



# Maximizing Water Resources: Strategies and Challenges in Drought Management

# Managing Water Supplies Through Drought

**Michael A. Murphy**  
**Water Conservation Program  
Manager**





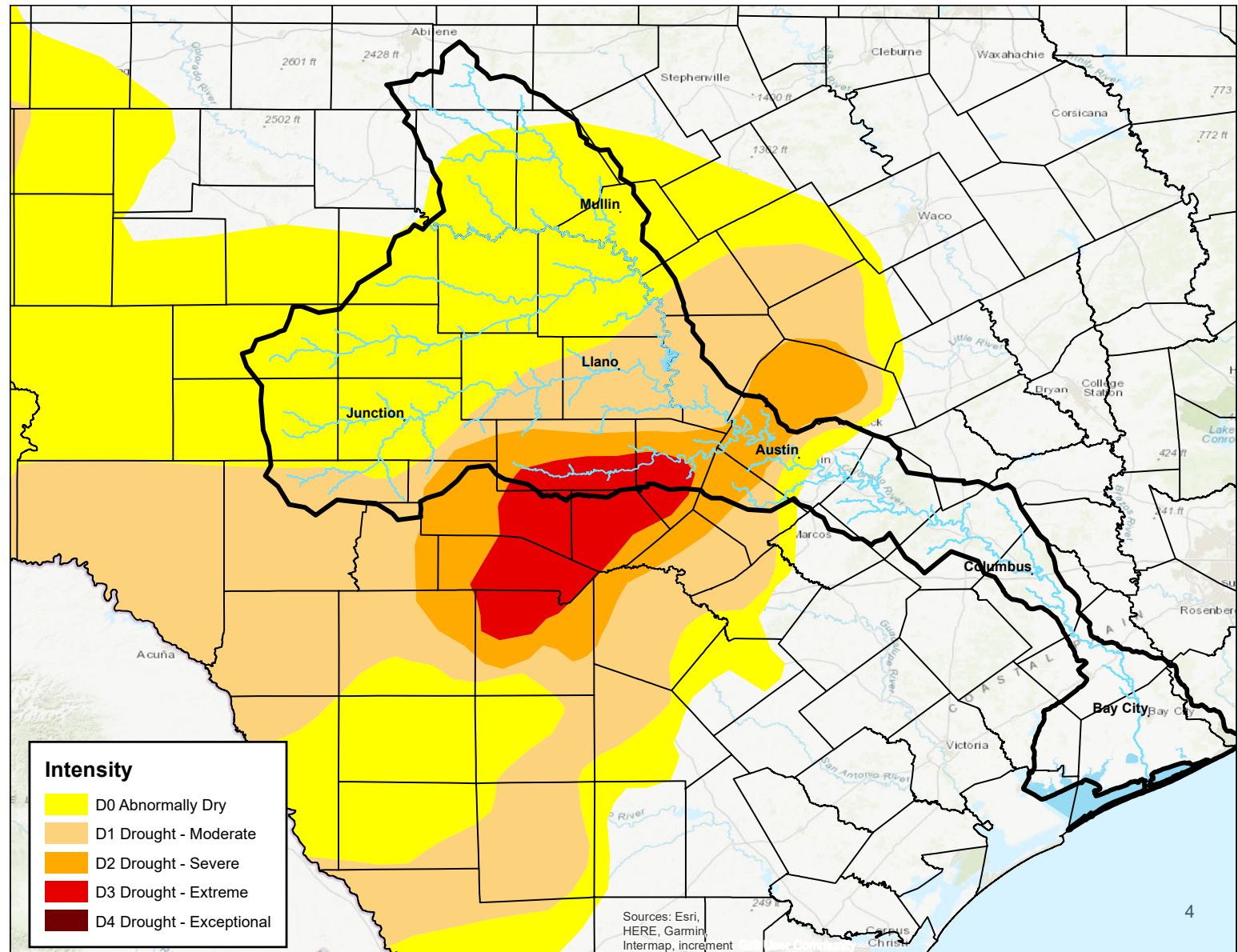
# Floods and Droughts



# U.S. Drought Monitor

## Lower Colorado River Basin

As of March 5, 2024





# Water Supply Reservoirs

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## Lake Buchanan



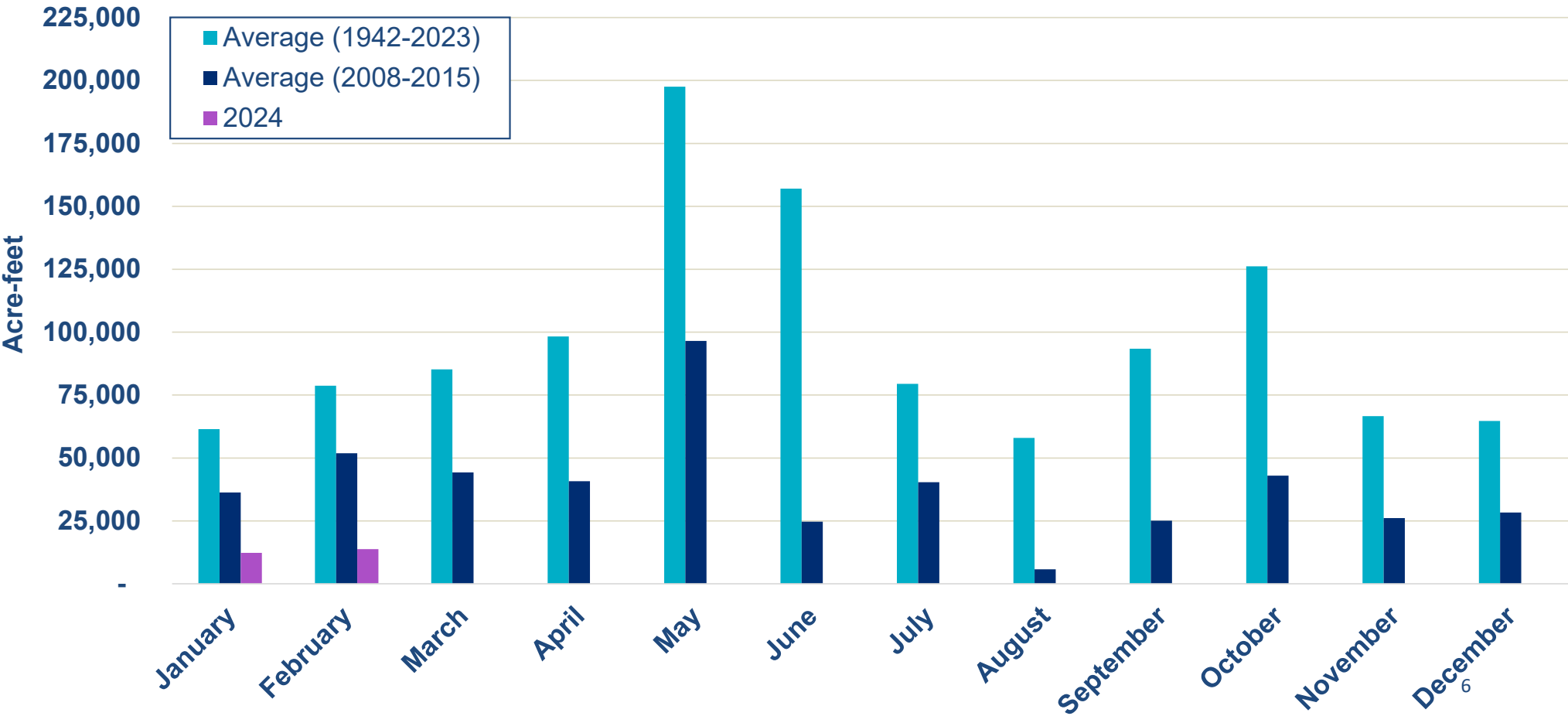
**47% Full**

## Lake Travis



**39% Full**

# Water Flowing Into Lakes Buchanan and Travis



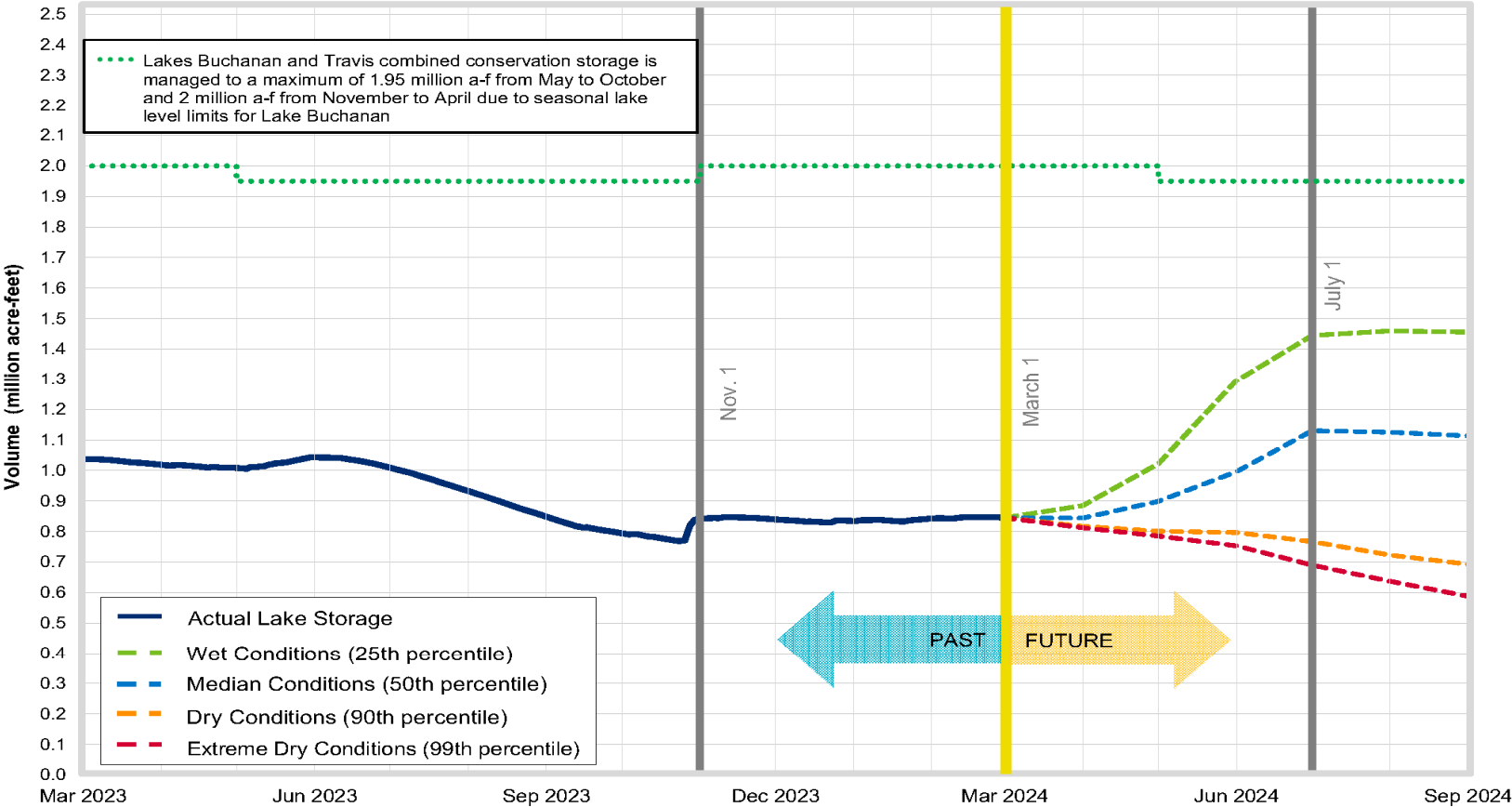


# Lake Level Comparisons

	March 1, 2023	March 1, 2024
Lake Travis (feet msl)	639.55	631.78
Lake Buchanan (feet msl)	1,001.92	994.42
Combined storage* (a-f)	1,036,507	845,086

\*For purposes of the 2020 Water Management Plan, the combined storage is defined as the total of the daily average volume of water in lakes Buchanan and Travis. This determination excludes any water in Lake Buchanan above elevation 1,018 feet msl in the months of May through October or above 1,020 feet msl in the months of November through April and any water in Lake Travis above elevation 681 feet msl.

