

# The Warning Signs Are Here — And They're Getting Stronger

## Action Needs to Begin Now

The Central Texas Water Coalition (CTWC) believes that the Lower Colorado River Authority's (LCRA) current Water Management Plan (WMP) for the operation of Lakes Buchanan and Travis should provide greater levels of protection for water supplies in the upper Colorado River basin, and that LCRA should begin working to update the plan now. A sufficiently protective WMP would be able to withstand a more prolonged drought under both near-term and longer-term demand conditions. The WMP should also describe how it will bridge to the longer term, as growth in Central Texas is happening very fast.

### Introduction

It's been said that the wars of the future won't be fought over oil; they'll be fought over water. Here in Central Texas, we may be among the first to find out just how that future will unfold.

We don't have to look very far ahead, either. Already, changing weather patterns are bringing hotter, drier weather to our region. Inflows into the Highland Lakes, the primary source of drinking water for Central Texas, have declined to just a trickle of what they once were. And a population explosion that shows no signs of slowing will increase demand on that shrinking water supply.

In short, there's a problem — but it doesn't stop there. Against this backdrop, LCRA's current WMP allows rice corporations in the lower river basin to request mass releases of water from the Highland Lakes to flood their fields for weed control – an inefficient irrigation practice that results in tremendous water losses.

This antiquated arrangement is happening while our region is experiencing another intense drought. The most recent "Drought of Record" (2008-2015) was disastrous for area businesses, homeowners, municipalities and families. The current drought may prove just as bad or worse — yet, under the current WMP, LCRA may wait until 2025 to even begin the WMP update process.

We do not have water to waste, and we certainly cannot ignore this threat and do nothing for another three years — not when our drinking water is at stake. This document discusses some of the flaws in the current WMP and why work must begin now to work on needed fixes and new approaches. But to truly prevent, rather than just delay, water catastrophes like we're starting to see around the world, a larger conversation is urgently needed about how our water supply should be used, managed and protected for the future. Our very lives depend on it.

## Historical Hydrological Data May Not Provide a Sound Basis for Water Supply Modeling and Planning Today

We rely on surface water inflows into the Highland Lakes reservoirs for our water supply. The current WMP modeling uses historical inflows dating back to 1942, and includes the recent 2008-2015 Drought of Record. The modeling is designed to assess water security for customers such as cities, businesses, and industries, referred to as Firm customers; assess and define water release requirements for environmental flows; and determine available water for Interruptible downstream customers, which consist primarily of rice corporations in the lower basin. The modeling shows us how our proposed water management strategies would have fared under observed historical conditions, yet it does not consider the possibility of worse conditions in the future.

