

MANAGING WATER NEEDS DURING DROUGHT



If you live near or regularly visit a lake in the Brazos River Authority system, it probably comes as no surprise that during extended dry periods such as the current drought, lake levels will drop.

However, some may find it frustrating when they see water being released from a reservoir while lake levels are declining...So, why is water being released during a period of drought?

There are two reasons for the release of water through a reservoir dam. First, the Authority releases water, usually through low-flow gates, to maintain the natural habitat of the river basin. Secondly, the Authority releases water from reservoirs to meet downstream water needs.

After the drought of record in the 1950's, numerous reservoirs were constructed by both state and federal entities with the purpose of storing water during times of plenty for use during periods of drought. Though the recreational aspect associated with reservoirs has provided



the state with many reservoirs to boat, swim and fish, the majority of impoundments serve as a large storage system. The Brazos River Authority system serves not only lakeside and municipal customers, but industry such as power plants, farming, ranching and mining needs throughout the Brazos River basin. (see System map below).

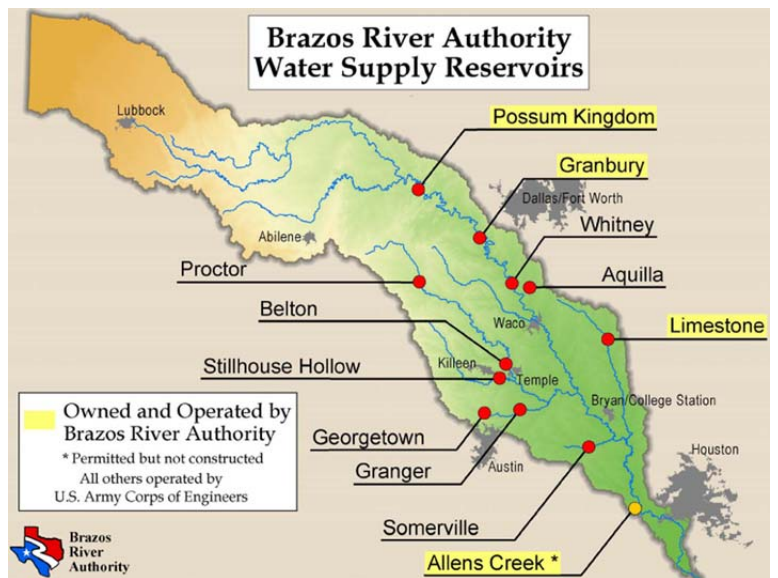


Meeting the needs of all who depend on the reservoirs for water as well as balancing the storage of water across the entire river basin is a full time job. To understand why water is released from a particular reservoir, it might be helpful to consider some of the factors behind these decisions.

First, hydrologists consider where the water is needed. The Brazos River Authority is tasked under state law with managing the Authority's permitted water to meet the needs of those living within the Brazos basin. Often, the nearest reservoir upstream makes the most sense to draw water to meet a downstream request in order to minimize in-transit losses and provide the water in a timely manner.

Hydrologists also consider the conditions at each reservoir. Is the closest reservoir to a customer already under a drought watch or warning? If so, releasing water from a more distant location might be a better option. To see current levels of the Brazos River Authority system of the reservoirs, please click [here](#).

Another factor is the varied size of the reservoir. The largest reservoir, Possum Kingdom Lake, holds over 170 billion gallons of water, while the smallest reservoir, Lake Georgetown, holds about 13 billion gallons.



The amount regularly drawn from a reservoir for local contracts also can play a role. Some reservoirs such as Lake Granbury have many local customers. But upriver, Possum Kingdom has much more capacity and much fewer local customers. So typically during dry times when you see water being released from Lake Granbury, it actually was released from PK and is being passed through Lake Granbury on its way downstream.



Salt Flats near Jayton, TX

An additional element that could affect where water is released for a customer is water quality. Water in the Brazos' main stem tends to have higher concentrations of chlorides and total dissolved solids (TDS) than the tributaries due to large, naturally occurring salt deposits in portions of the upper basin. In some cases, it may be possible to release water from tributary reservoirs to help dilute chloride and TDS concentrations in the lower portion of the Brazos.

The BRA also operates the three reservoirs on the Brazos' main stem, lakes Whitney, Granbury and Possum Kingdom, in a series. Possum Kingdom and Granbury have a special relationship that governs how their water is released.

Since Granbury is shallower and many lake-side facilities were not constructed to accommodate large changes in lake levels, a drop in the level at Granbury will affect more docks, boat ramps and similar structures than the same drop at PK. BRA officials recently developed a plan to help lessen these negative impacts by using a "zone" system of lake level management. In the top zone, when Possum Kingdom is no more than 7 feet below full, the lakes' levels will be managed at a 1.75:1 ratio. That means for every foot Granbury goes down; water will be released from PK until its elevation drops 1.75 feet. When Possum Kingdom drops more than 7 feet below full, which historic models show happening about 10 percent of the time, the ratio will vary between 1:1 and 1.75:1, depending on water use levels. In developing this zonal method of operation, BRA used computer modeling to ensure that operating in this manner did not compromise its ability to supply water to its contract holders.



After a series of town hall meetings presented the plan to the public, the management method was approved by the Authority Board of Directors in April. For more information about this water management study, including a slide show and audio from the public meetings, please click [here](#).

So you see, managing the water in the Brazos River basin is more complicated than simply opening a gate at the dam. Many factors contribute to the decision as part of the BRA's ongoing efforts to meet the needs of those who depend on that water for their farms, businesses and homes.