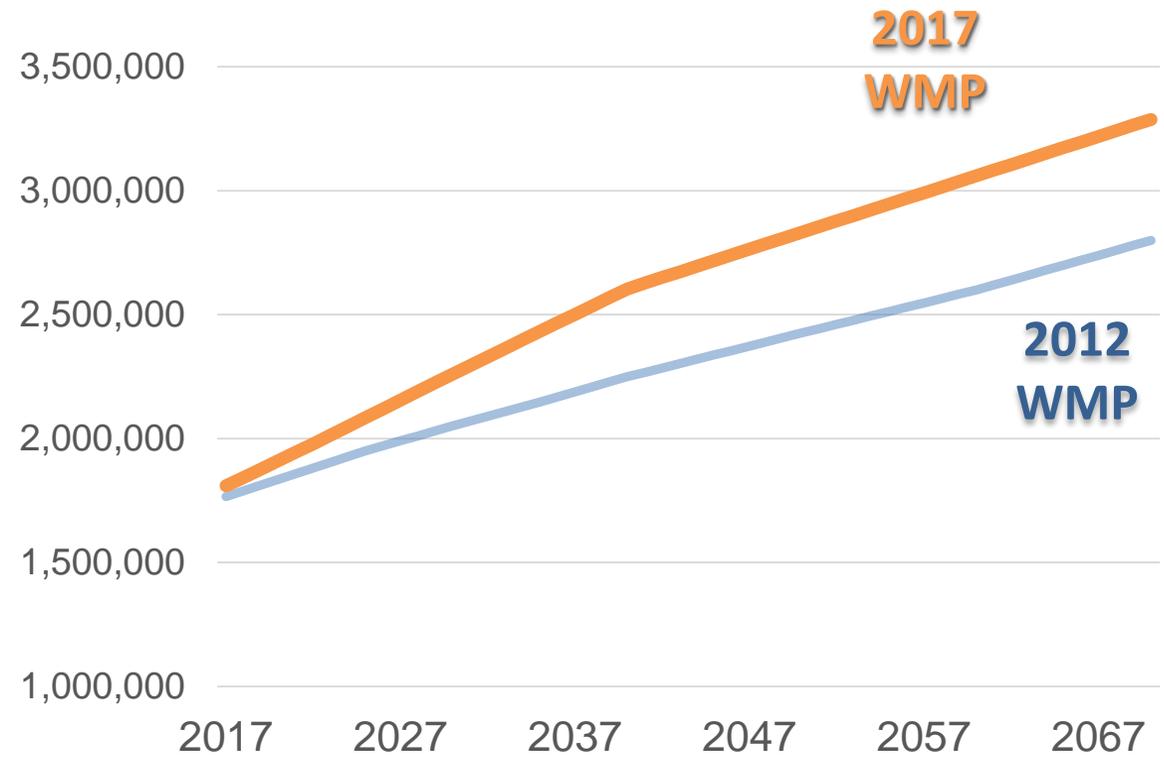
* 2008 RW Beck projection

Political, Legal and Regulatory



Projecting Population

New Neighbors



Water Management Planning

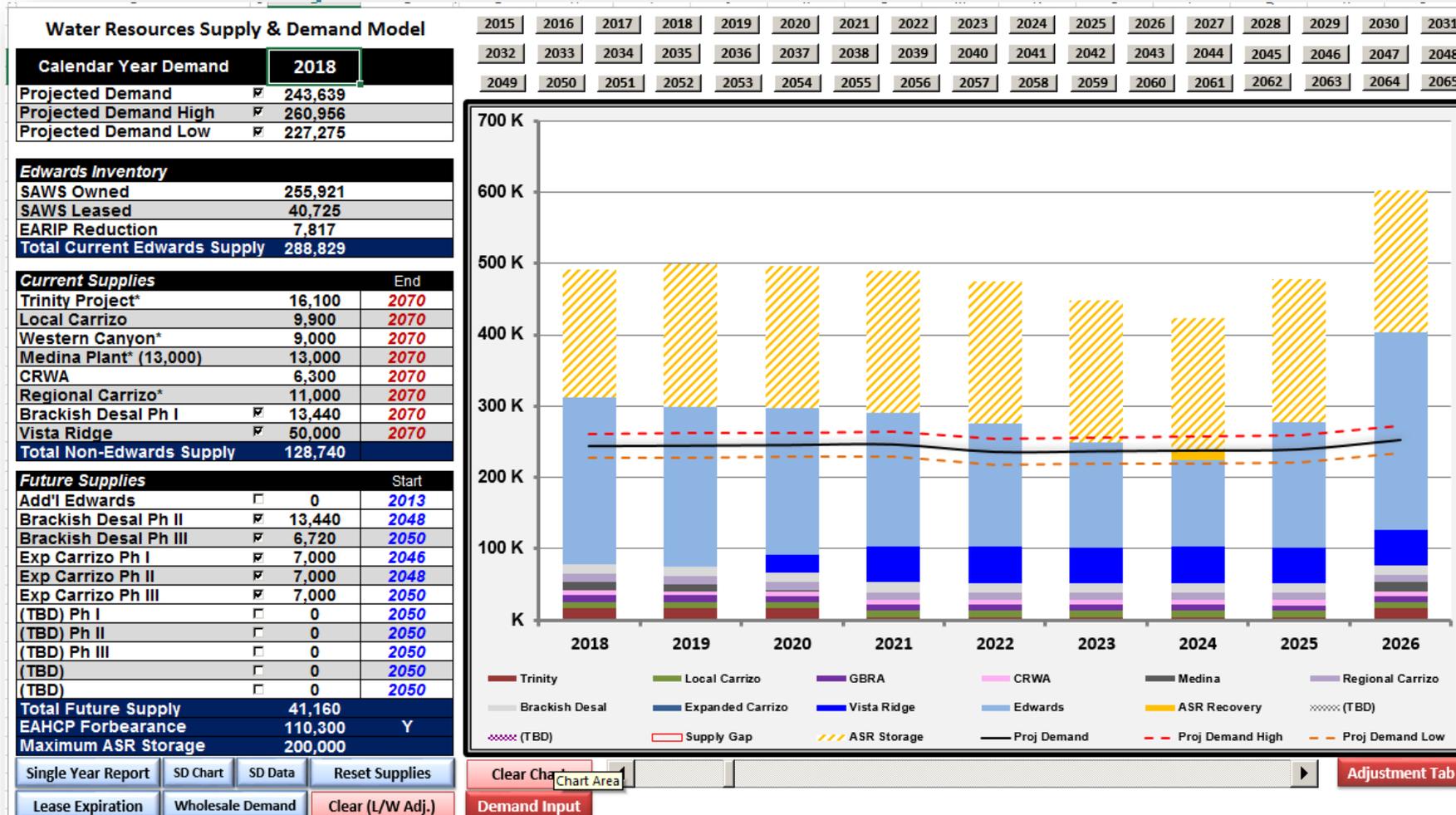
Drought of Record Planning

- Updated on 5 year intervals
 - Population
 - Demand and consumption projections
 - Firm supply yield in drought
 - Timing of planned supplies
 - Contracted Supplies