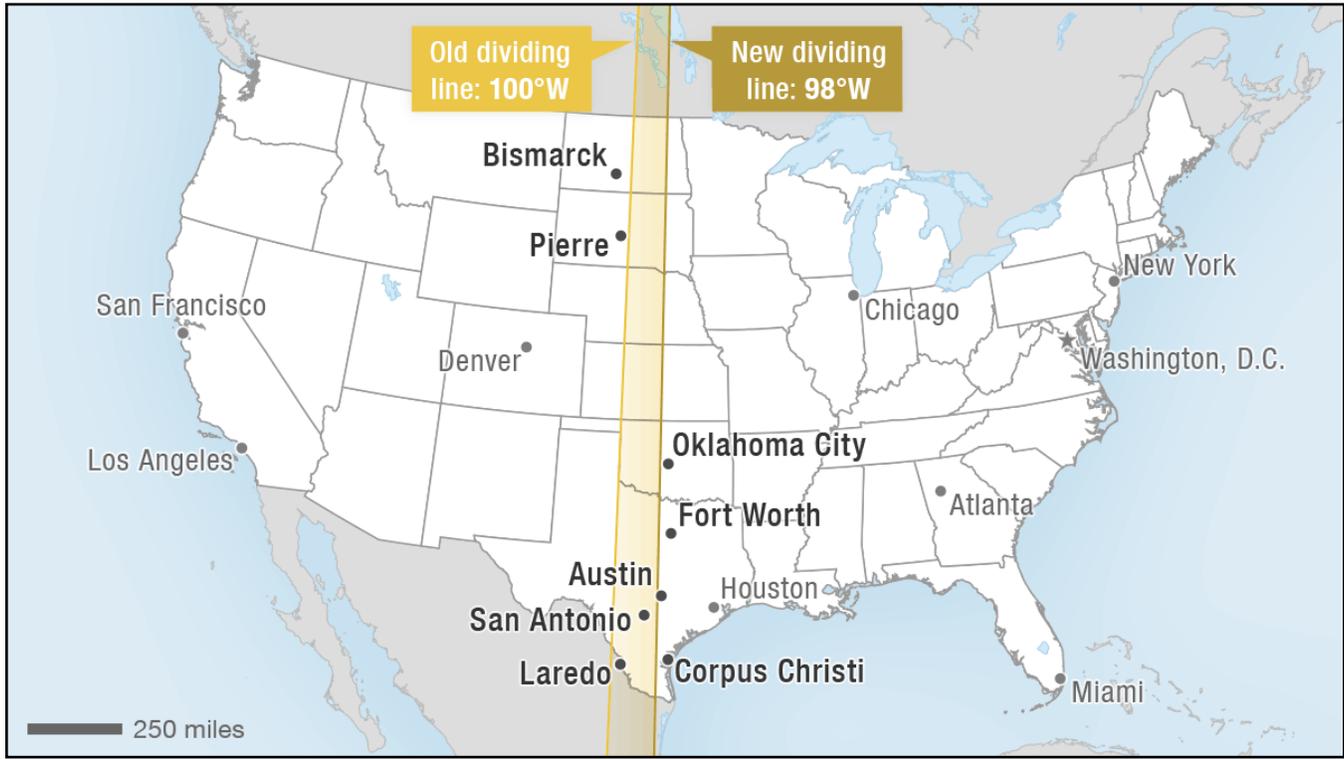
CTWC has been analyzing the historical inflow data, and strongly believes that a major adverse trend has developed to lower inflows from our watershed into the Highland Lakes. In other words, the inflows we've been seeing in the past few years are significantly less than what would be predicted from historical data, and therefore are no longer expected to predict future inflows. Studies have identified numerous structural and often permanent causes for the reduced inflows, such as a large proliferation of stock tanks and amenity ponds in the upstream reaches of the watershed; alluvial wells drilled adjacent to rivers, such as the San Saba River; brushy vegetation along watercourses; and a trend toward increased evaporation resulting from hotter temperatures.

CTWC believes that the observed reduction in inflows to the reservoirs is very likely to continue with additional development in the watershed, and it needs to be recognized and accounted for in the modeling for the WMP. Analyses of inflows into the lower basin are also needed, as there may be a developing trend toward lower inflows there. This is important given LCRA's reliance on run-of-river water below the Highland Lakes to satisfy the WMP's environmental demands, as well as the water available for its Interruptible customers such as rice corporations. A reduction in the lower basin historical inflow pattern puts significant pressure on the Highland Lakes reservoirs.

## Our New Normal: More Arid Weather Patterns for Central Texas

There's no doubt that more arid weather patterns are shifting eastward in the country. That means drier conditions seem to be becoming the new normal for much of Central Texas. A 2018 report by Columbia University meteorologists concluded that the 100th meridian, symbolically recognized as the dividing line between the wetter, cooler Eastern U.S. and the more arid West, has shifted 140 miles east. The dividing "dry line" is now located along the 98th meridian.





Source: Alyson Hurt/NPR | <https://www.npr.org/2018/08/09/637161725/the-arid-west-moves-east-with-big-implications-for-agriculture>

That shift means that much of Central Texas, including our upper basin watershed, is now on the dry side of the divide. This shift is likely to further reduce inflows and is another major cause for concern that using historical inflow data is no longer reliable for modeling purposes in the WMP. Unfortunately, the Central Texas region is feeling this impact at a time of unprecedented population growth and, as discussed above, historically low water inflows into the Highland Lakes, the primary source of drinking water for approximately 2 million people.

We don't need to look far to get a sense of what is headed our way. The trends in the more arid Western U.S. are clear — and alarming. Currently, the vast majority of the Western U.S. is in some stage of drought. The Southwest region is currently 22 years into a drought that is the worst since the start of the scientific record approximately 1,200 years ago.



Providing power and irrigation to south-central New Mexico and western Texas, the **Elephant Butte Reservoir** located in southern New Mexico has dropped to **5% of its capacity**.



