



LCRA Water Management Plan

LCRA responses to questions received during Nov. 12, 2020, annual review meeting

Inflows to lakes Buchanan and Travis

- *How are you planning to more proactively address and incorporate the continuing adverse trend to lower inflows being caused by structural issues in our watershed, such as the proliferation of stock ponds, alluvial wells and noxious brush?*
- *Can you give us a summary of what you have learned to date about the decreased inflows to the Highland Lakes that have been experienced over the past several years including the most recent drought of record?*
- *Has LCRA thought about looking at the causes of the low inflows from the watershed and potential proactive actions to turn this adverse trend around??*

The 2020 Water Management Plan was developed using hydrology that includes the recent drought, which is the most severe in the basin's period of record, and incorporates the effects of structural issues in our watershed on that drought.

The plan includes several provisions to respond to low inflows, including:

- Use of inflows as part of the triggering condition for entering Less Severe Drought or Extraordinary Drought conditions.
- A look-ahead test that could lead to a curtailment or cutoff of interruptible stored water for agriculture based on the inflow trends and/or projected lake storage forecasts below certain levels within the upcoming crop season or the next 12 months.

In recent years, we have seen both a decrease in inflows, as would be expected during drought, and historic flooding.

Several recent studies have looked at whether there is a permanent change to the relationship among rainfall amounts, runoff and associated inflows. We've reviewed the recent inflow studies and do not believe the data at this point are conclusive. We are very interested in long-term trends and will continue to review the most recent scientifically valid information.

We also will be looking at the potential for some targeted studies in our basin in the future. Specifically, LCRA will be exploring the physical and meteorological drivers of rainfall runoff processes in the watershed. In the coming year, we also plan to look at how uncertainty in inflows might be integrated into our future supply planning.

- *Where would 2020 rank in terms of historical annual inflows if the dry trend continues through Dec. 31?*

January to October 2020 ranks as the seventh-lowest January to October since 1942 for inflows to lakes Buchanan and Travis, with inflows totaling about 328,000 acre-feet. For comparison, inflows for the lowest January to October period, in 2011, were about 105,000 acre-feet. Median inflows for the January to October period are about 911,000 acre-feet.

Incorporating climate forecasts into the WMP

- *When do you plan to incorporate climatology, so that we are planning ahead and not just reacting after? La Nina for example?*

LCRA factors in ENSO conditions such as La Nina in evaluating the availability of interruptible stored water. Specifically, the look-ahead test in the WMP is based on projected lake storage levels, which include ENSO forecasts.

Also, please see the previous responses regarding inflows to lakes Buchanan and Travis.

Storage in lakes Buchanan and Travis

- *What is the maximum combined lake volume that LCRA (or the WMP) targets when going into the normal wet season? Either in a percentage of full pool or combined acre-foot. What is the minimum combined lake volume that LCRA (or the WMP) allows before reducing the supply to customers? And is that dependent on whether we are going into a dry season or not? The essence of these questions is to understand if LCRA has an established “normal operating range” of the combined lakes, and if so, what is that range?*

There is no defined “target” storage or normal operating range for lakes Buchanan and Travis. When operating under the WMP through a repeat of historic hydrology, the lakes are expected to fluctuate over an extended range while not dropping below 600,000 acre-feet.

When storage is above 1.5 million acre-feet on the March 1 and July 1 evaluation dates, interruptible stored water is not subject to being curtailed, and the water supply condition is categorized as Normal. If storage is below 1.5 million acre-feet on the evaluation dates and inflows are below specified levels, the water supply condition changes to more restrictive categories of Less Severe Drought or Extraordinary Drought, and the supply of interruptible stored water is reduced or cut off. Details can be found in Chapter 4 of the WMP.

- *Based on my analysis of combined storage data, the CS dropped below 98% on July 25, 2019 - This would make August as the first full month after the last month where the lakes were "full" per the WMP definitions... Can you confirm...*

Correct, August 2019 would be the initial drought tracking month after the last lake-full event under the definitions in section 4.6 of the WMP.

- *What lake levels would be considered “poor” or “bad”? 50%? 25%? And why? Why isn’t 100% considered “good”?*

There is no standard for “good,” “poor” or “bad” when it comes to lake levels. The perspectives of the various interests in our basin are often very different on this issue.

A better way to describe conditions would be to use the categories in the Water Management Plan – Normal, Less Severe Drought and Extraordinary Drought conditions. The specific tests for entering and exiting each of the conditions are spelled out in Chapter 4 of the WMP.

For example, when combined storage is above 1.5 million acre-feet on the evaluation dates, we are in Normal conditions and there is no curtailment of interruptible stored water.