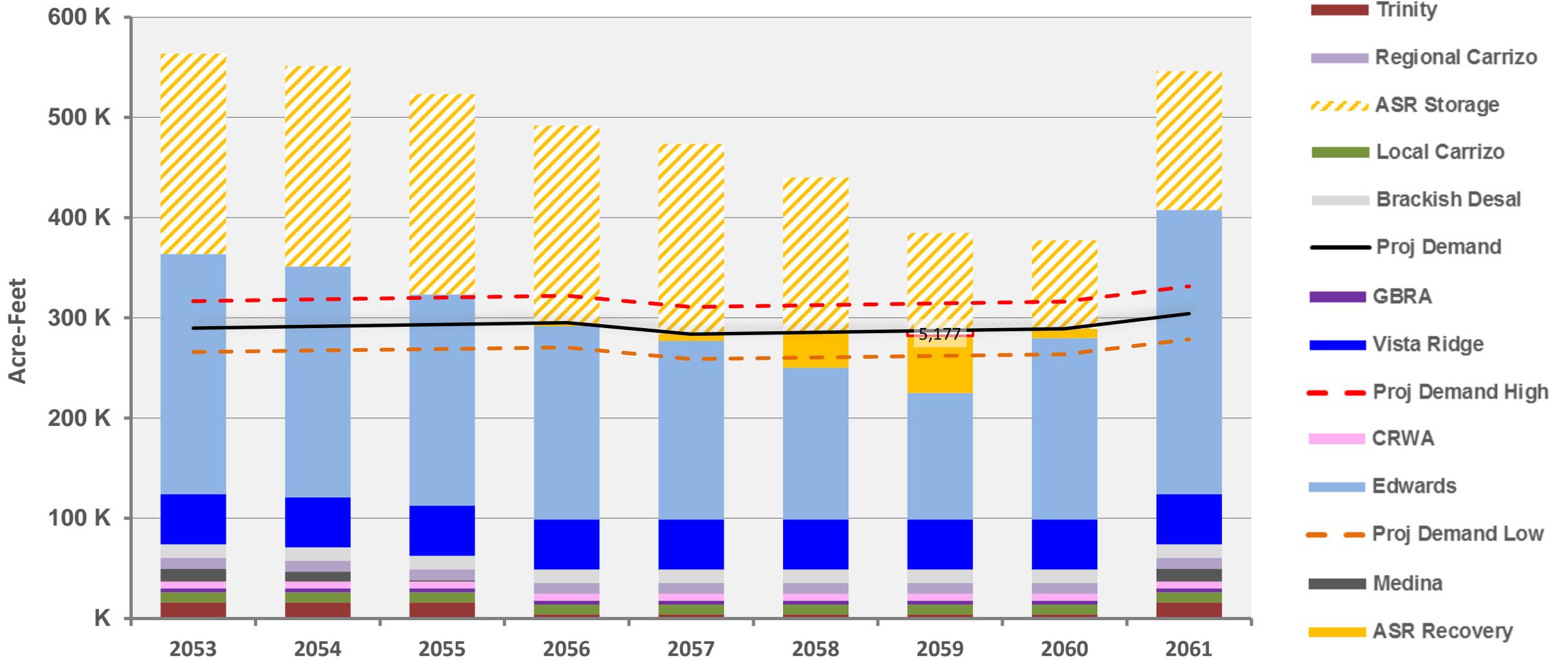


Modeling

In-House Model Developed



Example Drought of Record Planning Scenario



Water Management Planning Guiding Principles



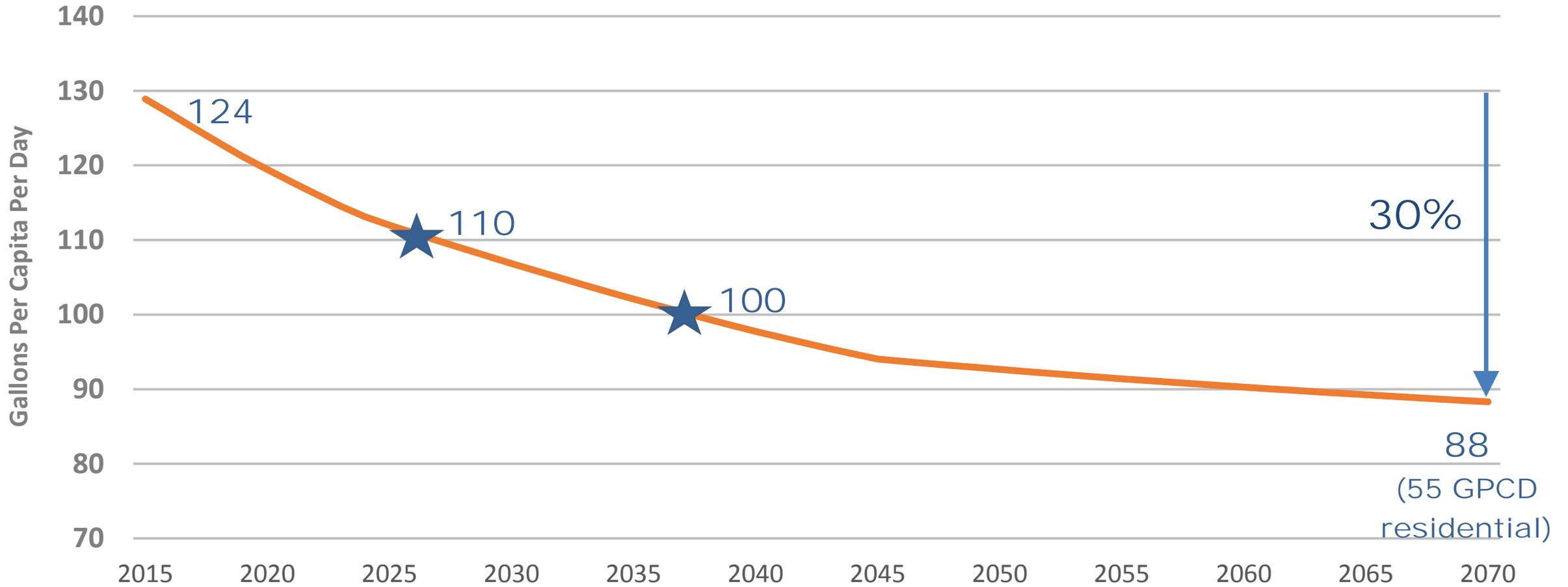
Conservation

Technology

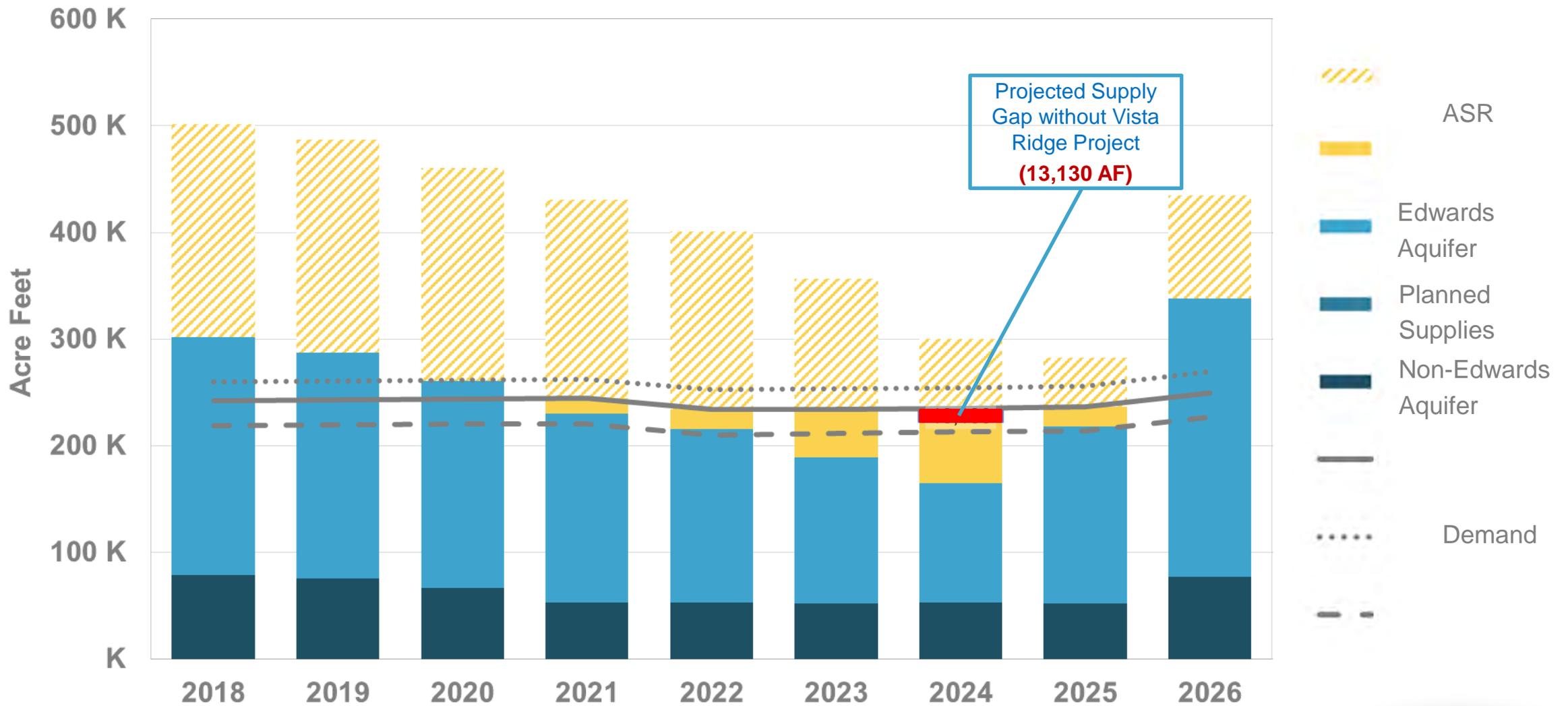
Diversified Water Sources

Regional Partnerships

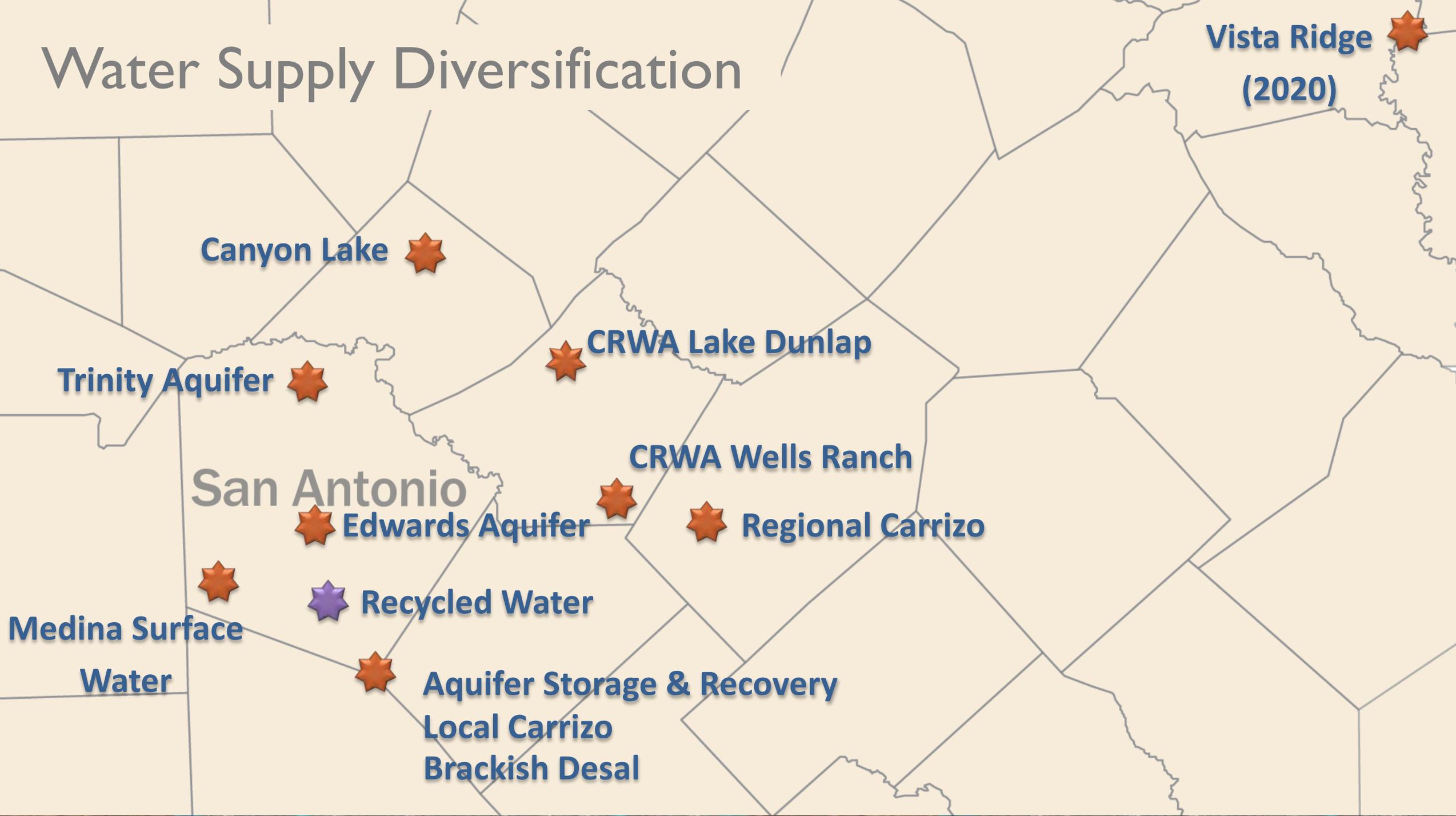
2017 Water Management Plan Per Capita Targets



Securing San Antonio's Water Future



Water Supply Diversification



Vista Ridge
(2020)

Canyon Lake

CRWA Lake Dunlap

CRWA Wells Ranch

Trinity Aquifer

San Antonio

Edwards Aquifer

Regional Carrizo

Recycled Water

Aquifer Storage & Recovery

Local Carrizo

Brackish Desal

Medina Surface

Water

Increasing Supply Diversification

15 Projects from 8 Sources

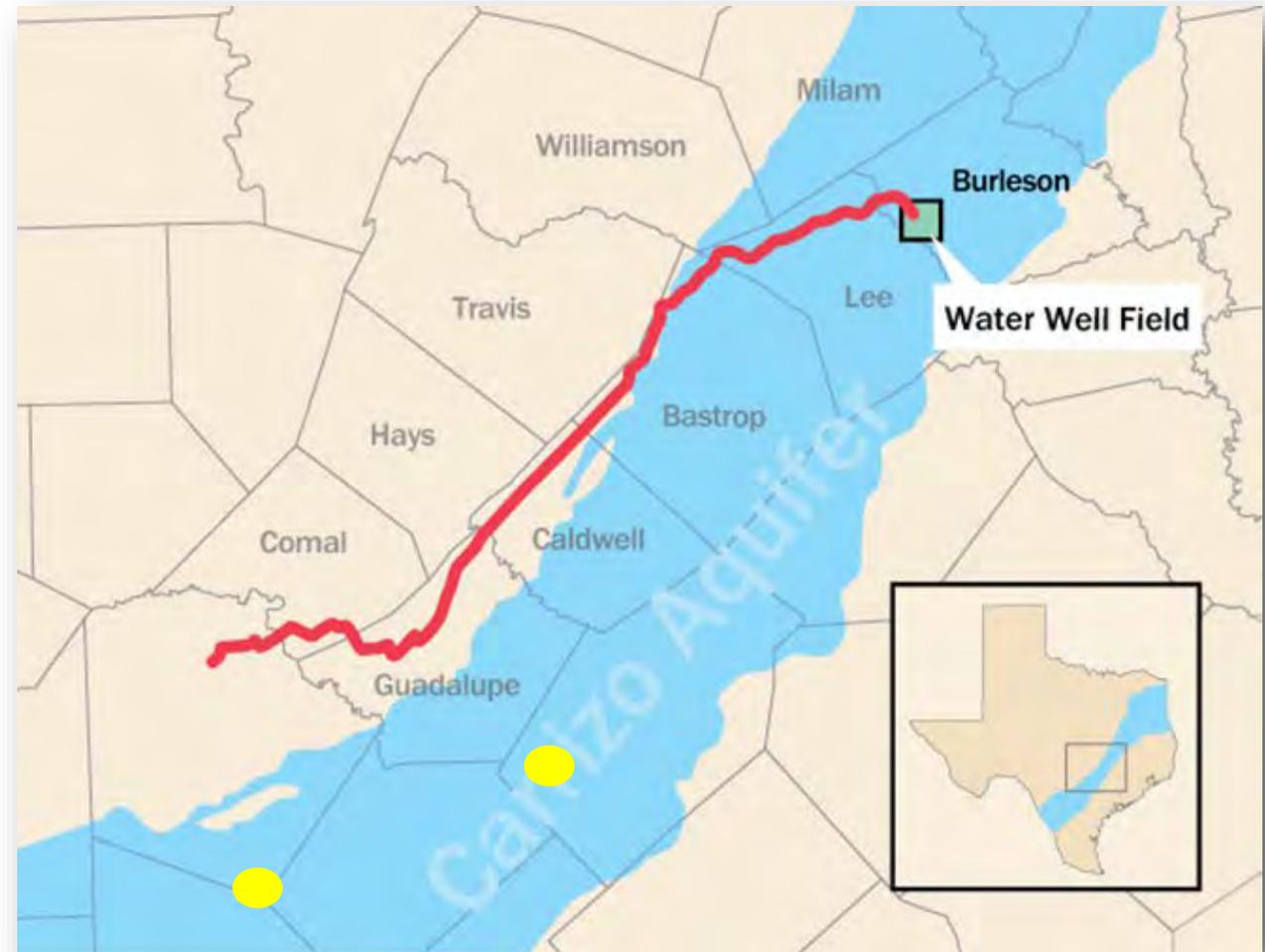
- Near Term
 - Vista Ridge by 2020
- Long Term
 - Expansion of Local Carrizo
 - Additional phases of brackish groundwater desalination