Located in Nevada and Arizona and supplying water to 20 million people, **Lake Mead** is the largest reservoir in terms of water capacity in the US. As of July, the lake had dropped to **27% of its capacity**.



Serving as a water storage facility for Colorado, Utah, Wyoming and New Mexico, **Lake Powell** is the second largest reservoir in the US. The lake is currently at **24% of its capacity**.

Not only does drought threaten water supplies as reservoirs drop to historic lows, it increases the risk of wildfires, which have been particularly destructive in Western states and Texas in recent years. It's a vicious cycle: Low lake levels mean firefighters are often unable to access the water they need to fight the fires, and the fires may further reduce the water supply and threaten water quality.

In the past few months alone, Austin has experienced the hottest December, May, June and July on record. Central Texas saw less than half its average rainfall this spring, and went 27 days without rain in January. In early August, the Highland Lakes had at least 14 days in a row of zero inflows. This was the longest stretch during which the river has received zero inflows since records began in 1942.



Located west of San Antonio in Medina and Bandera counties, **Lake Medina** was at **27% of its capacity** as of September 27, 2022.

Photo source: WOAI-News4SanAntonio | <https://news4sanantonio.com/news/local/medina-lake-now-at-22-filled-the-lowest-point-since-2015-03-31-2022>

**Falcon Reservoir** located in south Texas near Laredo along the Texas-Mexico border has dropped to **16% of its capacity** as of September 27, 2022.

Photo source: Texas Public Radio | <https://www.tpr.org/border-immigration/2022-08-05/water-restrictions-increase-along-the-scorched-border-as-falcon-reservoir-steadily-fades>