Lakes Buchanan and Travis Total Combined Storage Projections



Date: March 1, 2024  
Note: One acre-foot equals 325,851 gallons



# Managing Water Supply Through Drought

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Tools in our toolbox



# Benefit of Once-Per-Week Watering Schedule

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Going from watering twice per week  
to watering once per week reduces  
annual water use by about 7-12%





# LCRA's Drought Contingency Plan Update

- What's new?
  - Shifting Stage 1 from a voluntary to a mandatory response
  - Adding an inflows-based trigger in Stage 2 to initiate water use reductions sooner in very dry conditions
  - Adding a new drought contingency plan stage
  - Adding required minimum measures related to outdoor watering for each stage
  - Specific storage level exiting criteria defined for each drought stage

# Proposed Minimum Measures



**Stage 1**

Increased enforcement of twice weekly watering schedule



**Stage 2**

Maximum once weekly watering schedule



**Stage 3**

Automatic irrigation limited to six hours per week

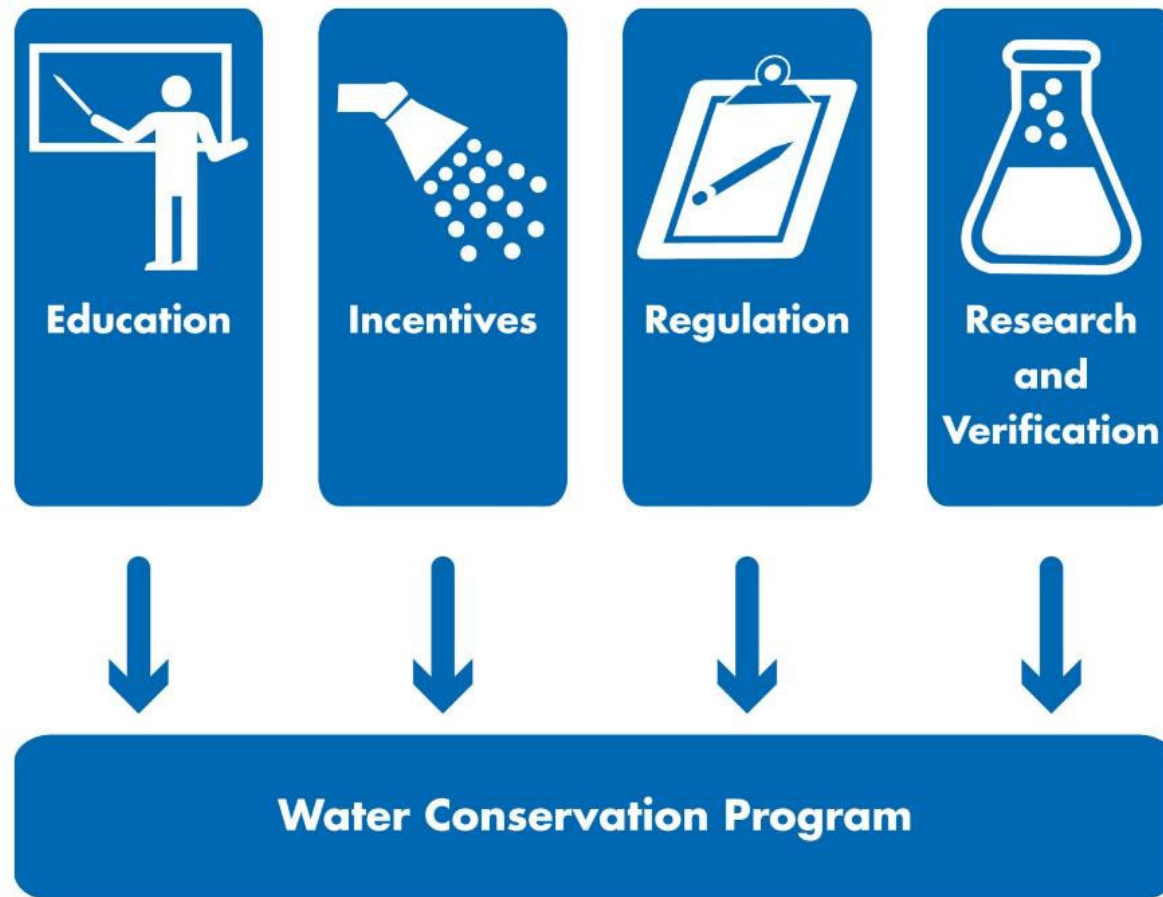


**Stage 4**

Handheld watering only for essential uses: foundations, trees, vegetable gardens



# LCRA Water Conservation Plan Strategies



# Water Conservation Incentive Programs

- LCRA Firm Water Customer Conservation Cost-Share Program
  - Expand customer base, eligibility, participation, evaluate rule changes
- LCRA WaterSmart Rebates Program
  - Increase participation, evaluate potential new incentives such as converting turf to native landscapes