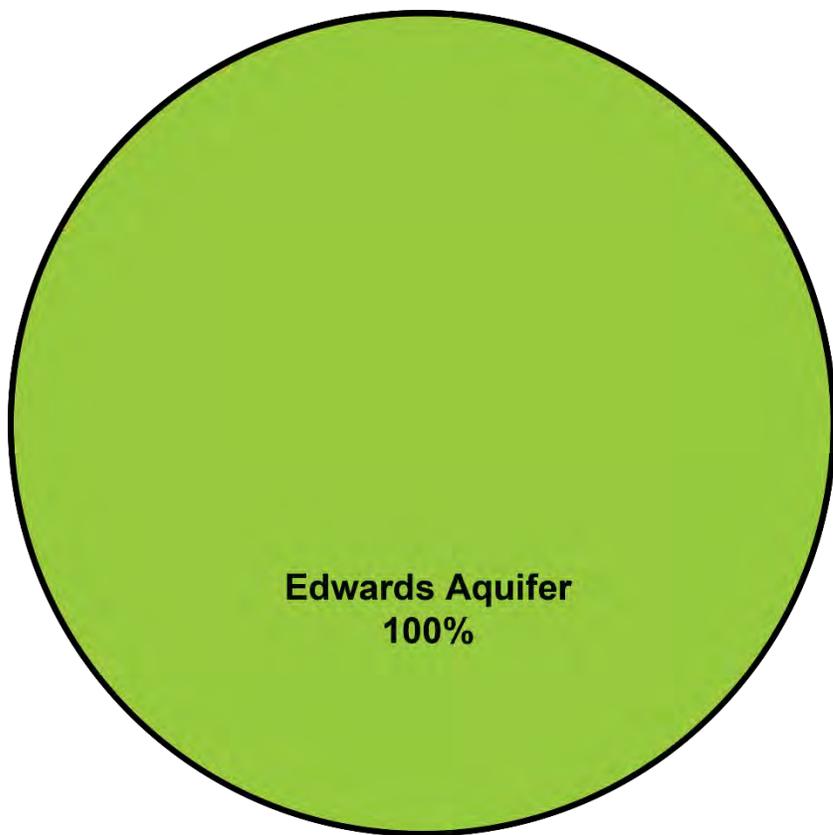
Increasing Supply Diversification

Vista Ridge Project

- Largest Water P3 in Nation
- Historic Risk Shifting
- 60 Years (30 + 30)
- Fixed Price for Water/Infrastructure

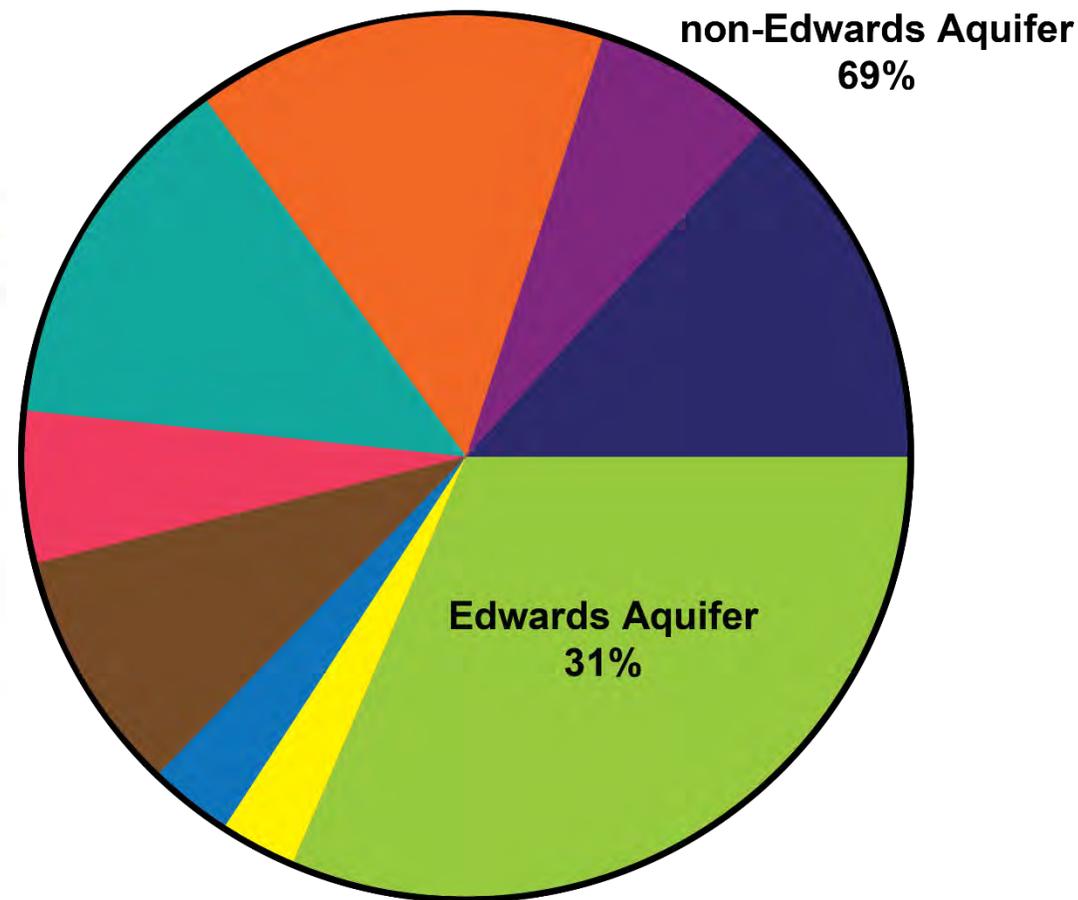


Supply Portfolio Diversification (drought year)



1996 → 2070

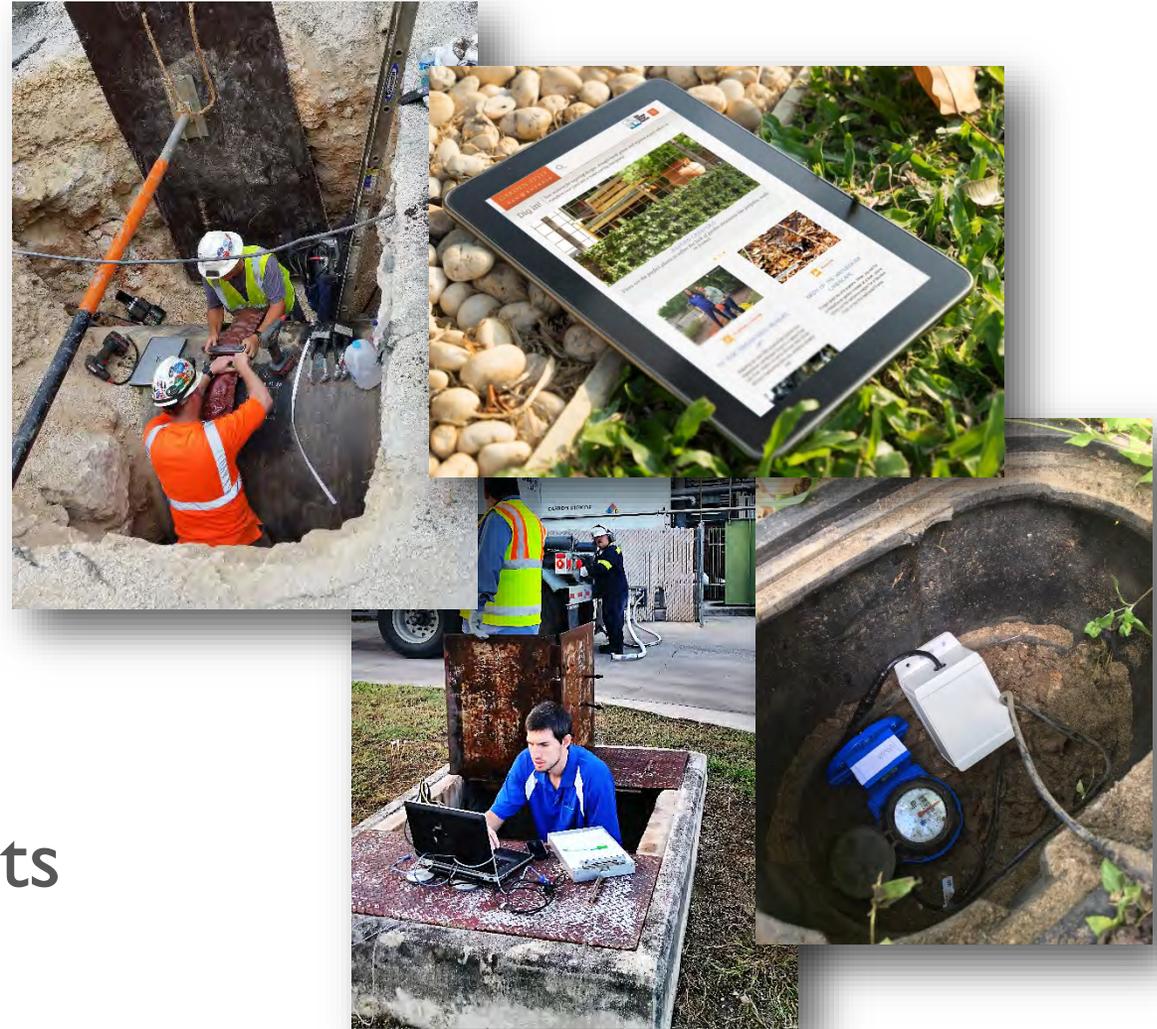
- Recycled Water (CPSE)
- Recycled Water (Direct)
- ASR Recovery
- Expanded Carrizo
- Vista Ridge
- Brackish Desal
- Regional Carrizo
- Medina System
- Canyon Regional
- Canyon Lake
- Local Carrizo
- Trinity Aquifer
- Edwards Aquifer



Utilizing Technology

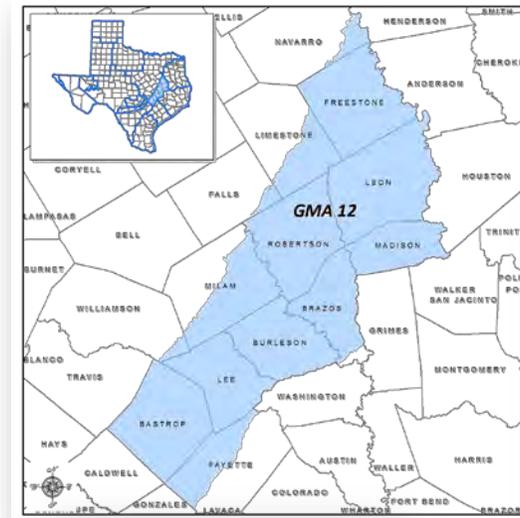
Progress through Modern Tools

- Automated Metering
- Smart Phone Apps
- Infrastructure Assessment
- Data Analysis
- Personalized Customer Reports

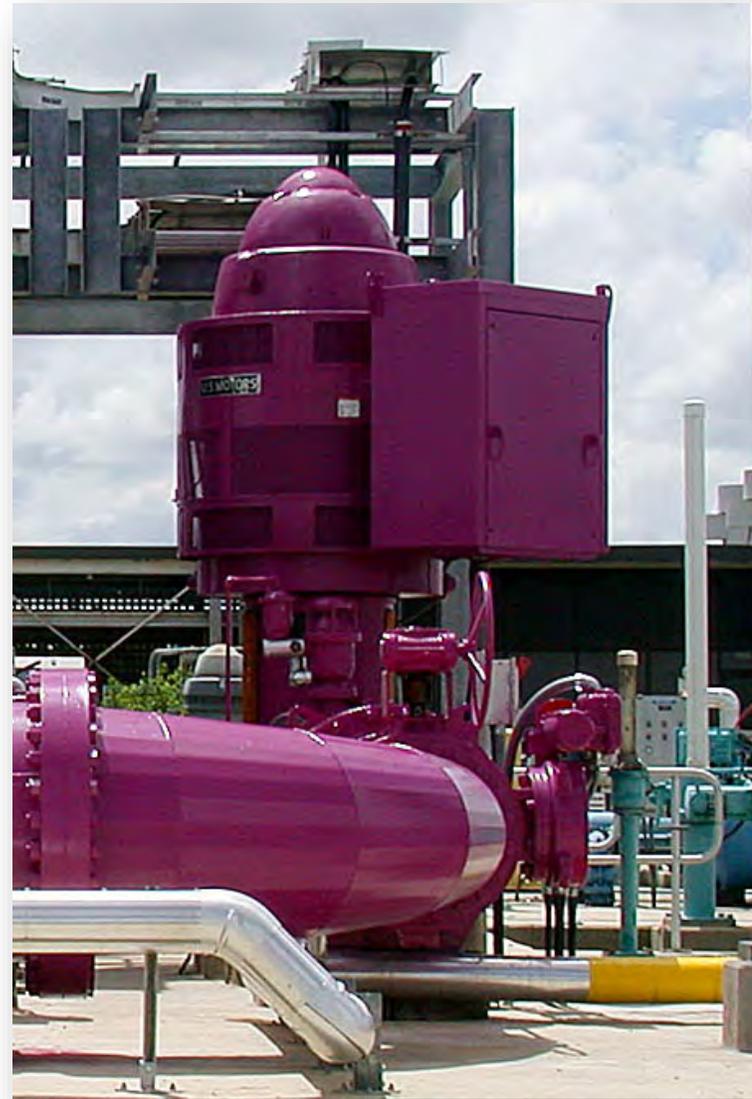


Leveraging Regional Partnerships

- Plan for local management of groundwater sources
- Commitment to Edwards Aquifer Habitat Conservation Plan
- Protecting instream flows through Bed and Banks Project
- Wholesale water opportunities