## Worst 10 Jan-Aug Inflows

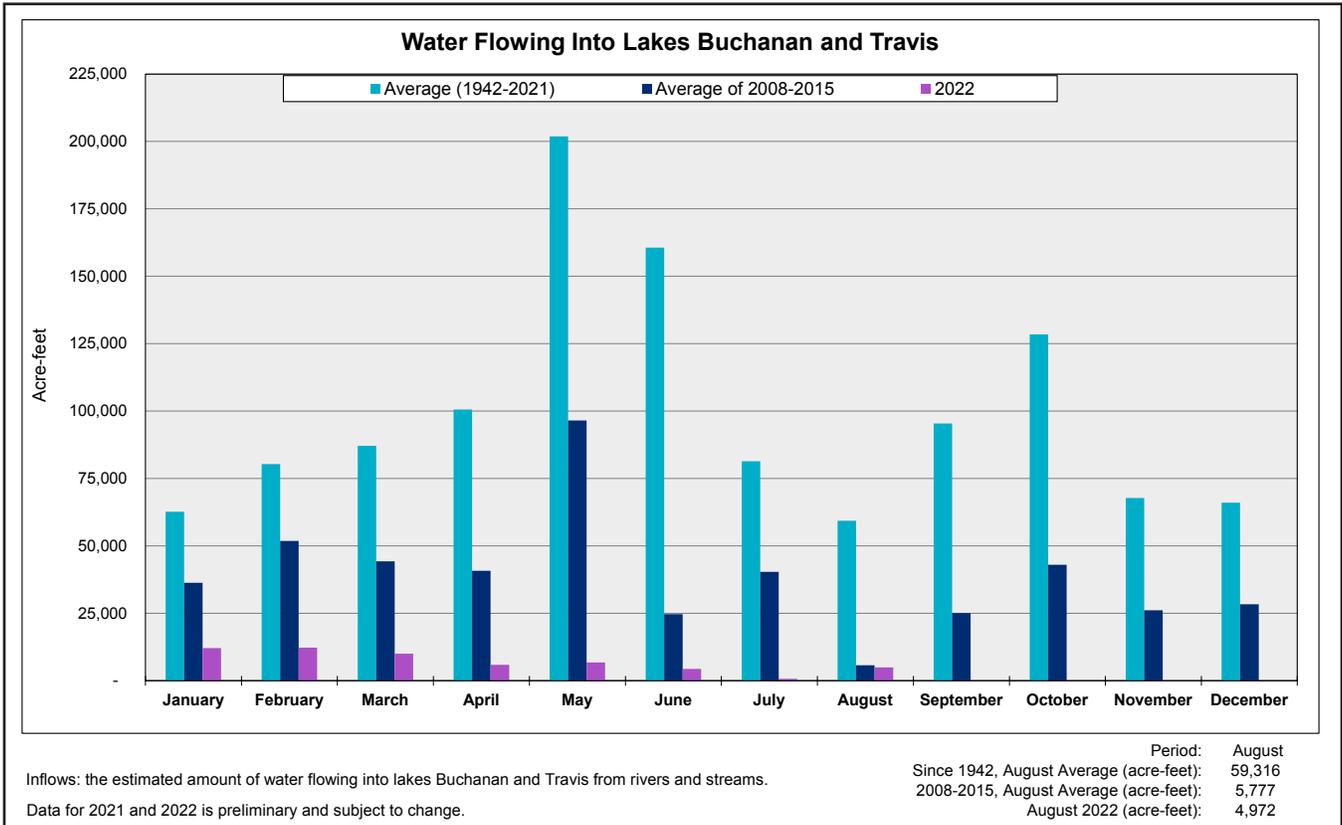
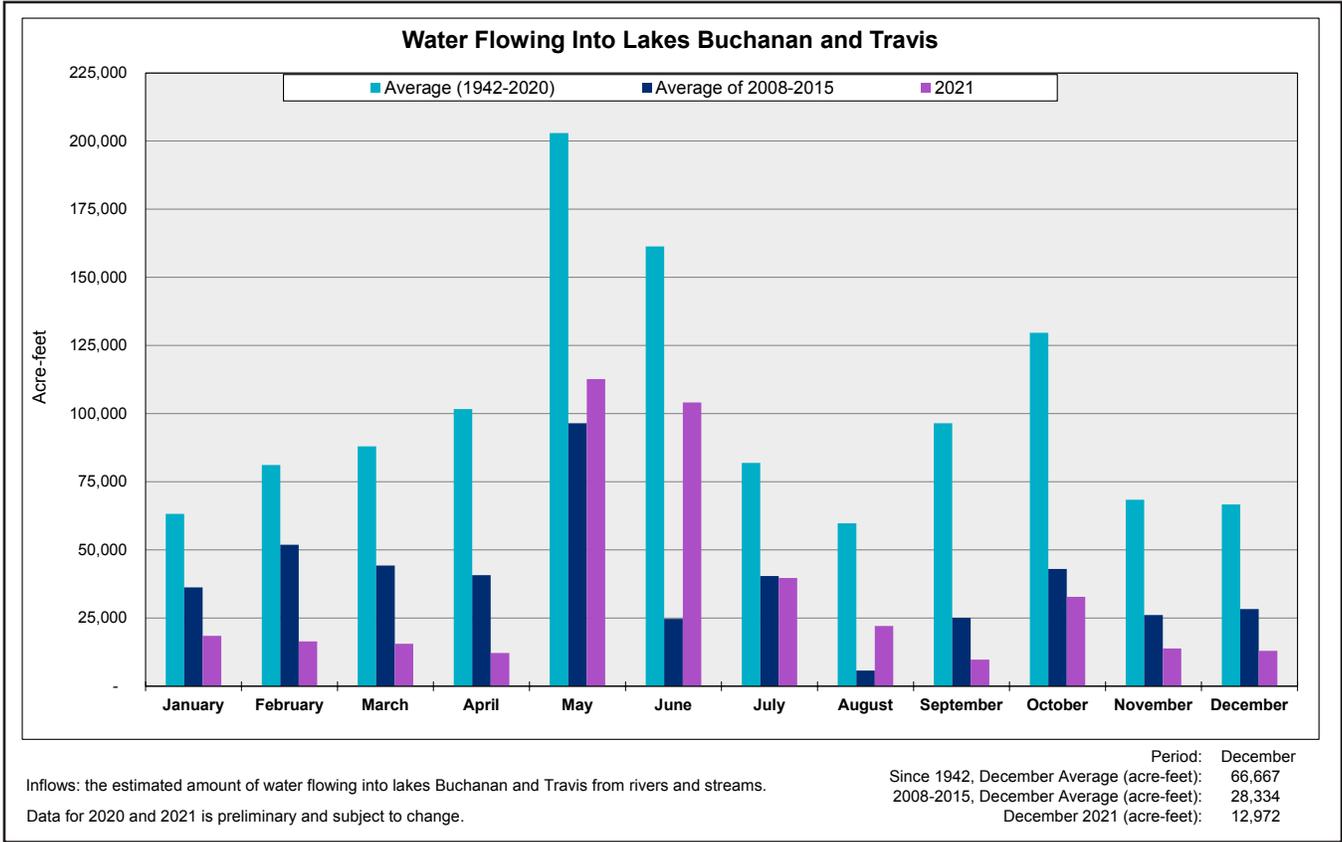
2022	58,835 acre-ft
2011	74,109 acre-ft
1984	91,691 acre-ft
2013	99,665 acre-ft
2018	103,009 acre-ft
2014	152,065 acre-ft
2000	177,674 acre-ft
2009	192,544 acre-ft
2006	229,535 acre-ft
2008	234,312 acre-ft