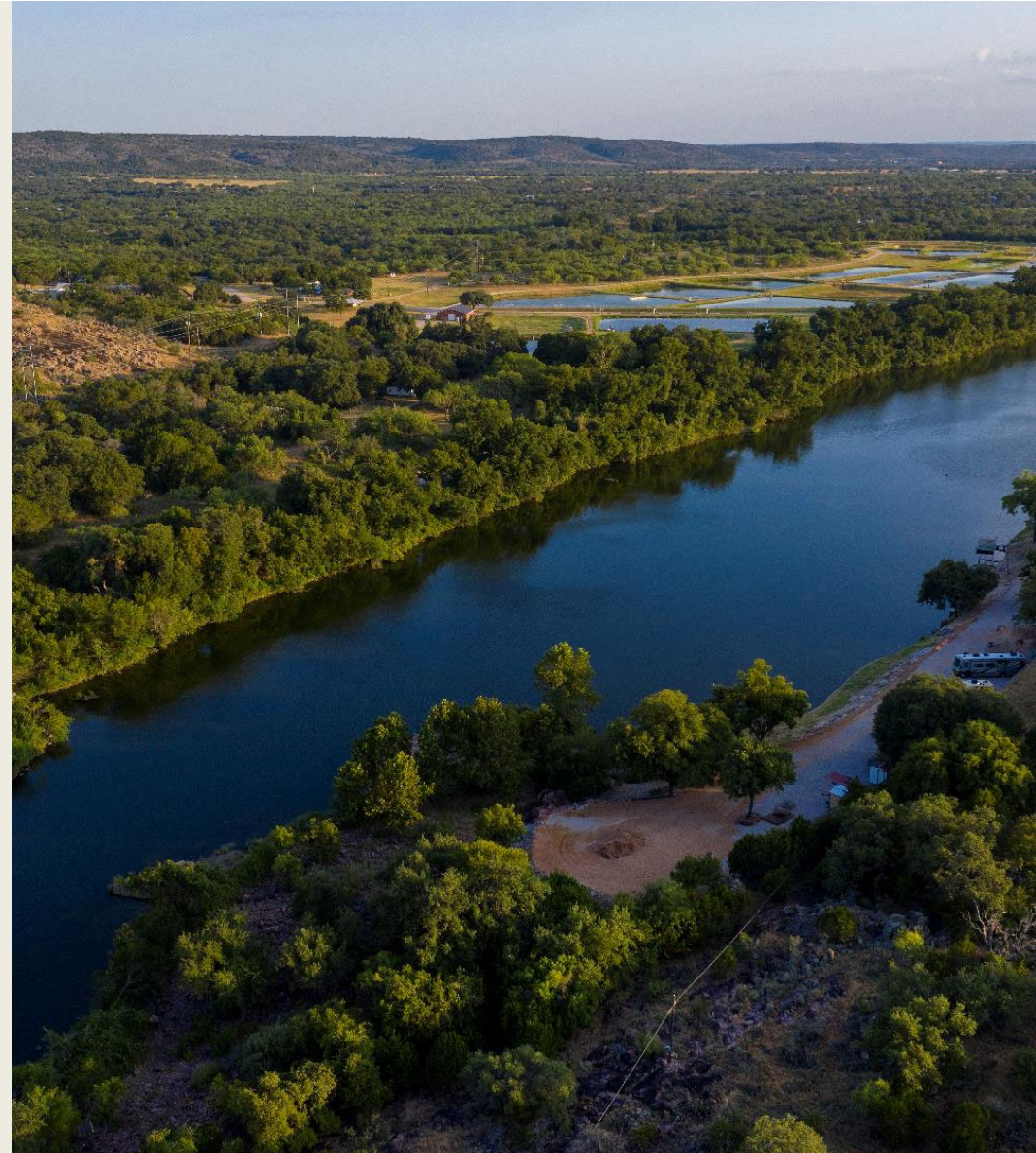


# Beyond Conservation

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No Highland Lakes water for most  
downstream interruptible agricultural  
operation since July 2022

Adding new supplies





# What the Future Holds



## Conservation + New Supplies

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Will need both conservation and new supplies to meet  
our water needs in the future

# Questions?



[www.lcra.org/contactlcra](http://www.lcra.org/contactlcra)





ENERGY • WATER • COMMUNITY SERVICES





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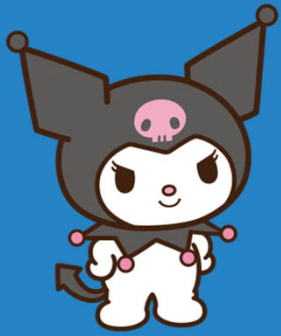


# 311 The Good, The Bad, and The Adorable

Steve Villatoro



# Agenda



- Austin Water & 311 Overview
- Partnering with 311
- Suggestions for success
- Areas of Concern





# Austin Water & 311



- Customers submit reports (Service Requests “SR”) via phone, website, and mobile app
  - Mobile app allows for submission of photos and will automatically geotag location.
- Alleged violator receives yellow postcard, official warning is a red postcard.
  - 10 days to comply.
- If 2<sup>nd</sup> report received after 10 days, a second yellow postcard is sent.
- If a 3<sup>rd</sup> or more report is received an investigator is assigned to document violation.
- Winter all leak reports are investigated after first SR.

# Austin Water & 311



- 2,322 SRs received in 2022
- 4,596 SRs received in 2023
  - Aug 11 to Oct 31 – 2,390
  - 3,064 Postcard mailed
- 145 investigations between May and October
  - 45 confirmed violations
- 139 investigations between Nov 2023 and Mar 2024
  - 27 confirmed violations



## Partner with 311

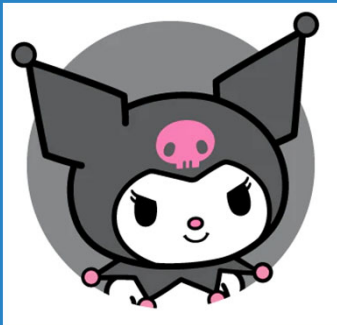


- Monthly meetings to discuss issues or updates.
- Develop service level agreements.
- Public Information Requests.
- Provide timely updates to drought stage changes.





# Suggestions for Success



- 💧 Develop effective policies.
- 💧 Communicate with stakeholders.
- 💧 Develop standardize language and abbreviations.
- 💧 Avoid internal acronyms or jargon.



## Areas of Concern



- Alleged violators may get upset, can take it personal.
- False allegations – reporting neighbor if they suspect they reported them.
- In accurate reports or incomplete reports.
- Auto geotagging issues.



# Hello Kitty Rock Star Award



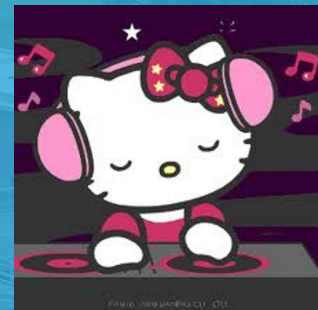
- 💧 Citizen Jemma
- 💧 272 SRs submitted
- 💧 Detailed information and photos.