Nation's Largest Recycled Water System



San Antonio Riverwalk

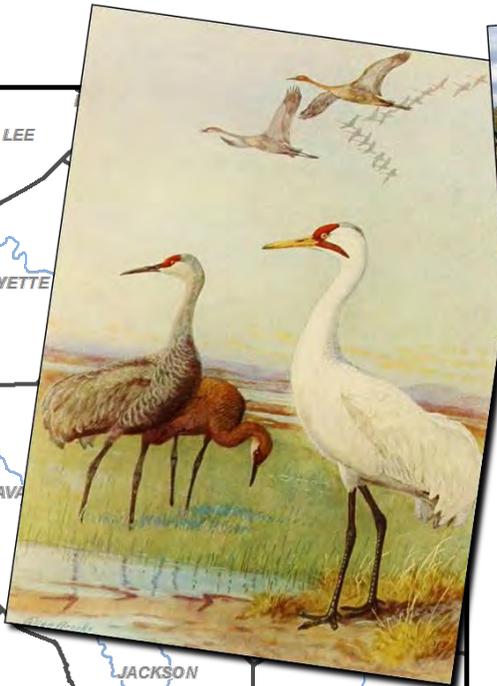
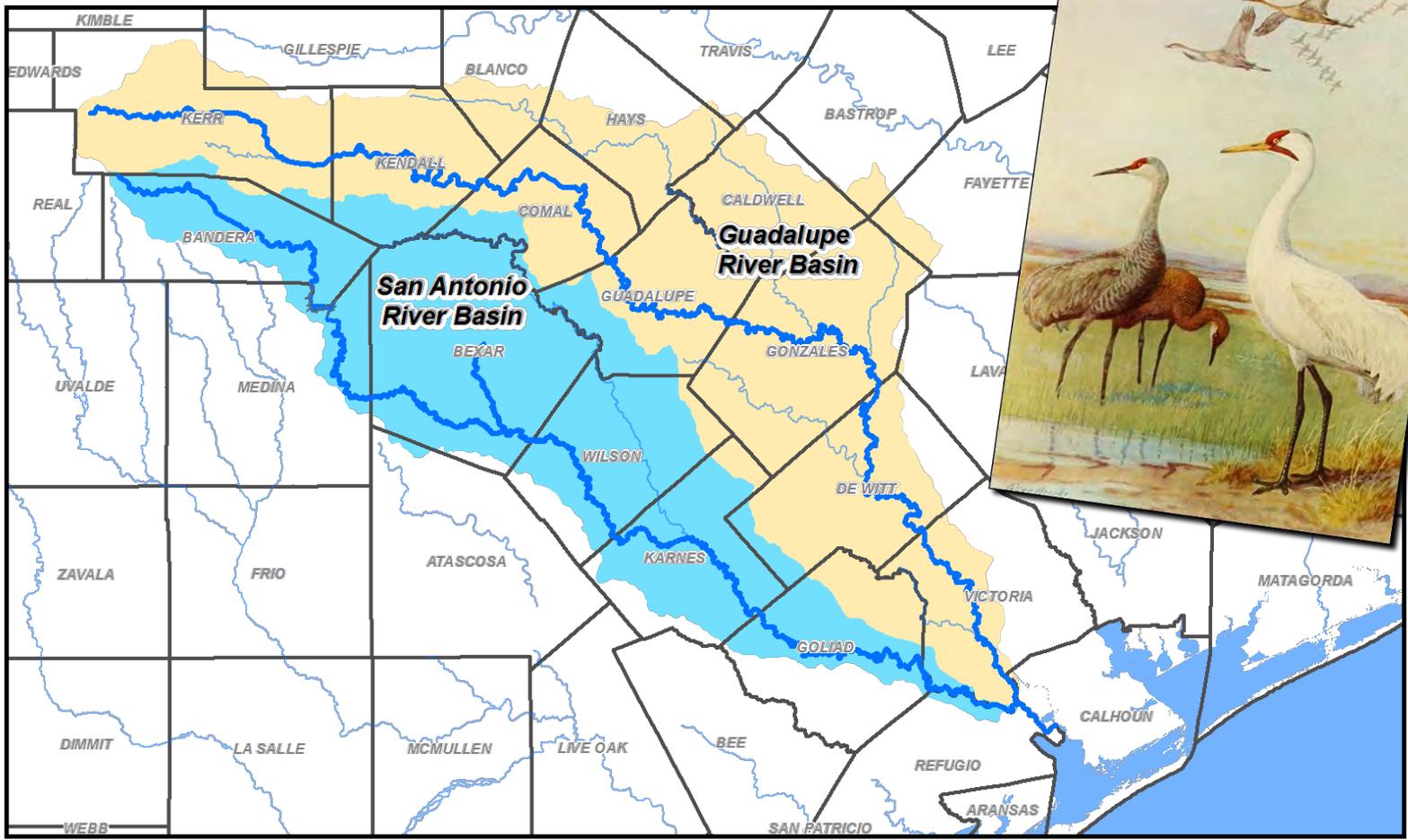


Electricity



Water for Downstream Benefit

SAWS Bed and Banks



Addressing Extreme Weather Conditions

San Antonio is Well-Positioned

- Rising temperatures and flashy rainfall
- Resiliency via diversification
- ASR, groundwater sources, conservation

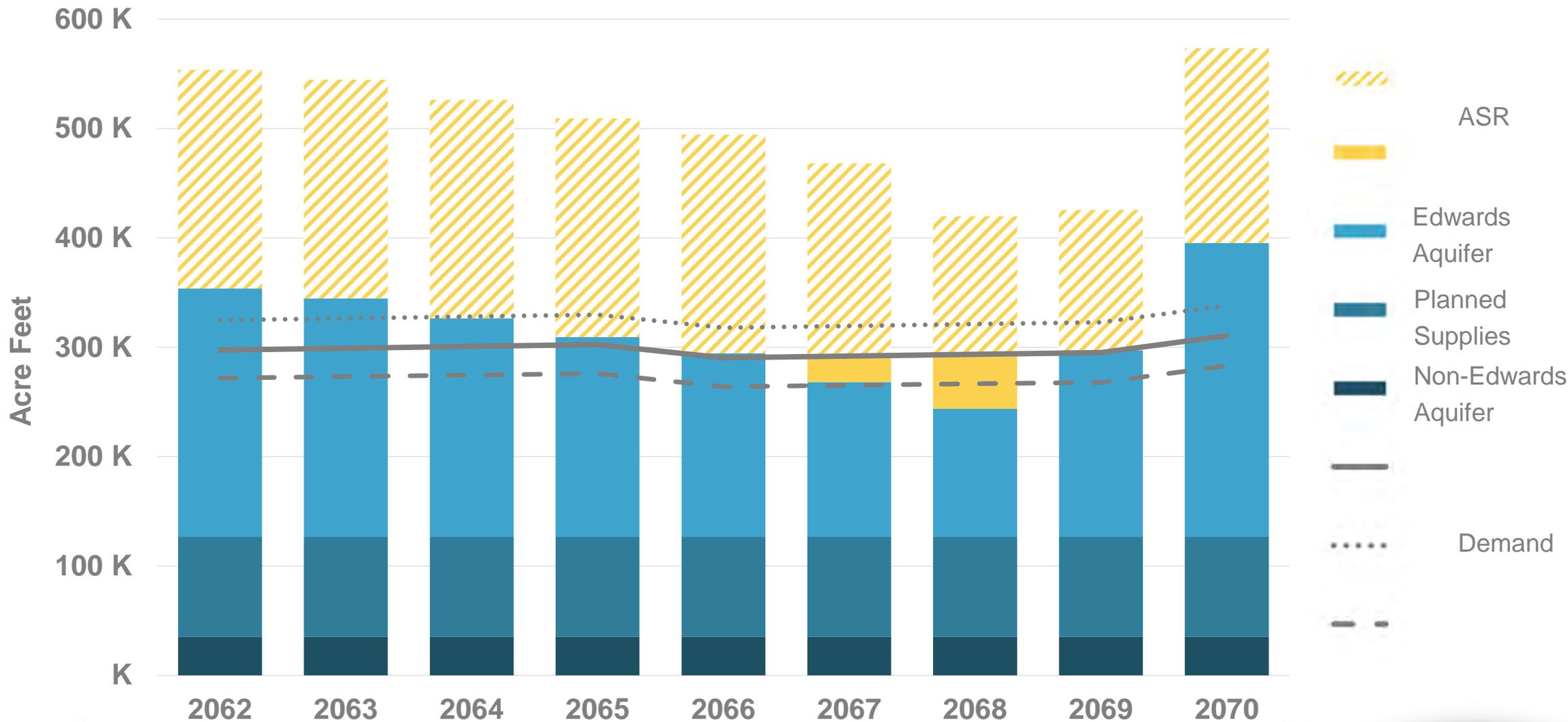


Summary of 2017 Water Management Plan

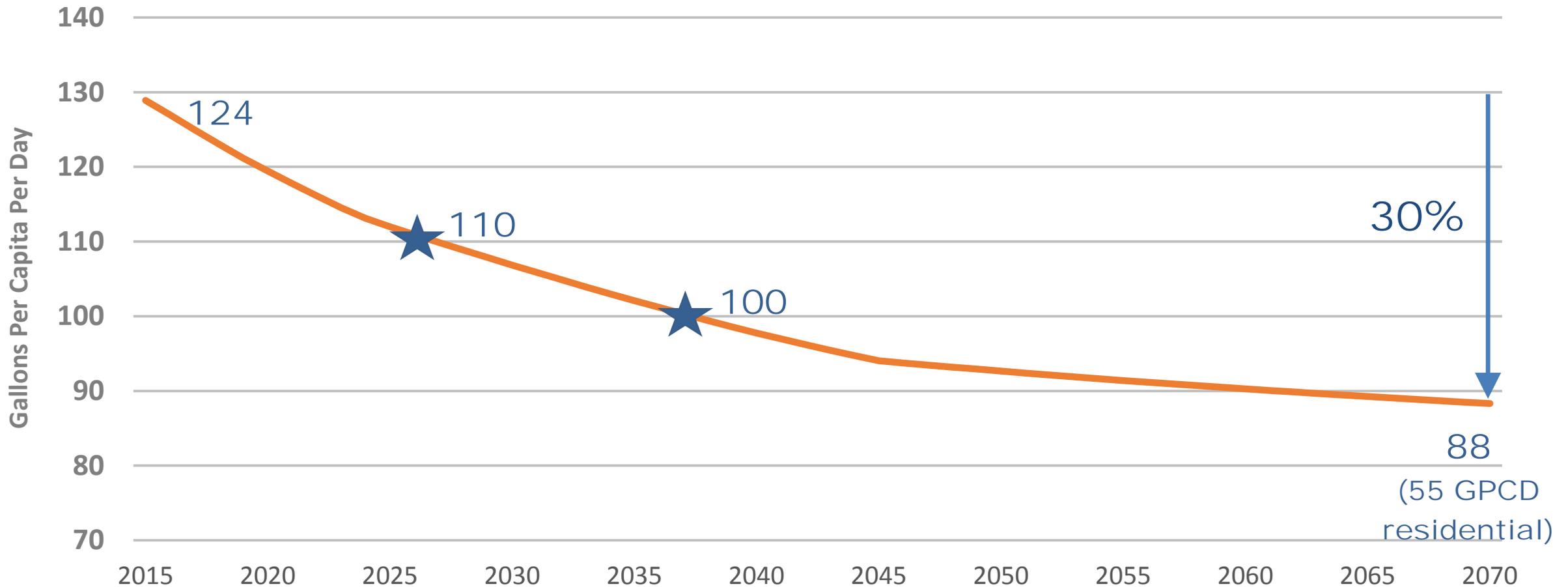
Progressive Conservation and Continued Diversification

Planning Source/Variable	Yield/Goal
Vista Ridge	50,000 acre-feet per year (AFY) in 2020
Brackish Groundwater Desalination	Additional 20,000 AFY by 2050s
Expanded Carrizo	Additional 21,000 AFY by 2050s
Progressive Conservation	88 GPCD by 2070 (55 GPCD residential)
Nonrevenue Water	14% by total volume
Population Projections	800,000 additional 2017-2040, 1.5 million additional 2017-2070 (80% increase)
Total Demand Projections	253,000 AFY in 2017, 324,000 AFY in 2070 (only 25% increase)