United States Geological Survey (USGS) data

Since the start of the current drought (8/1/19 per LCRA definitions), as of Aug. 31, 2022, the lakes have received 774,299 acre-feet less water than during the same three-year period at the beginning of the 2008-2015 Drought of Record. August Year-to-date (YTD) inflow totals for 2022 are only 58,835 acre-feet, making them the worst

YTD totals ever. In July 2022, only 564 acre-feet of inflows entered the Highland Lakes, per USGS gauge flows.

This year, the June inflow total into Lakes Buchanan and Travis was just 2.7% of the historical June average. The July inflows, as reported by LCRA, of 586 acre-feet into the lakes were less than 1% of the historical July average. These low inflow numbers and trend in the upper basin are very concerning, and need much more attention, and likely new modeling approaches, to ensure that they are adequately reflected in the WMP update process to provide a more protective reliable and sustainable water supply for the entire Central Texas region. This process must also include the study and incorporation of inflows into the lower basin, given the direct linkages in the WMP.



Source: Lower Colorado River Authority



## More Arid Conditions Set Central Texas Heat Records

- Hottest May, June and July ever for Austin
- Nine daily heat records broken in June
- July 2022: Matched most 100-degree days in a single month (ties July 2011)
- July 10 recorded the second-highest temperature ever: 110 degrees
- As of August, Austin has recorded only 59% of normal rainfall

Source: *The Austin American-Statesman* | <https://www.statesman.com/story/weather/2022/08/01/austin-tx-weather-heat-rainfall-drought-10-real-numbers/65386567007/>

These ominous projections and trends of the more arid weather conditions shifting eastward to include Central Texas are consistent with warnings from the state climatologist that sound the alarm about potential sustained drought conditions, suggesting a better term may be “megadrought.”

State climatologist John Nielsen-Gammon told Austin’s KUT 90.5 in July 2020 “There’s some question about whether we should refer to what’s coming as a drought. Because a drought is something that happens and goes away. And we’re talking about something that is effectively going to be permanent — at least in terms of human lifespan.” John Nielsen-Gammon, who is also a professor of atmospheric sciences at Texas A&M University, is the lead author of research that forecasts the arrival of more extreme droughts through this century. As pointed out by Nielsen-Gammon in a follow-up KUT article in July 2020, “these could include decades-long “megadroughts,” which have not afflicted the state for a thousand years. Texas manages its water resources based on what the paper calls a “rear-view mirror approach.”

The state water plan, updated every five years, aims to prepare Texas for a drought like the seven-year-long “drought of record” that took place in the 1950s. What it does not do is consider how shifting weather patterns could further drain water supplies. Climate change “means our margin of safety of our water supplies becomes smaller and smaller unless we adapt our planning to keep up with it,” Nielsen-Gammon says. That means groups that use and distribute water in the state, like agricultural interests and local and regional water authorities, should use tools for forecasting the impacts of climate change on their water supply.

## Addressing the Structural Causes for Reduced Inflows From the Watershed Will Not Be Easy

Development and fragmentation of the large ranches in the watershed has driven the proliferation of unmonitored stock tanks, ponds and groundwater wells, which are reducing inflows into the Highland Lakes. In other words, the upstream structures that capture surface water that once entered the Highland Lakes must be accounted for in the WMP’s water modeling assumptions, as they are likely to remain for years to come.