# QUESTIONS

[Austinwater.org](http://Austinwater.org)







# Maximizing Water Resources: Strategies and Challenges in Drought Management

# MANAGING WATER CONSERVATION & ENFORCEMENT AT A MID-SIZED UTILITY

TRAVIS COUNTY WATER CONTROL & IMPROVEMENT DISTRICT NO.17

WCID<sup>★</sup> No. 17

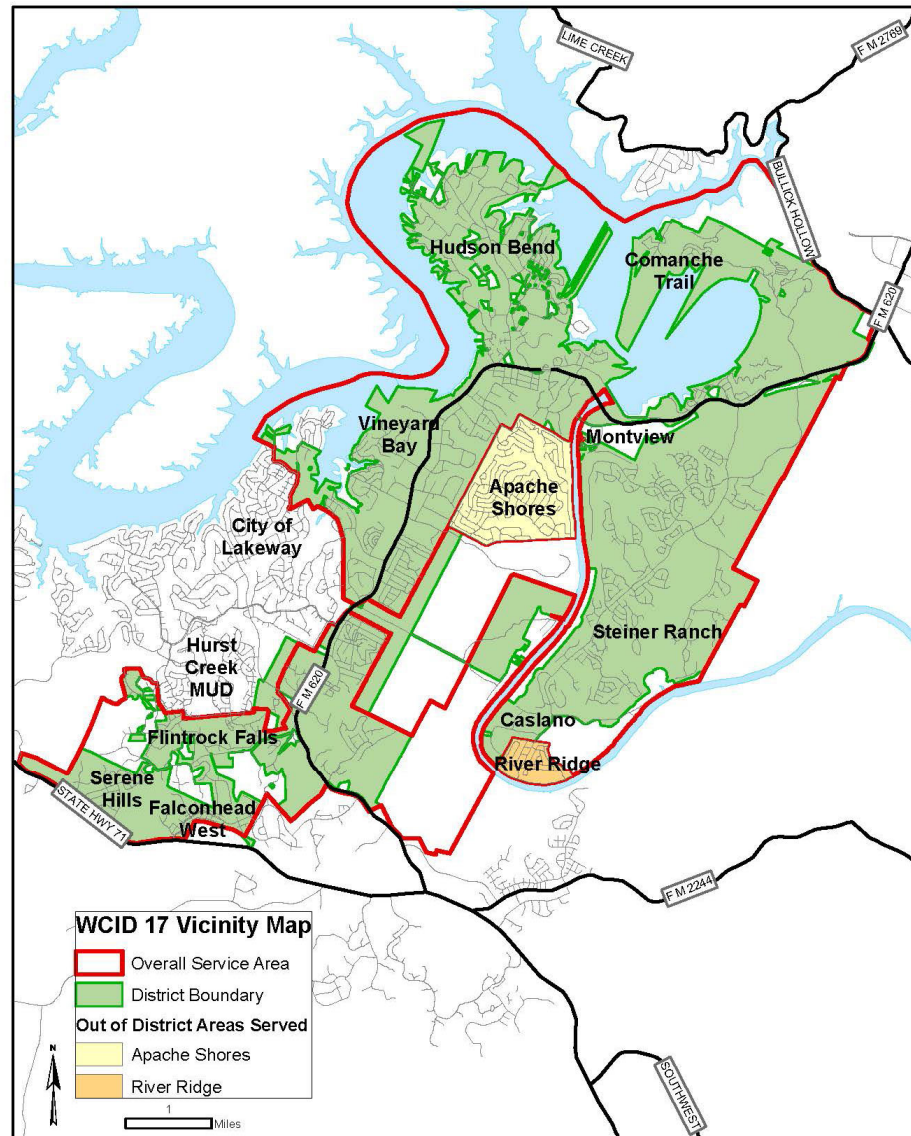
Travis County



# WCID No. 17

## Travis County

- WE ARE A WATER AND WASTEWATER UTILITY SERVICING APPROXIMATELY 50,000 RESIDENTS IN TRAVIS COUNTY
- WE PROVIDE WATER SERVICE FROM TWO PRODUCTION FACILITIES:
  - ECK LANE TREATMENT = 18 MGD
  - MANSFIELD TREATMENT = 12 MGD



# MANAGING TODAY'S WATER USE WHILE PLANNING FOR TOMORROW

- PLANNING FOR POPULATION DEMAND:
  - TRAVIS COUNTY GROWTH FROM 2010 – 2020 = 26% (APPROX. 1.29 MILLION PEOPLE)
    - 2020 – 2023 GROWTH RATE OF 3.1%
  - PROJECTED TRAVIS COUNTY GROWTH FROM 2020 – 2030 = 19% (APPROX. 1.54 MILLION PEOPLE)
- UNDERSTANDING / INFLUENCING COMMUNITY USAGE PATTERNS:
  - WCID NO.17 HAS SEEN CONSISTENTLY MORE CONSERVATIVE USAGE PATTERNS OVER THE LAST 5 YEARS.
    - GALLONS PER CAPITA PER DAY (GPCD)
      - IN 2018 – 148 GPCD
      - IN 2023 – 136 GPCD

# HOW CAN A UTILITY INFLUENCE COMMUNITY CONSERVATION?

- PRIORITIZE A PROACTIVE APPROACH TO CONSERVATION:
  - EDUCATE THE PUBLIC:
    - ENERGY AND WATER-EFFICIENT APPLIANCES
    - IRRIGATION CONTROL AND MONITORING
    - UNDERSTANDING THE LARGEST SINGLE COMPONENT OF MUNICIPAL WATER USE IS IRRIGATION
  - ENGAGE YOUR LOCAL COMMUNITY LEADERS:
    - REUSE IRRIGATION FOR PUBLIC SPACES AND COMMERCIAL IRRIGATION
    - EVALUATING LOCAL ORDINANCES TO ENCOURAGE COMMERCIAL AND RETAIL USE OF WATER EFFICIENT FIXTURES
    - WORK WITH COMMUNITY PARTNERS TO MODERNIZING OUR APPROACH TO LANDSCAPE MANAGEMENT.