Securing San Antonio's Water Future

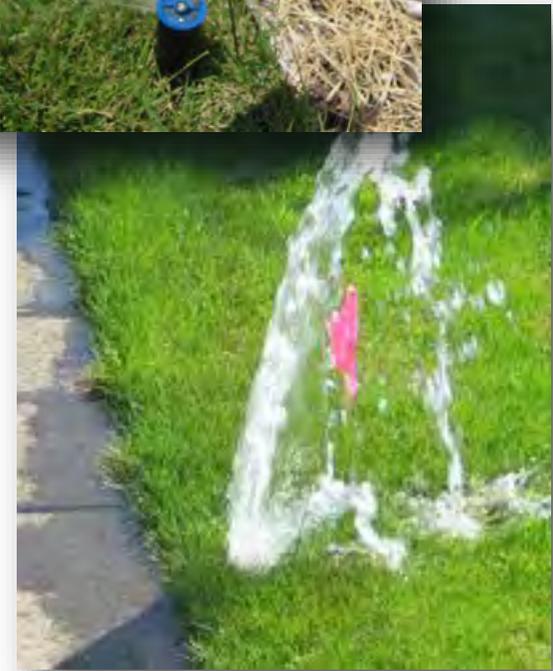
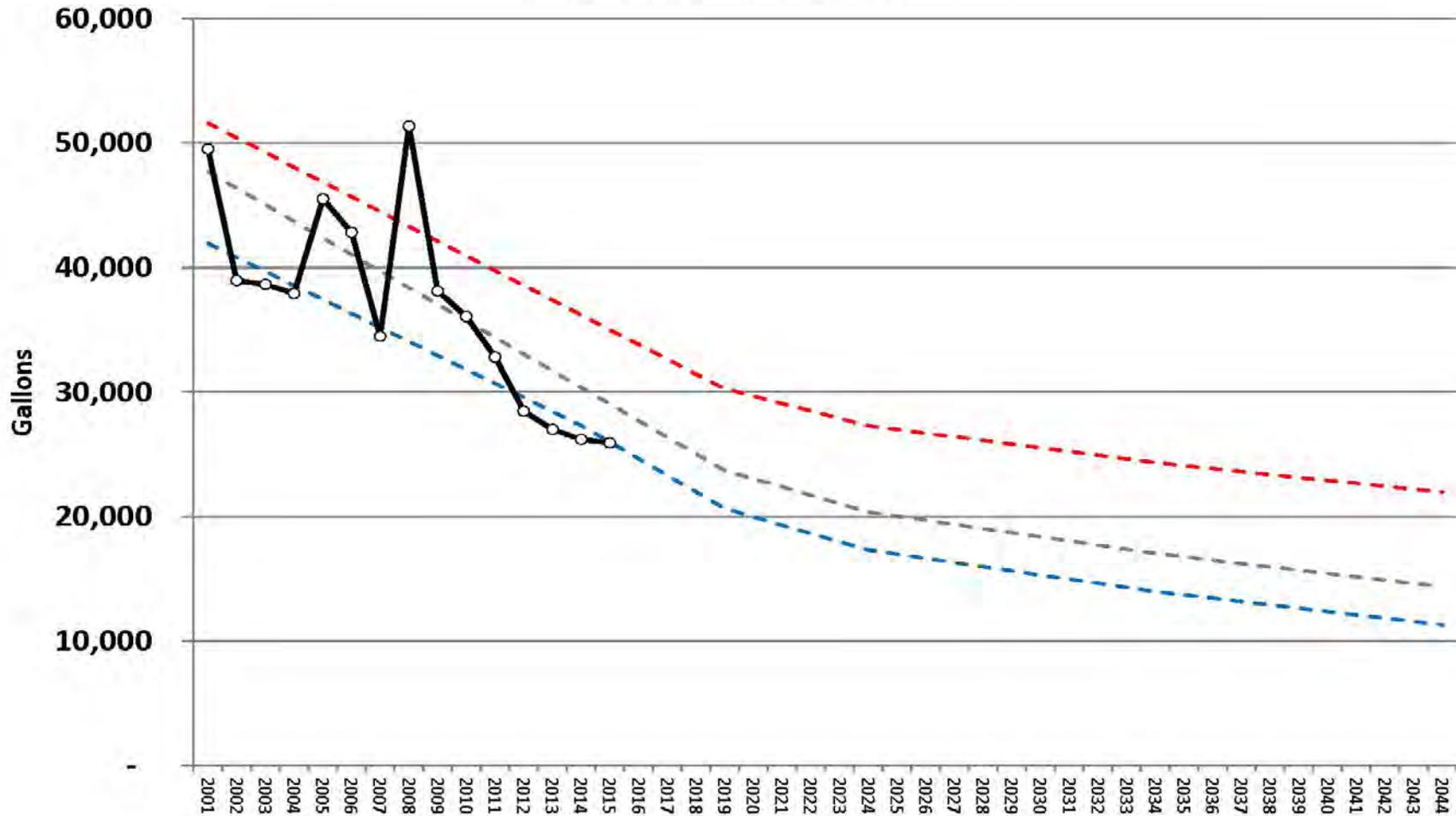


2017 Water Management Plan Per Capita Targets



General Class - Irrigation Trend

Monthly Usage Per Bill (Commercial, Industrial, & Municipal)



Conservation Toolkit

Annual Savings Plan: generates portfolio of 3,000 acre feet from strategies

- Education & Outreach
 - Targeted presentations & workshops; SAWS staff & partners
 - E-newsletter, Social media, GardenStyleSA.com, Irrigation Consults
 - Custom water reports
- Reasonable Regulation
 - Water waste against the law in San Antonio
 - Large property Irrigation Check Ups
- Financial Investment
 - Incentive rebates for efficiency improvements
 - Conservation Oriented Rates



SAWS' 2018 Rate Tiers

\$\$ / Thousand Gallons, Inside City Limits



UpLift Programs Address Customers In Poverty

One Application Process

- Affordability Discount
- Plumbers to People & Laterals to People
- Conservation Make-Over; proactive analysis of usage
- WaterSmart Reports
- **Pending Pilots:** Washing Machine Incentive & Multifamily



Over 26,000 families are enrolled in UpLift Programs

Face to Face; Conservation Consultations

Yield thousands of gallons/month from high use customers

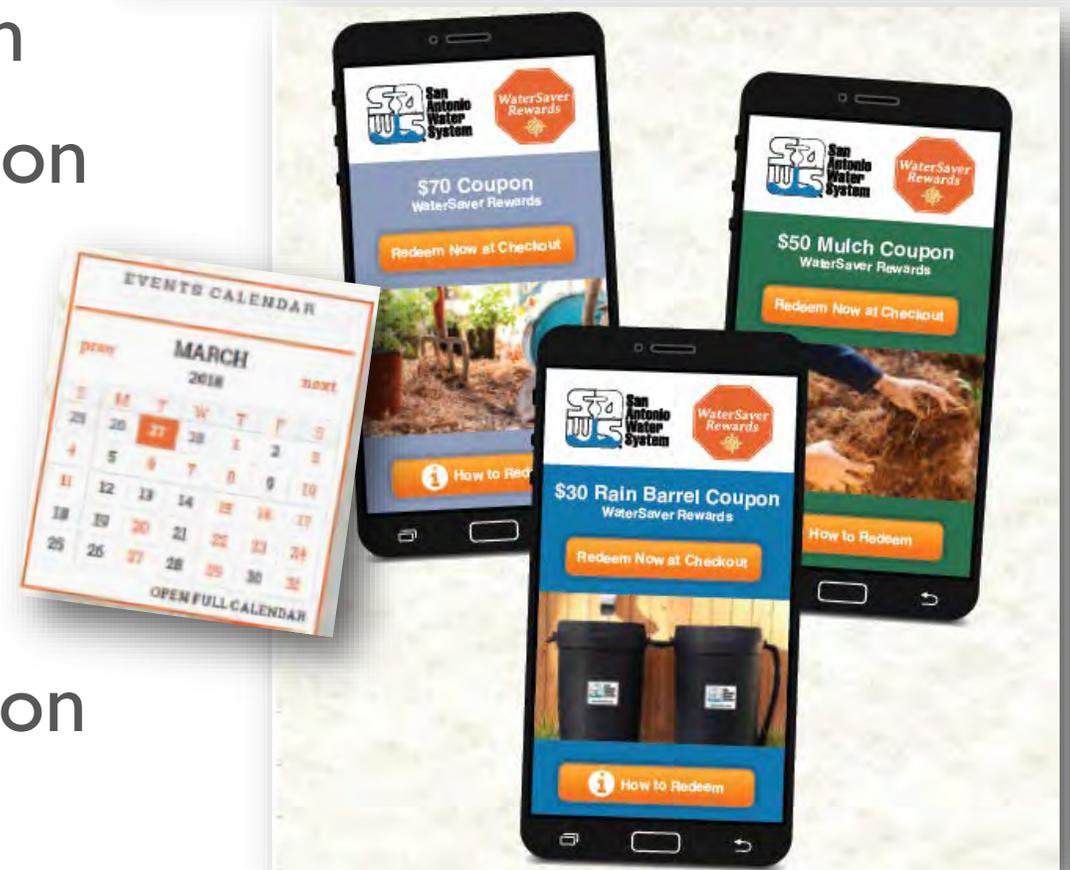
- Not an audit; a consultation to help you!
- Data you see us collect. Where the water went?
- A custom offer to help you change the usage



WaterSaver Rewards

A loyalty program for water? Sure why not?

- Track engagement in conservation
- Provide a “value-added” proposition to share personal information
- We NEED their contacts for operations, billing and other education
- Conservation is a strong motivation to “opt-in”



Pilot Example: Swimming Pool Check-Up

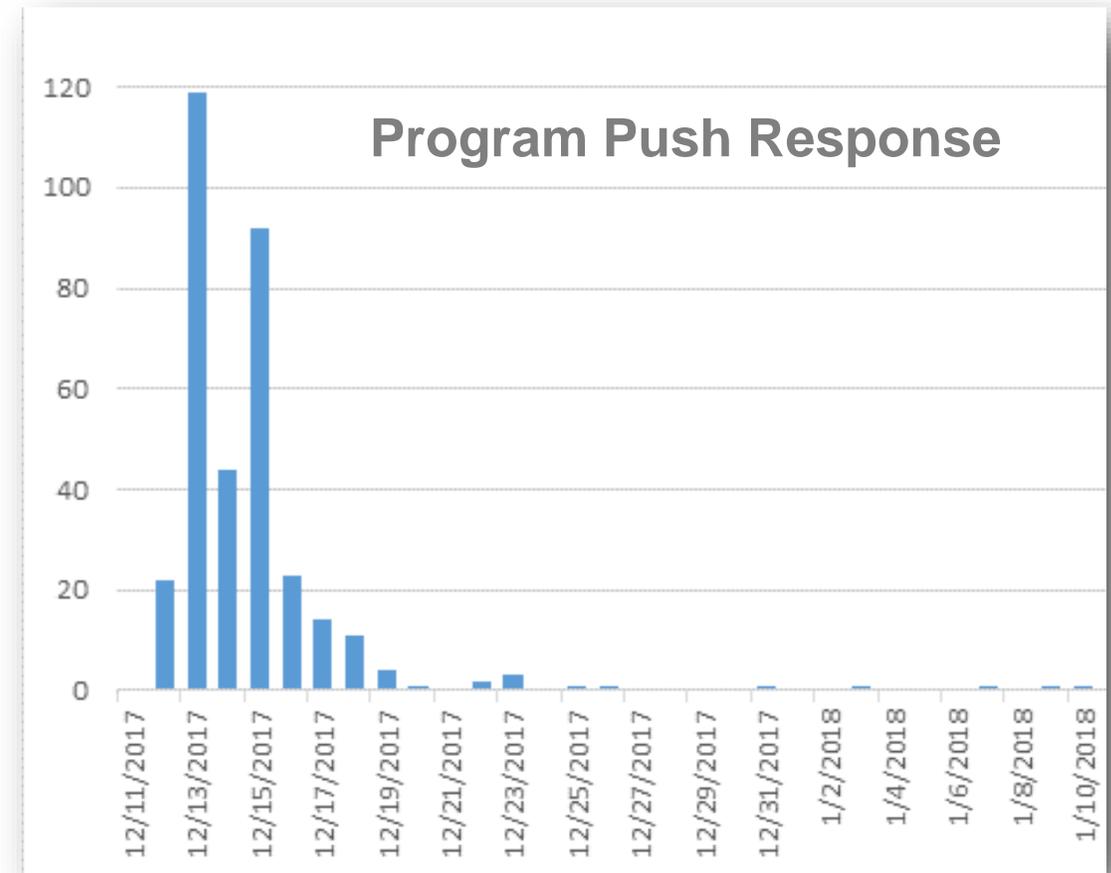
Over 30,000 households have pools in San Antonio



- Assessing maintenance habits of San Antonio pool owners
- Finding 60% have leaks
- Educating on best practices to be water efficient
- Will determine savings against control group

Newest Metrics

- Market Penetration of Conservation Participation
- Participation among distinct segments of customers (socioeconomic, location, usage patterns)
- Uptake of Program Appeals
- Number Newly Engaged Households
- Customers sharing digital engagement information; email & cell



We use personalized emails and letters to push programs out to sub-segments of our customers.