## Recent Rapid Declines in Lake Storage Raise a Red Flag That This WMP Is Not Sufficiently Protective

On March 1, our water supply, as measured by combined storage in the reservoir lakes (Travis and Buchanan), stood at about 1.55 million acre-feet, or 77% of capacity. Our region was in the drier weather pattern resulting from a strong La Niña, and inflows were already very low compared to historical norms, but the WMP itself defined the situation as “Normal.” This meant that the WMP allowed large and highly subsidized Interruptible releases for rice corporations’ first crop without curtailment of up to 178,000 acre-feet, as measured at the lower basin delivery points for three (Lakeside, Pierce Ranch and Gulf Coast) of the four agricultural operation divisions. This occurred despite the very low inflows and a continuing La Niña projection. Conveyance of this water between its storage in Burnet and Travis Counties and its availability for diversion from the river to LCRA customers in Colorado, Wharton and Matagorda Counties results in significant water losses along the way. Natural evaporative and seepage losses during this journey are exacerbated by LCRA’s questionable policy of allowing its downstream irrigation customers to “order” water from lake storage and then decline to take that water from the diversion point on the river (hundreds of miles downstream from the Highland Lakes) when it later arrives.

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These factors raised the potential allowable release to up to 210,000 acre-feet, or 68 billion gallons, for the first crop for the three divisions. Additional large releases could also be made for Garwood, the fourth agricultural operation division, which holds a separate contract with the LCRA.

Actual irrigation releases are not provided by the LCRA in their daily reporting processes. As such, the exact volumes of releases for the Interruptible customers and for environmental flows are not yet known. However, by July 1, the combined storage had dropped to under 1.3 million acre-feet, which triggered LCRA’s declaration of an Extraordinary Drought and the cutoff of releases for the second growing season for three of the four irrigation divisions. The Extraordinary Drought declaration also changed the environmental flow requirements in the WMP for Matagorda Bay from the very large OP-3 category, requiring 164,000 acre-feet for two-month inflows, to the threshold-only category of 15,000 acre-feet per month.

As a result, the LCRA's Aug. 1 projection for combined storage of the lakes showed a potential drop to just above 1 million acre-feet by Oct. 1, 2022. That projection represented a decline in the stored water supply of more than 500,000 acre-feet in a seven-month period, or a reduction of almost one-third of the stored water supply that was available in March. This raises serious questions about the sufficiency of the current WMP to mitigate a rapid decline in lake storage amounts. This highlights the concern that the stronger conservation provisions of the current WMP are kicking in too late. As referenced above, Aug. 1-14 inflows reported daily by the LCRA were down to zero, and, with no inflows, the region is totally dependent on the water supply contained in the reservoir lakes. This is a significant concern, as the low inflows during the last drought continued for another four years after the severe 2011 year. Given the dramatic growth being experienced in Central Texas, if that were to occur again, under higher demands from growth and the defined environmental flow requirements, Central Texas could find itself in a very vulnerable water supply situation, and very dependent on a flood-like situation to recover. This is simply too risky to protect the millions of people in Central Texas who are dependent on this water supply.

## **2020 Environmental Releases Raise Questions About WMP's Modeling and Supportability**

LCRA's Annual Water Use Report for 2020 indicates that over 181,000 acre-feet were released from the Highland Lakes to meet environmental instream and Matagorda Bay inflow requirements. The magnitude of this required release was a surprise, and it brings the modeling used in the development of the WMP into question. Additional study and inflow analysis, particularly in the lower basin, is needed, and that analysis will take time and needs to begin as soon as possible.

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## **Need to Reconcile the Reserve Requirements Between the Operational WMP and the Firm Yield Calculation That Is Used to Determine Water Available for Firm Commitments**

The current operational WMP prescribes a minimum combined storage reserve of 600,000 acre-feet, which is intended to provide protection against droughts that are worse than the Drought of Record. The 600,000 acre-feet reserve level has been in place since the 2010 WMP planning process, and it is very concerning and questionable if this level of protection is still sufficient given the dramatic and continuing population and business growth in Central Texas. The need

for raising the 600,000 acre-feet combined storage reserve level was raised again in 2018 during the update process for the current WMP. As such, given the dramatic growth of Central Texas and the reduced inflows issue, it now rises to be a central point of review during this update process.