It's important to note that our water supply reservoirs, lakes Travis and Buchanan, are designed to store water during wet periods and supplement needs during dry periods. The levels fluctuate over a wide range by design, especially considering the arid nature of our watershed and our intermittent severe flooding. Lake Travis fluctuates more than Lake Buchanan because it is the only one of the Highland Lakes built to hold floodwaters.

Arbuckle Reservoir

- *What is the status of the Arbuckle reservoir?*
- *Could you provide an update on status of operations of Arbuckle Reservoir?*

Work at the Arbuckle Reservoir is ongoing. We expect the reservoir to be operational in late spring 2022.

- How are you adjusting the WMP with the 90,000 AF deficit without the reservoir?

At this time, there is no adjustment to the WMP needed.

The limits on interruptible stored water from lakes Buchanan and Travis remain in effect, both for amounts diverted and for the maximum amounts released through Mansfield Dam.

Environmental releases

- *David showed a slide showing that 2020 projected environmental use is about equal to the firm use. Is this expected to continue over the next years?*
- *I was very surprised to see the actual magnitude of the 2020 YTD Environmental Releases presented at yesterday's WMP Review meeting. A question was asked about whether this result would continue, and David Wheelock said that he thought it would drop off, however he did not provide any quantification. I do not remember any discussions of the actual magnitude of these new Environmental Release requirements during the WMP Review Cycle. Please provide a quantitative assessment and analysis of these new annual requirements/releases over time. This a very important issue given the trend to much lower inflows needed to support this requirement.*

The amount of water provided for environmental purposes varies based on lake levels and inflows to lakes Buchanan and Travis. When the lakes are higher, the target environmental criteria are higher. The 2020 WMP also imposes various caps on releases for environmental criteria that are more restrictive as lake levels drop.

Water releases for Matagorda Bay and for the higher-level instream flow criteria are only required to the extent there is water flowing into lakes Buchanan and Travis. The amount of inflows that are subject to release varies under criteria tied to lake levels. With higher lake levels, the potential releases for environmental flows are higher. As lake levels drop, the potential releases for environmental flows are lower.

Section 4.7.3 of the 2020 WMP identifies the average annual amount of stored water made available for environmental purposes as 114,000 acre-feet for the period of record. Documents provided during the WMP participant process included model output data tabulating the amount of water provided for

instream flows (averaging about 72,000 acre-feet per year) and the amount of water provided for bay inflows (averaging about 42,000 acre-feet per year).

Over the course of 2020, the monthly releases for environmental flows have generally decreased as the year progressed. In January and February, the environmental criteria in effect were based on the 2015 WMP, which relied on a July 1, 2019, evaluation date. The criteria in effect were the highest levels: Base-Average for instream flows and OP-4 for bay inflows. In those months, there was little demand for pass-through water, so most of the inflows to lakes Buchanan and Travis were considered “storable inflow” and were available to help meet environmental flow needs. During those two months, combined storage ranged from 1.72 to 1.75 million acre-feet, and the total amount released for environmental purposes was about 26,000 acre-feet.

The new WMP was effective on March 1, when environmental flow criteria were determined for the March through June period. The instream criteria were reduced to Subsistence, and the bay criteria were reduced to OP-3. From March through June, the total amount released for environmental purposes was about 75,000 acre-feet. During that period, the combined storage in lakes Buchanan and Travis increased slightly from about 1.72 million acre-feet to about 1.76 million acre-feet. Based on combined storage on July 1, the same OP-3 criteria remained in effect. From July through October, the total amount released for environmental purposes was about 12,000 acre-feet while combined storage fell from about 1.76 million acre-feet to about 1.54 million acre-feet.

As shown in WMP Section 4.4.3 (Curtailment of Water for Freshwater Inflows to Matagorda Bay), bay inflow criteria are reduced when combined storage falls below certain set points. Two of those set points are at 1.5 and 1.3 million acre-feet of combined storage. If the current dry conditions persist to the March 1, 2021, evaluation date, as discussed at the meeting, it is likely we will drop to a lower bay inflow criteria. And regardless of the specific criteria, the obligation to make releases will continue to be limited to storable inflows into lakes Buchanan and Travis.

Water rates

- *Please provide the Water Price assumptions for 2021 Firm and Interruptible water customers. If the 2021 Interruptible price used remains below the LCRA cost of service, what year is full cost assumed in the Plan.*

Water rates are not part of the WMP, as the WMP does not establish or address pricing for firm or interruptible water. LCRA’s rates for firm and interruptible water are established on a calendar-year basis by the LCRA Board of Directors. Agenda items regarding water rates are posted on LCRA’s website for public review and input. Anyone interested in this topic can to sign up to receive an email notice when proposed water rates and rules are available for review. Visit <https://www.lcra.org/email-subscribe/> to subscribe.

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