H2Oaks

H2Oaks System

- 3,200 acres expanded to 6,000
- Unique combination of systems
- ASR infrastructure
 - 29 recharge and recovery wells (64 mgd)
 - 30 mgd water treatment facility
 - 7 local Carrizo wells



ASR investment approx \$250,000,000

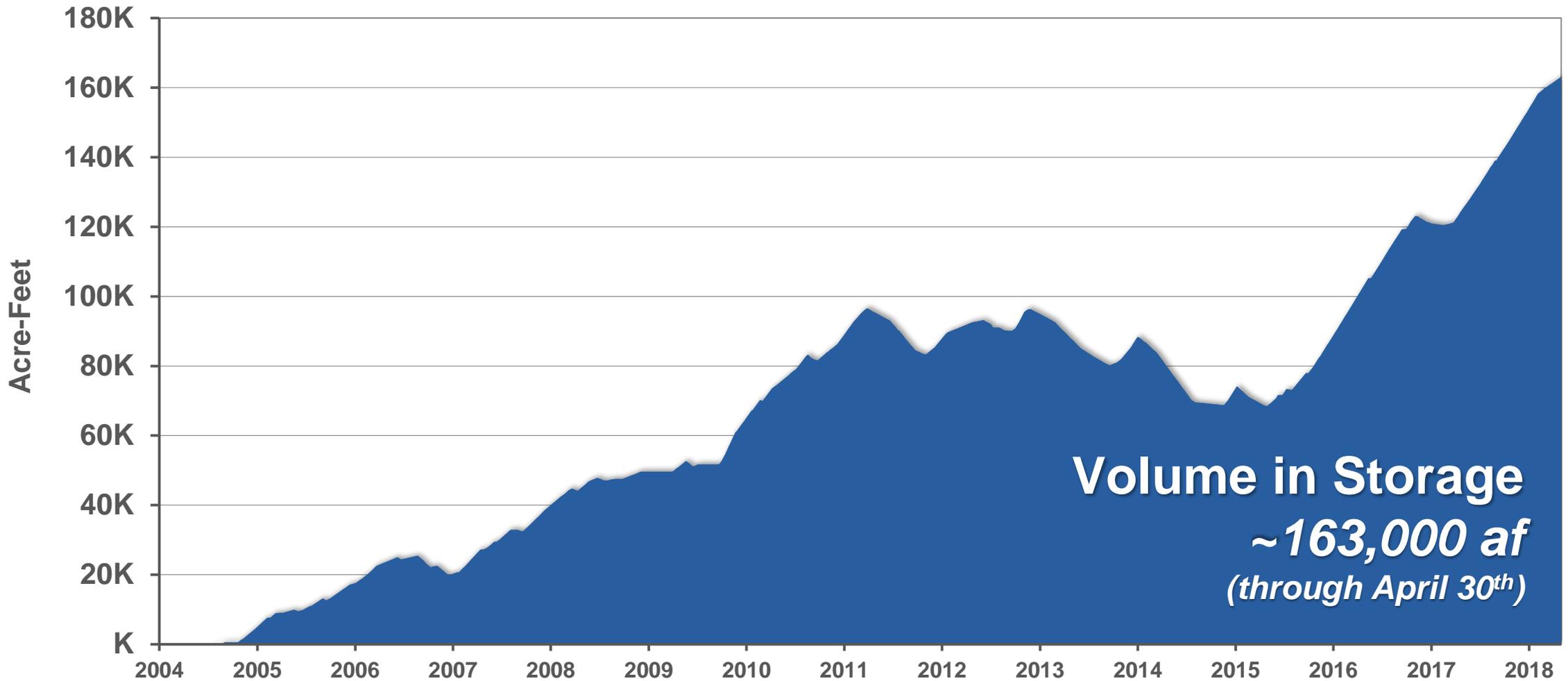
ASR Benefits

Largest Groundwater Based ASR in the Nation

- Approx 70% of SAWWS annual demand stored underground
- Property leased back to landowners for farming & ranching
- Cornerstone of resolution of Edwards Aquifer disputes



Historical ASR Storage

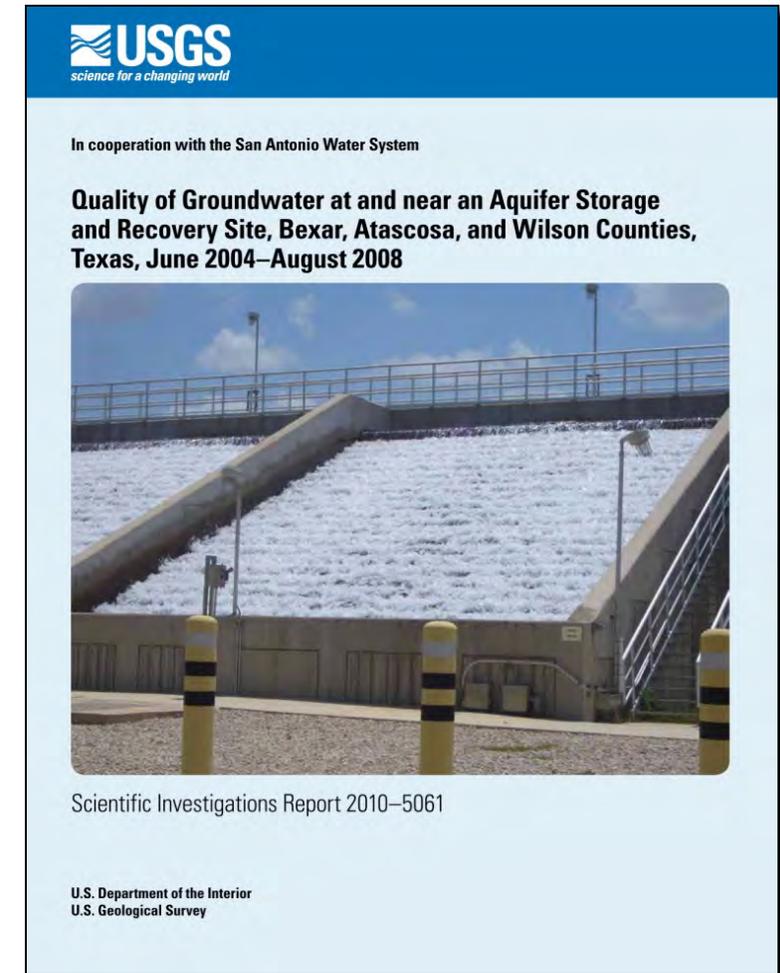


Source: San Antonio Water System

USGS Activities

- Scientific Investigations Report 2010-5061

"No trends that might have been caused by migration of injected Edwards aquifer water were observed."



ASR Storage Capacity

- 233,000 ± 9,000 acre-feet
 - 146,600 in Bexar county
 - 86,400 in Atascosa, Wilson counties

**Water Storage Assessment for
SAWS Aquifer Storage and
Recovery (ASR) Project
UTSA-SAWS contract number M-12-037-MR**

Presented to SAWS by:

Alan Dutton, Principal Investigator

Blaine Rabel, M.S. Geology student

UTSA Center for Water Research & Water Institute of Texas

November 25, 2013

ASR Challenges

- Prove It mentality
- Neighboring groundwater districts
- Bubble management
- Land requirements
- Geology and well performance
- Limited term supply
- Impacts to neighboring wells

ASR Challenges

- Prove It mentality
- Neighboring groundwater districts
- Bubble management
- Land requirements
- Geology and well performance
- Limited term supply
- Impacts to neighboring wells
- **System has outperformed expectations**

ASR Well Locations



Local Carrizo Production



Carrizo Aquifer Production

Evergreen UWCD Agreement

- Approved in 2002
- Allowed for cooperative management
 - “beneficial and more desirable alternative to annexation”
- “SAWS is authorized to recover 100% of the amount of water injected.”
- In addition to ASR recovery, Agreement authorized Local Carrizo production
 - 2 AFY per surface acre, or no more than 6,400 AFY from Local Carrizo wells on the 3,200 acres
- Required mitigation program

Mitigation Program

- 240 wells investigated
- 101 wells where mitigation has been completed:
 - 33 wells had pumps lowered
 - 59 new wells drilled



ASR and Carrizo Well Locations



Brackish Groundwater Desalination



Why Brackish Groundwater Desalination?

- Untapped resource
- Close to San Antonio
- Combined systems at H2Oaks
- Very firm
- Low salinity

Brackish Aquifers of Texas



Desalination Program

A modular approach

- 12 MGD – 13,440 Acre-feet / year
 - ~53,000 Households
- Source Water
 - Lower Wilcox Formation
 - 12 Production wells (~1,500' avg. depth)
- Treatment Process
 - Reverse Osmosis
- Concentrate Disposal
 - 2 Injection wells (5,000' avg. depth)



Desal Construction

- Project Cost: ~\$200 million (\$1,177 \$/AF)
- Production began on November 9, 2016