However, while the WMP prescribes a combined storage reserve of 600,000 acre-feet, the LCRA uses a Firm Yield calculation methodology during the WMP update process that provides no reserve to determine water availability for sales contracts for Firm customers such as cities, businesses and industries. Specifically, this LCRA Firm Yield methodology uses a calculation basis that empties the reservoir lakes down to ZERO levels in both Lake Travis and Lake Buchanan. This raises very serious concerns, as it facilitates the potential for overselling the water supply. Additionally, the current calculation approach does not consider the mass releases for Interruptible customers such as rice corporations, and it is questionable if environmental flow requirements in the WMP are sufficiently represented in the formula used to determine water volumes LCRA has available to sell.

If it makes sense to have a reserve in the WMP, why does it not also make sense to have a reserve in the calculation to determine reliable available water for contract sales? Other regions are addressing this issue by changing to a Safe Yield approach that provides one to two years of reserve. Resolving this important issue will take time and potentially require the addition of new water supplies for the region.

It should also be noted that some communities must start adjusting their water intakes long before lake levels decline toward the 600,000 acre-feet combined storage level due to the fact that intake structures cannot function properly as lake levels fall so dramatically to very low lake levels. Very low lake levels also create water access issues for communities and firefighters, and lead to large adverse economic impacts, as shown by previous studies.

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## **Water Conservation Efforts Should Be Uniform and Fair to Firm Customers**

The use of trigger levels in the WMP to determine Interruptible release requirements can conflict with the goal of conservation by Firm customers. Currently, when Firm customers upstream conserve water and therefore increase the volume of water stored in the lakes, the WMP uses that larger number to determine that stored water is available for release to

Interruptible customers downstream. This practice effectively gives away water conserved by cities, businesses and industries to downstream irrigators. Firm customers should be rewarded for their conservation efforts, not penalized. Additionally, it would be beneficial if drought contingency measures were updated to be reasonably consistent across Firm customers and implemented sooner when drought conditions are projected to continue.

## **A Transparent and Open Discussion Is Needed About Our Water Supply**

In its 2018 sunset review of the LCRA, the Sunset Commission found that the agency's practices did not fully embrace open and responsive government. It found the agency maintained an inconsistent and reactive approach to public engagement, was not providing key information to the public, had a lack of public approach to budget transparency, did not clearly explain water funding, and that the agency's lack of transparency often led to incorrect and unnecessary distrust from stakeholders.

Disappointingly, the LCRA opposed the sunset review at the time. Today, it continues to demonstrate the lack of transparency and open government that the Sunset Commission observed, particularly in its opposition to public discourse about ways to improve the WMP as conditions evolve. The LCRA has an opportunity to step up and begin to reverse its history of backroom governing by taking the lead in facilitating an open, comprehensive and meaningful discussion about the current WMP.

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## **Conclusion — Time to Recognize and Adjust to Our New Normal**

It's easy to miss the defects in a Water Management Plan until you're living the plan. However, now that we're over two years into implementation of the 2020 WMP, it's clear there are flaws that must be addressed. It is easy to see in retrospect that not only have we been in a drought since the current WMP was approved, but that more arid and higher temperature conditions are becoming our new normal. Combined with rapid population growth, the shifting weather patterns that are bringing declining and, in some instances, disappearing inflows into the reservoirs could have Central Texas headed toward disaster.

It would be convenient if we could wait until 2025 to begin to address these issues in the WMP. Unfortunately, given the urgency of the problem and the fact that it will take several more years after that to implement an updated WMP, we simply cannot afford to wait. If we don't reopen the WMP now, we'll be living under the current plan for another five to seven years, maybe longer. That's too long not to take action when we're talking about protecting a resource essential to the life and livelihoods of Central Texans.

The previous Drought of Record, which ended in 2015, lasted eight years. If our current drought lasts the same length of time, we'll have been mismanaging our water resources during the entirety of the drought. That didn't go well for our region last time around, and this time things are looking worse. It is a mistake to ignore clear and convincing evidence that conditions are evolving and are unlikely to go back to what we used to know. We all wish this weren't the case, but it's an unfortunate truth — and sticking our heads in the sand won't make it go away.

As recently noted in a Texas Water Newsroom article by the Texas Water Development Board, our finite water supplies must be managed wisely, and we literally can't live without them. We cannot gamble with Central Texans' lives. An update of the Water Management Plan must begin as soon as possible to address the flaws that the current drought has revealed. Given the importance of our one and only water supply, we must do this now, and we must do it together.

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