# COMMUNITY EDUCATION: WHY CONSERVE – THERE IS WATER IN THE LAKE?

- CURRENT LAKE TRAVIS LEVEL = 631 FEET
  - 37 FEET BELOW NORMAL
- CURRENT COMBINED STORAGE = 849,447 ACRE-FEET OR 43% OF TOTAL STORAGE
  - THIS IS 1.1 MILLION ACRE-FEET BELOW FULL
- SINCE JULY OF 2022, THE LCRA HAS CURTAILED NEARLY ALL AGRICULTURAL WATER USE FOR CUSTOMERS IN COLORADO, WHARTON AND MATAGORDA COUNTIES.
- AUGUST 2023, THE LCRA ANNOUNCES ITS MOVE TO STAGE 2 OF THE DROUGHT CONTINGENCY PLAN REQUIRING FIRM WATER (THINK MUNICIPAL) CUSTOMERS TO REDUCE USAGE BY 10-20%.
- FEBRUARY 2024, THE LCRA ANNOUNCED A CHANGE TO IT'S DROUGHT CONTINGENCY PLAN. EFFECTIVE MAY 1<sup>ST</sup> : ONCE PER WEEK WATERING FOR OUTDOOR IRRIGATION.

## LAKEWAY CITY PARK

MAY 2015 @ 666 FEET



SEPT 2011 @ 631 FEET



# SO WHAT CAN WE DO?

- PRIORITIZE CONSERVATION LOCALLY:
  - COMMUNITY EDUCATION AND OUTREACH
  - ENFORCEMENT OF MUNICIPAL WATERING RESTRICTIONS
  - MAKE HOME (INSIDE AND OUT) CONSERVATION A PRIORITY
- WATER PROVIDER ACTIONS TO ENSURE CONSERVATION AND WATER AVAILABILITY:
  - AMI METER INSTALLATION AND EDUCATION
  - EXPANSION OF OUR MANSFIELD WATER TREATMENT PLANT
    - ENSURES OUR ABILITY TO SUPPLY POTABLE WATER DEMANDS AT LAKE LEVELS FAR BELOW THE DROUGHT OF RECORD.
      - LOWEST EVER RECORDED LAKE TRAVIS WATER LEVEL = 614'
      - LOWEST MWTP SUCTION LEVEL = 555'



# SO WHAT CAN WE DO?

- IMPROVE LONG-TERM WATER MANAGEMENT PLANNING AT THE REGIONAL AND STATE LEVEL:
  - THROUGH THE TEXAS WATER DEVELOPMENT BOARD, AREA MUNICIPALITIES AND THE LCRA:
    - WORK TO BETTER INCLUDE MUNICIPALITIES IN THE ASSESSMENT OF POPULATION PROJECTIONS AND USAGE PATTERNS
  - IMPROVE MUNICIPAL OWNERSHIP OF CONSERVATION:
    - DO EXISTING REGULATIONS / CODES PRIORITIZE CONSERVATION?
  - IMPROVE MUNICIPAL & HOA COOPERATION AND INVESTMENT:
    - REUSE IRRIGATION PROGRAMS
    - PRIORITIZE DROUGHT TOLERANT LANDSCAPE
    - END GREEN LAWN REQUIREMENTS

# SO WHAT CAN WE DO?

- EVALUATION OF THE CURRENT WATER MANAGEMENT PLAN:
  - THE WATER MANAGEMENT PLAN IS DESIGNED TO ENSURE THAT WATER NEEDS CAN BE MET THROUGH A FULL RANGE OF ENVIRONMENTAL AND USAGE CONDITIONS.
    - WHAT DOES THAT MEAN....
      - THE HIGHLAND LAKES / LOWER COLORADO RIVER SYSTEM ARE DESIGNED TO ACT AS A NATURALLY REGENERATING RESERVOIR FOR ALL RIVER SYSTEM NEEDS: ENVIRONMENTAL, MUNICIPAL, COMMERCIAL, AGRICULTURAL ETC.
      - IN ORDER TO DO THIS THE HIGHLAND LAKES WATER LEVELS MUST FLUCTUATE (SOMETIMES GREATLY).

# SO WHAT CAN WE DO?

- ENFORCEMENT AND ANALYSIS OF THE LCRA WATER MANAGEMENT

- PLAN: (CONT.)

- WITH INFLOWS CRITICALLY LOW AND FAR BELOW THE ASSUMPTIONS USED TO CREATE THE WATERMODEL THAT BACKS THE CURRENT WATER MANAGEMENT PLAN:

- IS THE CURRENT WATER MANAGEMENT PLAN EFFECTIVE FOR THE REAL-WORLD CONDITIONS WE ARE SEEING?
  - WE CAN ADOPT A TIME-WILL-TELL MENTALITY OR WE CAN ASK THE HARD QUESTIONS TO ASSESS THE APPLICABILITY OF THE EXISTING PLAN.
  - AT THE END OF THE DAY, THE ONLY TRULY HARMFUL QUESTION IS THE ONE THAT GOES UNASKED...



## SO WHAT CAN WE DO LOCALLY?

- LOCAL MUNICIPALITIES CAN HAVE A GREAT IMPACT ON THIS ISSUE THROUGH ENSURING THEIR VOICES ARE HEARD IN THE WATER MANAGEMENT PLAN PROCESS.
- BUT ALSO THROUGH HOW THEY GOVERN:
  - INCREASING DEMAND AS A RESULT OF HIGH POPULATION DENSITY DICTATES THAT WE MUST LEARN HOW TO MAKE EVERY GALLON COUNT.
    - REQUIRING HIGH-EFFICIENCY HOME APPLIANCES AND FIXTURES IN ALL NEW OR RENOVATED CONSTRUCTION CAN DOUBLE OR IN SOME CASES TRIPLE THE EFFICIENCY OF EACH HOME OR UNIT.
  - ORDINANCES THAT PRIORITIZE GREEN LAWNS THAT ARE RESPONSIBLE FOR 70% OF CURRENT MUNICIPAL WATER USE ARE OUTDATED AND NOT IN TOUCH WITH THE CONDITIONS WE ARE CURRENTLY FACING.