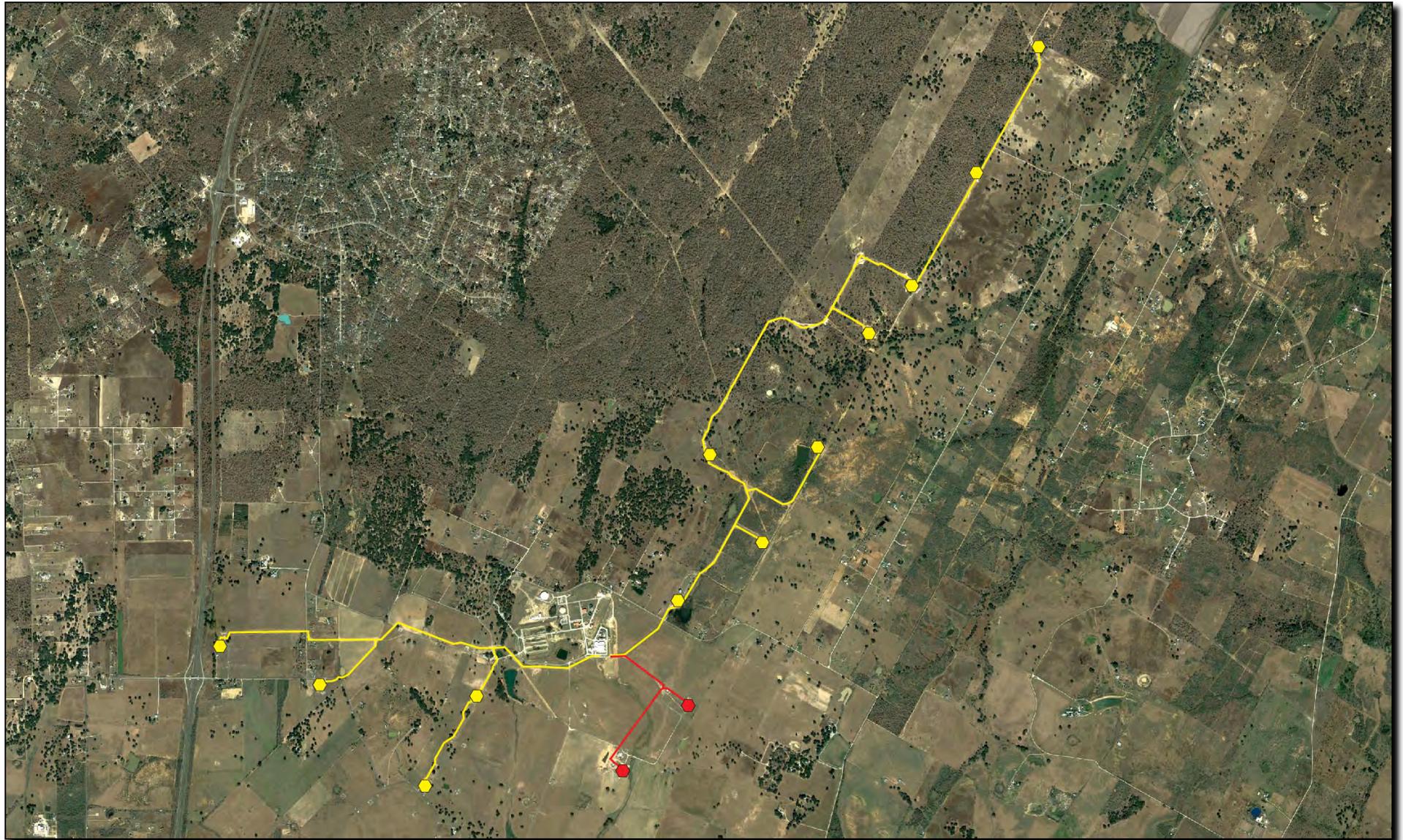


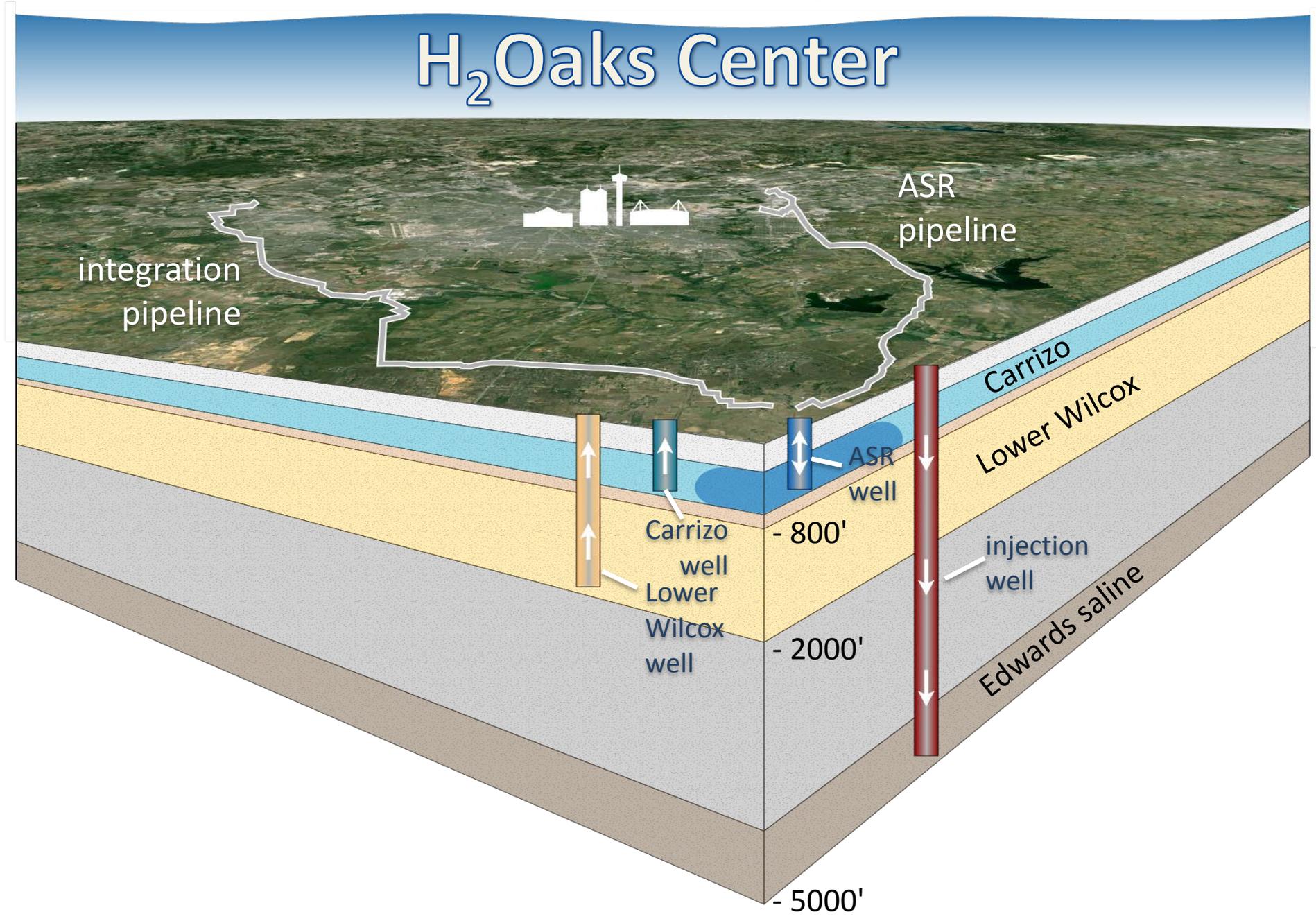
Challenges

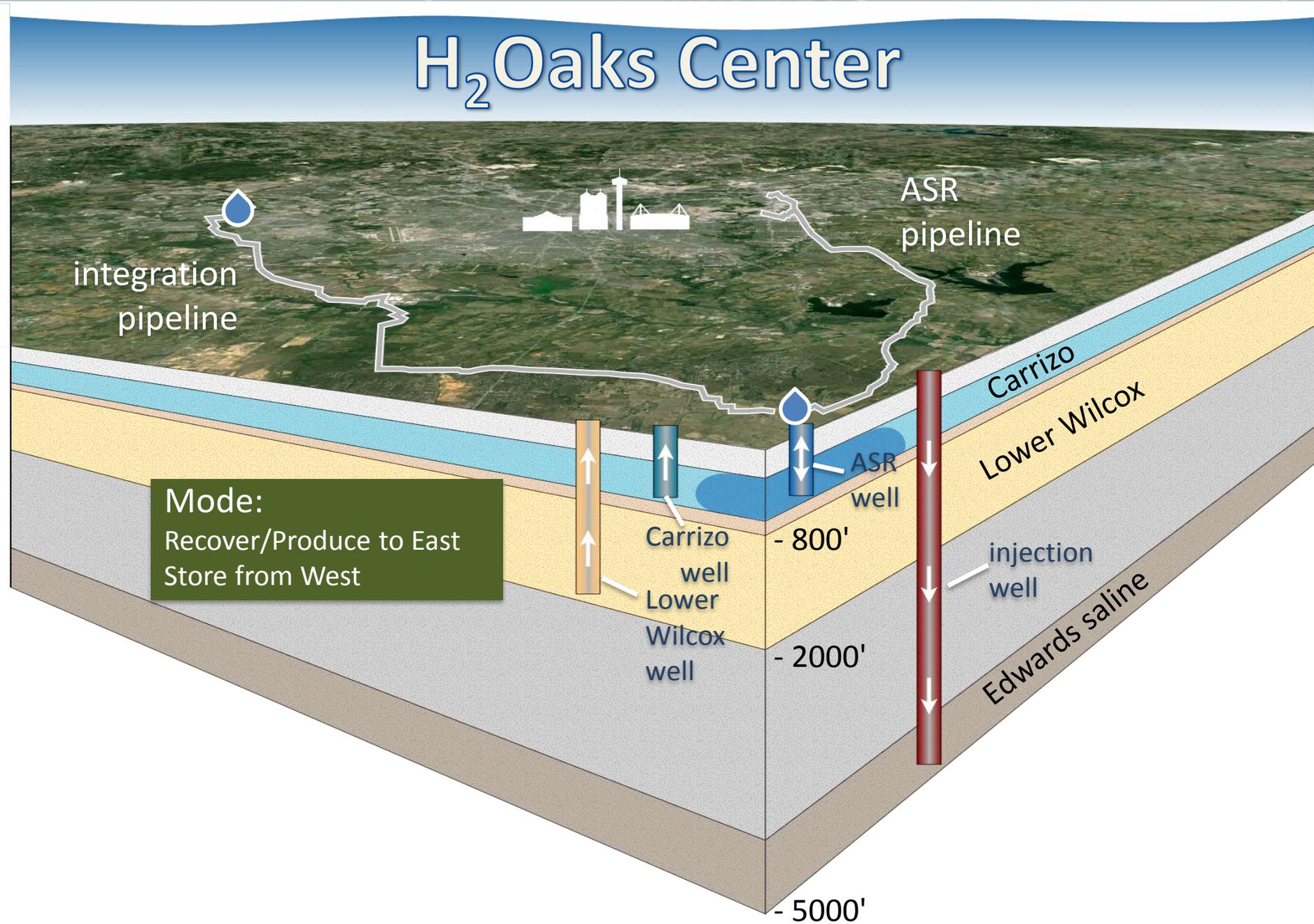
- State and Local Groundwater Regulation
- No aquifer data to design around
- Real Estate
- Concentrate disposal
- Operations
- Water compatibility

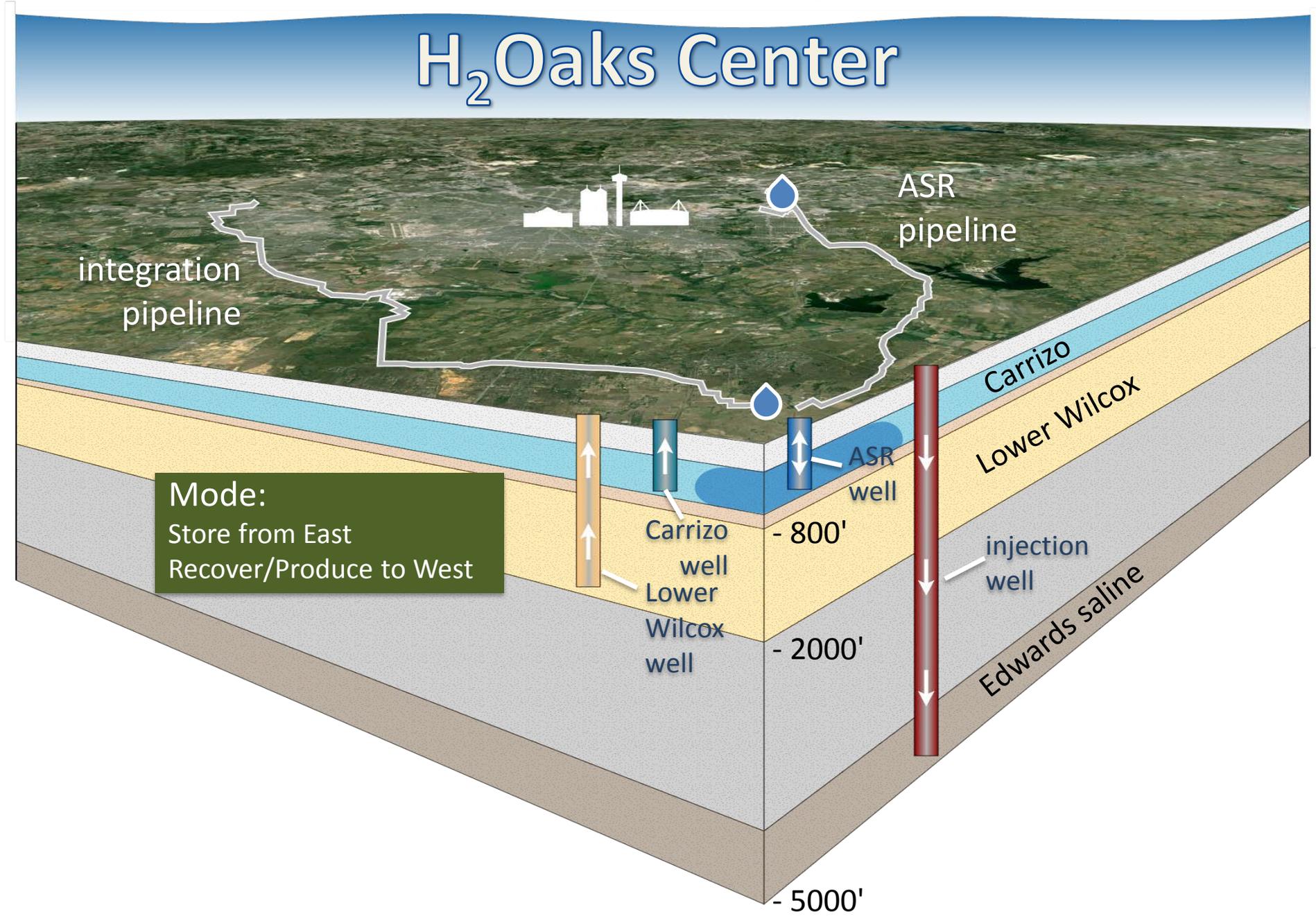


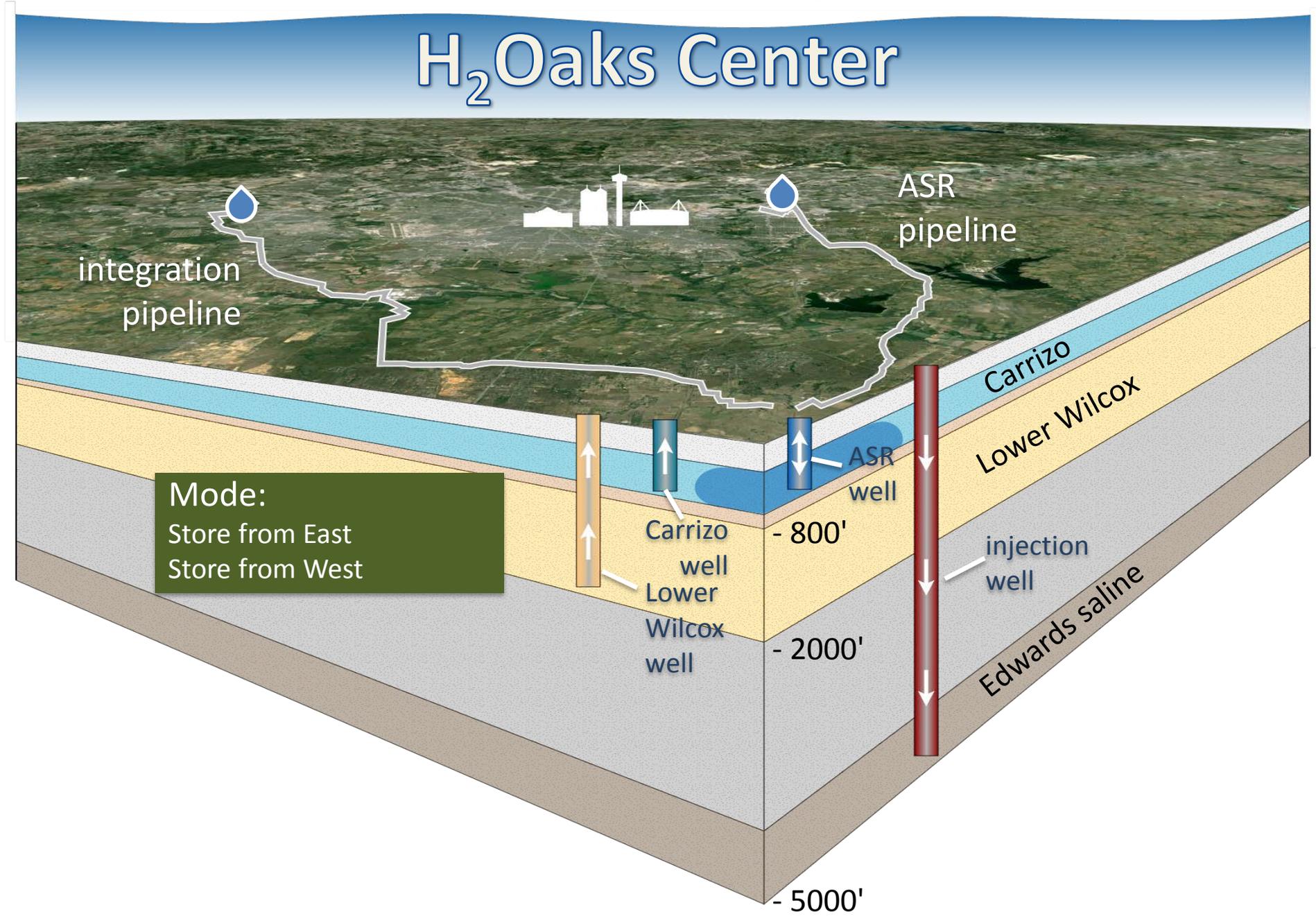
Lower Wilcox and Injection Well Locations

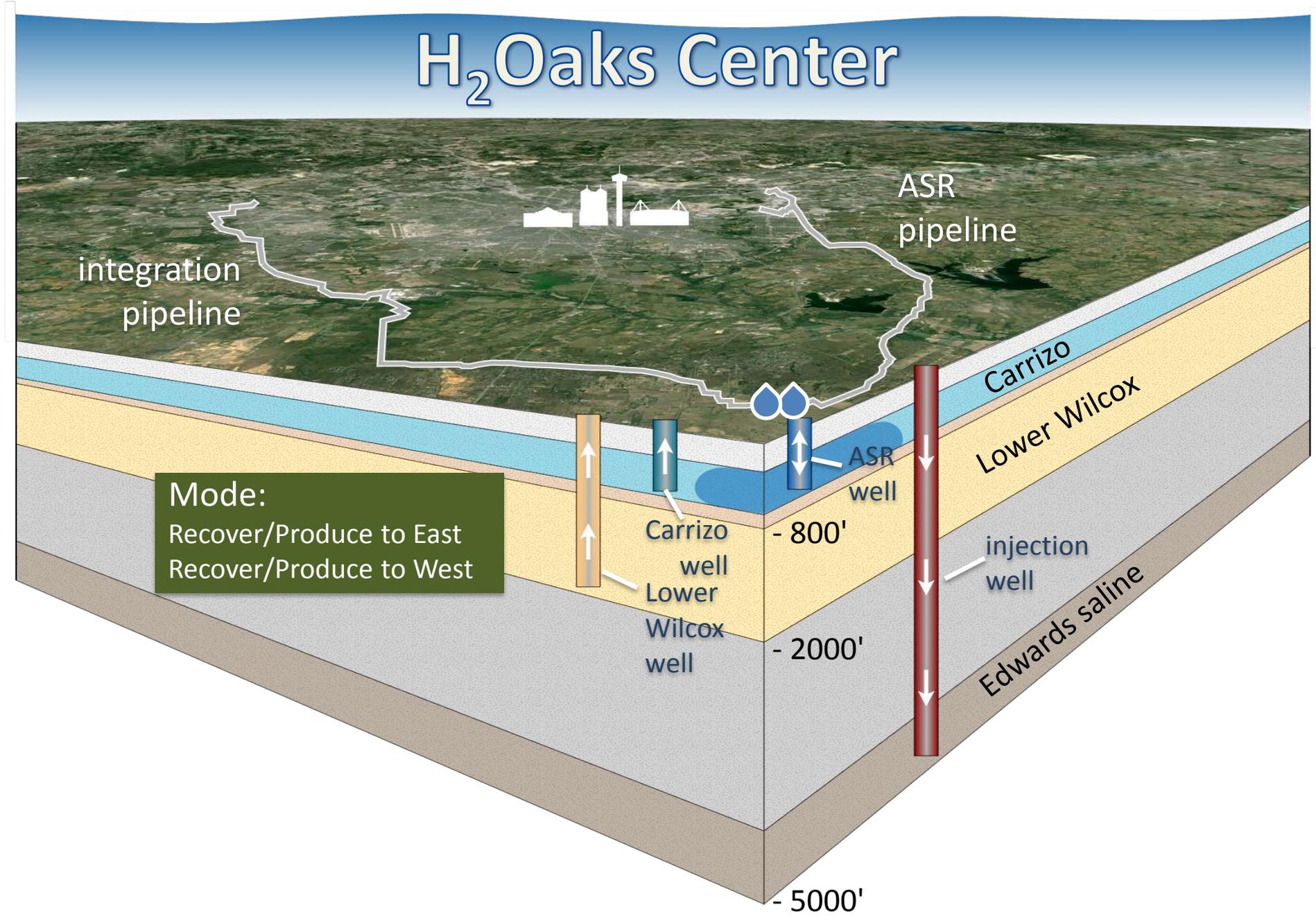












Conclusion

Water Supply Projects Require Time and Money

Project Name	Year Conceived	Year Online	Total Capital Costs, 2001-2017	Total Annual O&M Costs*
Aquifer Storage & Recovery	1996	2004 (Phase 1), 2008 (Phase 2)	~\$266 million**	~\$10 million
Brackish Groundwater Desal, Phase 1	2005 Water Resources Plan	2016	~\$200 million***	~\$6 million

*does not include debt service

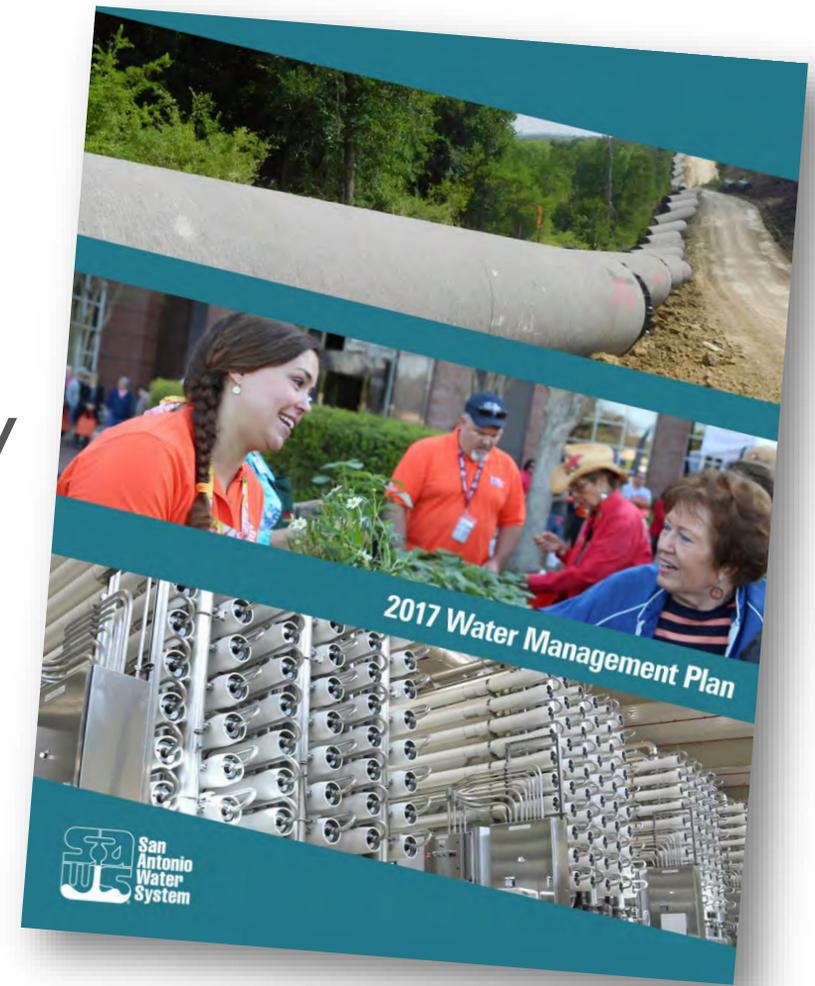
**includes integration

***does not include integration, but includes a lot of infrastructure that will be used for Phases 2 and 3

2017 Water Management Plan

Supporting a Thriving Economy

- Continued commitment to progressive conservation
- Diversified Water Supply already underway or under construction
- Leverage Regional Responsibility
- Progress through Technology
- Water security for decades



San Antonio Water Management

Austin Water
May 4, 2018



MAKING SAN ANTONIO
WATERFUL



RESTRICTIONS ON POLITICAL ACTIVITY FOR BOARD/COMMISSION MEMBERS

June 2018

The November 2018 ballot will include mayor/council member elections, and may include bond measures, charter amendments, and citizen-initiated petition items. It is important that city officials, including appointed officials such as board and commission members, follow laws and guidelines concerning election activity. Engaging in certain political activities can result in violations (with attendant consequences) of the City Charter, the City Code, and civil and criminal statutes. The City's Personnel Policies and Administrative Bulletins, while governing employees rather than appointed officials, are additionally instructive.

- ❑ Running for Office: Board and commission members **may** seek election to any public office. The following must resign their appointed positions in order to run for elective office: Planning Commissioners, Municipal Civil Service Commissioners, and municipal court judges. *Charter, Article IX, Section 6.* The resign-to-run provision applies to municipal court judges only if the unexpired term of their office exceeds one year. The Charter states: "If any judge of a municipal court announces candidacy, or in fact becomes a candidate, in any general, special, or primary election, for any elective public office, at a time when the unexpired term of the judge's office exceeds one year, the judge's announcement or candidacy is an automatic resignation of the office of municipal judge." *Charter, Article VI, Section 2.*
- ❑ Personal Contributions; Personal Political Expression: Except as noted in the subsection immediately below, board and commission members **may** contribute personal money or labor to a campaign, or take a position on election items or candidates, in their free time. This is allowed in city elections and in all other elections. Board and commission members **may** put campaign bumper stickers on their personal vehicles, but not on city vehicles, and **may** place campaign signs on their private property. *Texas Attorney General Opinion MW-243.*
- ❑ Officials in Uniform or on Active Duty: Board and commission members in uniform or on active duty **may not** take an "active part" in any campaign for an elective position of the city. The term "active part" means passing out campaign literature, writing letters, making political speeches, signing petitions, actively soliciting votes or support, making negative or derogatory remarks about candidates, and the like. *Charter, Article XII, Section 2.* Board and commission members should not engage in political activities when using their city title.
- ❑ Seeking Contributions/Exerting Influence: Board and commission members **may not** solicit campaign contributions from any City employee, elected official or appointed official. Board and commission members **may not**, in any way exert influence, either directly or indirectly, on any city employee, elected official, or appointed official to favor any person or candidate for office in the city. This is a misdemeanor criminal offense and, upon conviction, the official shall forfeit their office and be punished by fine. *Charter, Article XII, Section 2.*
- ❑ No Requirement to Contribute: Board and commission members **are not** required to contribute to any political fund or render any political service to any person or party whatsoever. A board and commissioner member **may not** remove a person, or reduce a person's classification or salary, or otherwise prejudice a person for refusing to contribute or render political service. Any city official who attempts to do so shall be guilty of violating the charter. *Charter, Article XII, Section 2.*
- ❑ No City Resources to Advocate: Board and commission members **may** take a position on a ballot item or a candidate, so long as they use no city resources (including their title) to do so. Board and commission members **may** make communications that factually describe a ballot measure so long as the communication does not advocate passage or defeat in any way.

- ❑ No City Resources for Election Campaigning: Board and commission members **may not** contribute or use any city resources, equipment, or money for election campaigning. This includes a prohibition against using city worktime, property, websites, workspaces, and the like to support or oppose a campaign, candidate, or ballot measure. It also includes a prohibition against distributing materials such as signs, brochures, flyers, cards, buttons, bumper stickers, or the like in the workplace, including making materials available to be viewed or picked up. Note that posting on social media platforms during City worktime would also fall under distributing materials in the workplace and is therefore prohibited. *Charter, Article XII, Section 2.*
- ❑ No Contributions at City-Owned Buildings: Board and commission members **may not** make a contribution to any candidate or officeholder at a city-owned building, except at a city-owned building that is available for rental to the general public and that is actually rented for a campaign event at the time the contribution is made. *City Code, Section 2-2-52(A).*
- ❑ No Public Funds for Political Advertising: Board and commission members **may not** spend or authorize spending public funds for political advertising. This is a Class A misdemeanor criminal offense. *Texas Election Code, Section 255.003.* It also could subject the official to being personally fined by the Texas Ethics Commission or being held personally criminally liable. Political advertising includes communications that are created, produced, copied, or distributed using city resources; that advocate for or against campaigns, candidates, propositions, or ballot measures; that are published in a paid newspaper, magazine, or other periodical, or are broadcast by radio or television; or that appear in a pamphlet, circular, flyer, billboard or other sign, bumper sticker, internet website, or similar form of written communication. *Texas Election Code, Section 251.001(16).* This prohibition against authorizing or spending public funds includes using City equipment, computers, copiers, supplies, staff, postage, stationary, email, websites, twitter or other social media sites, bulletin or electronic message boards, resources, ATXN Channel 6, and the like.
- ❑ Limitation on Remuneration: Board and commission members **may not** accept remuneration, directly or indirectly, for campaign work relating to an item placed on the ballot if the member served on the body which exercised discretionary authority in the development of the ballot item and participated in the discussion or voted on the item. *Code Section 2-7-62(K).*
- ❑ Requirement to Comply: City officials are responsible for maintaining current knowledge of the city's charter and code provisions, as revised, and abiding by them; and are responsible for abiding by applicable state statutes.