## SO WHAT CAN WE DO LOCALLY?

- EVALUATION AND ADOPTION OF ORDINANCES THAT ALLOW FOR CREATIVE SOLUTIONS THAT STILL MAINTAIN THE COMMUNITY AESTHETIC.
  - REUSE IRRIGATION OF PUBLIC SPACES
    - REQUIRE NEW COMMERCIAL & RETAIL CONSTRUCTION/RENOVATIONS TO IMPLEMENT WHERE AVAILABLE.
  - XERISCAPE:
    - LAWN AREAS ARE DESIGNED TO NEED LITTLE TO NO IRRIGATION. DROUGHT TOLERANT PLANTS IN COMBINATION WITH LOCAL ROCKS AND GRASSES TO PRODUCE TASTEFULLY DESIGNED YARDS THAT PRESERVE THE WELL MAINTAINED LOOK PEOPLE DESIRE.
    - XERISCAPING SETS ASIDE THE ALL-AMERICAN IMAGE OF THE MANICURED LAWN AND WHITE PICKET FENCE FOR A LANDSCAPE THAT IS BOTH MORE NATURAL AND PERSONALIZED.



Many garden centers, including the San Antonio Botanical Garden, Zilker Botanical Garden, and the Ladybird Johnson Wildflower Center have had exhibits dedicated to Texas xeriscaping efforts. Visitors can get inspiration and talk to experts for advice on how to make their yard a success.







**WCID No. 17**  
Travis County

STAGES OF WATER RESTRICTIONS

**Stage 1 - Baseline Water Conservation**  
• >900,000 Acre-Feet Combined Storage  
• Twice per week watering

**Stage 2 - Moderate Water Shortage**  
• 600,000 - 750,000 Acre-Feet  
• Once per week watering

**Stage 3 - Severe Water Shortage**  
• 750,000 - 900,000 Acre-Feet  
• No watering allowed

**Stage 4 - Critical Water Conditions**  
• <600,000 Acre-Feet  
• No watering allowed

[LEARN MORE](#)



**NEW Drought Contingency Plan Co...**

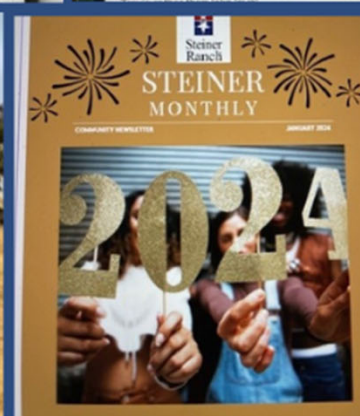
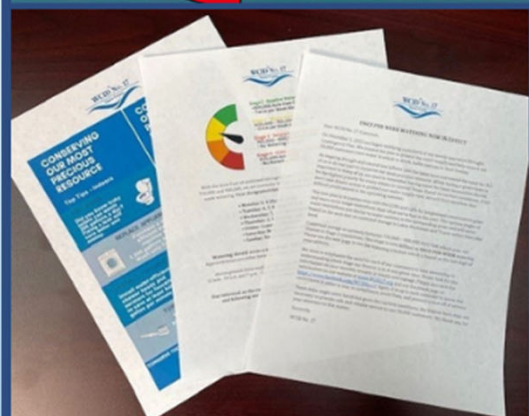
**WCID No. 17**  
Travis County

This is an important message from Travis County Water Control & Improvement District No. 17.

Dear WCID No. 17 Customer,

In an effort to protect the water supply for our 50,000 customers, the publicly-elected board for WCID No. 17 has approved the District's new Water Conservation and Drought Contingency Plans which call for heightened conservation goals and stricter usage restrictions to help preserve our drinking water supply.

The new plan is in partnership with the LCRA and the definition of the District's water stages is similar to the water utilities in the surrounding areas. The various stages of water restrictions will occur based on the acre-feet of combined storage in Lakes Buchanan and Travis.



Travis County WCID No. 17

**WCID No. 17**  
Travis County

3812 Eck Lane  
Austin, Texas 78734

**12 Month Water Usage (in gallons)**

**ACCOUNT SUMMARY**

Description	Amount
Current Billing	\$0.00
Total Current Billing Charges	\$56.78
TOTAL DUE BY 01/20/24	\$59.13
TOTAL DUE AFTER 01/20/24	\$64.13

**DISTRICT 17 UPDATES & GENERAL INFORMATION**

- District Approves Adoption of New Water Conservation and Drought Contingency Plans.
- Enforcement of once-per-week watering February 1, 2024.
- Waterless Water Emerging Through Feb. 2024.
- Waterless your yard and hoses to prevent damage.
- Office Closure Feb. 19.
- Visit [www.wcid17.org](#) for information about the District.
- Next regular Board of Directors Meeting at 6 p.m. - Feb. 19.

**FOUR POINTS NEWS**  
SERVING STEINER RANCH, RIVER PLACE, GRANDVIEW HILLS, WESTMINSTER GLEN, COMANCHE TRAIL, ETC. SINCE 2005

**WCID No. 17 goes to once a week watering**

Travis County Water Control & Improvement District No. 17 emailed customers including thousands in Four Points about going to once a week watering. WCID No. 17 will begin enforcing restrictions on February 1, 2024.

"In an effort to protect the water supply for our 50,000 customers, the publicly-elected board for WCID No. 17 has approved the district's new Water Conservation and Drought Contingency Plans which call for heightened conservation goals and strict drinking water supply," WCID No. 17 shared.

The new plan is in partnership with the LCRA and the definition of the district's water stages is similar to the water utilities in the surrounding areas. The various stages of water restrictions will occur based on the acre-feet of combined storage in Lakes Buchanan and Travis rather than lake level.

With the combined storage currently at 840,000 acre-feet, WCID No. 17 is under Stage 2 restrictions which is now defined as once-per-week watering.

dress ending number and approved hours are either between 12 a.m. - 10 a.m. or 7 p.m. - 12 a.m. on authorized day. Residential: Monday: 0, 1; Tuesday: 4, 5, 6; Wednesday: 7, 8, 9; and Thursday: 2, 3. Friday is for Commercial/HOAs and automated systems are not allowed on Saturday or Sunday.

Other notable restrictions linked to Stage 2 include no washing of sidewalks, driveways, and other impervious surfaces allowed. Additionally, restaurants are asked to serve water by request only.

# WHAT ONE ACTION CAN LOCAL UTILITIES TAKE THAT WILL RESULT IN THE GREATEST IMPACT ON CONSERVATION?

- IRRIGATION POLICY ENFORCEMENT

- SOUNDS SIMPLE – SO WHY DON'T MOST UTILITIES ACTIVELY ENFORCE THEIR POLICIES?

- NEGATIVE COMMUNITY FEEDBACK

- THE PROCESS CAN BE EXTREMELY EXPENSIVE:

- INCREASED STAFF HOURS:

- ENFORCEMENT, CALL VOLUME ETC

- DROUGHT RATE PRICING:

- “SO YOU WON'T LET ME BUY THE WATER I WANT TO BUY AND NOW YOU ARE CHARGING ME FOR THE WATER YOU WOULDN'T LET ME BUY????”

- LOSS OF REVENUE FROM DECREASED WATER SALES:





# IRRIGATION POLICY ENFORCEMENT PITFALLS

- ARE YOU STAFFED FOR THE INCREASED CALL VOLUME?
  - WE SAW A 300% INCREASE IN OUR CALL VOLUME OVER NON-ENFORCEMENT IN 2023
  - WE HAD TO BRING ON TEMPORARY STAFF TO HANDLE THE INCREASED CALL VOLUME
  - WE DISCOVERED THAT OUR OUTDATED PHONE SYSTEM WAS NOT DESIGNED TO HANDLE THAT LEVEL OF INCREASED CALL VOLUME
- NO MATTER HOW WELL TRAINED, YOUR STAFF WILL MAKES ERRORS.
  - ARE YOU PREPARED TO HANDLE THIS?
- ARE YOU READY FOR THE PUBLIC FEEDBACK?

ARE YOU READY FOR THE PUBLIC FEEDBACK?



# ARE YOU READY FOR THE PUBLIC FEEDBACK?

- HOW COMMITTED ARE YOU TO ENFORCEMENT?
- DO YOU HAVE THE PROPER LEVEL OF SUPPORT FROM YOUR COUNCIL/BOARD?
- THE REALITY IS THAT NO MATTER HOW WELL RUN YOUR PROGRAM OF ENFORCEMENT IS, YOU WILL TAKE NEGATIVE PUBLIC FEEDBACK VIA SOCIAL AND TRADITIONAL MEDIA.
  - IN 2023 WCID NO.17 WAS THE SUBJECT OF MULTIPLE TV MEDIA REPORTS CONCERNING CUSTOMERS THAT HAD THEIR WATER SHUTOFF, IN THE VIEW OF THE CUSTOMER, ERRONEOUSLY.
  - ONCE EACH OF THE THREE ACCOUNTS HIGHLIGHTED IN THE NEWS REPORT WERE VERIFIED BY STAFF, THEY HAD EACH INDEED BEEN IN VIOLATION. THE HOMEOWNERS IN QUESTION ULTIMATELY PAID THEIR FINES AND MADE THE CORRECTION TO THEIR IRRIGATION SYSTEMS.
    - WAS THIS EVER UPDATED ON SOCIAL MEDIA BY THE HOMEOWNERS?
    - WAS THIS EVER ADDRESSED BY THE NEWS MEDIA?



# CAN YOU EVEN SHUT SOMEONE OFF FOR A WATERING VIOLATION?

- MANY CUSTOMERS WERE MISTAKENLY UNDER THE IMPRESSION THAT PUC RULES PROHIBIT WATER SHUT OFF'S WITHOUT A 10 – DAY NOTICE. THIS IS FALSE.
  - TEXAS ADMINISTRATIVE CODE CHAPTER 24, SUBCHAPTER F STATES THAT THE REQUIREMENT TO ISSUE A 10-DAY NOTICE PRIOR TO WATER SHUTOFFS IS APPLICABLE TO INVESTOR-OWNED UTILITIES ONLY.
  - THE PUC WEBSITE DOES NOT INCLUDE THE INVESTED-OWNED CAVEAT AND AS A RESULT GIVES THE PUBLIC THE FALSE IMPRESSION THAT UTILITIES MUST PROVIDE A 10-DAY NOTICE PRIOR TO ANY WATER SHUTOFFS.
  - WCID NO. 17 RULES AND POLICIES SECTION 1.21.1 REQUIRES THAT 'PROPER NOTICE' MUST BE PROVIDED PRIOR TO WATER SHUT OFF IN THIS CASE.

# THE STATISTICS FOR 2023

- IN 2023 WCID NO. 17 ISSUED:
  - 2297 WATER VIOLATION WARNINGS
  - 1336 \$200 FINES FOR REPEATED VIOLATIONS
    - OF THOSE 725 FINES WERE WAIVED
  - 413 \$500 FINES FOR REPEATED VIOLATIONS
    - OF THOSE 408 FINES WERE WAIVED
  - 60 ACCOUNTS WERE SHUT OFF FOR NON-COMPLIANCE

# THE STATISTICS SPEAK FOR THEMSELVES – AFFECT OF SHUTOFF ON IRRIGATION ENFORCEMENT

- IS THE NEGATIVE PRESS AND CUSTOMER OPINION WORTH THE HEADACHE?
  - WHEN WE COMMENCED ENFORCEMENT IN JULY OF 2023 WE HAD 1,878 VIOLATORS FOR 8,931,047 GALLONS OF WATER WASTE.
  - PRIOR TO COMMENCING SHUTOFFS IN 2023 WE WERE AVERAGING A TOTAL OF 600 VIOLATORS PER WEEK FOR 4,017,845 GALLONS OF WATER WASTE.
  - ONCE SHUTOFFS COMMENCED THAT IMMEDIATELY DROPPED TO LESS THAN 300 VIOLATORS PER WEEK AND SETTLED OUT AT APPROXIMATELY 150 VIOLATIONS PER WEEK FOR APPROXIMATELY 1,600,000 GALLONS OF WATER WASTE.





# WCID<sup>★</sup> No. 17

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Travis County



QUESTIONS?





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