



# NEWS

GUADALUPE-BLANCO RIVER AUTHORITY  
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## **Drought of Record Not Record Drought; Adding 50 Years of History Proves Texas Had Much Worse Droughts**

FOR IMMEDIATE RELEASE, April 20, 2006

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SEGUIN- A tree-ring study commissioned by the Guadalupe-Blanco River Authority (GBRA) to determine how the 1947-1957 Drought of Record compared to other historic drought events indicates that “there may have been periods when drought was more protracted and the impact might have been considerably worse.”

The study was conducted by Professor Malcolm K. Cleaveland of the University of Arkansas Department of Geosciences Tree-Ring Laboratory, and examined past droughts in the Edwards Plateau and South Central Texas Regions using tree-rings to expand our detailed knowledge of drought back to 1648, adding over 50 years to the period examined in previous studies.

The report concludes that “It would appear unwise for civil authorities to assume that the 1950s drought represents the worst case scenario to be used for planning purposes in water resources management in the South Central and Edwards Plateau climate divisions of Texas.”

According to GBRA General Manager Bill West, the 1947-1957 drought -- known as the Drought of Record -- is the criteria on which all Texas water resource planning has been based. “It is basically the gold standard,” said West, who explained that the yields of water supply reservoirs and other resources used for municipal water supplies are based on providing a firm supply through the Drought of Record.

However, the San Antonio Water System (SAWS) has recently selected a lesser drought than the Drought of Record as their standard for water planning. “The SAWS 2005 Water Resource Update is based on the 1982 – 1984 drought,” said Dr. Todd Votteler, GBRA Director of Natural Resources. “We were shocked to learn that the 1982 – 1984 drought is not even one of the top 20 short-term drought events, or top 20 long-term drought events that have occurred in this region since 1648,” said Votteler.

“Water usage based on the use of a lesser drought standard could increase pumping from the Edwards Aquifer – and impact springflows from Comal and San Marcos Springs,” said Votteler. “GBRA and others are concerned that this could seriously affect the amount of water in the Guadalupe River, with serious impacts on municipal, industrial and agricultural water supplies.”

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According to Votteler, GBRA commissioned the study in 2005 to update previous tree-ring studies conducted by other organizations, which were based in part on Dr. Cleaveland's prior research.

"Drought is the most complex and least understood of all natural hazards, and affects more people globally than any other natural hazard. By studying the droughts that have occurred in Texas historically we can prepare for future droughts. Unfortunately, the farther back in time we go the less information we have on droughts."

One way to make up for this lack of observed data is to study things strongly influenced by the climate of the time, or 'proxies.' One of the best proxies is tree-rings. Trees generally grow one tree-ring each year, and its width provides a record of each year's climate. In a dry year, a narrow tree-ring is produced while in a wet year the rings are wide.

Some trees can grow to be a few thousand years old, providing a lengthy historical record of the climate that occurred locally during the life of the tree. Tree-ring chronologies are based on small core samples extracted non-destructively from living trees and cross-sections cut from dead logs and original timbers found in historic structures. Each ring can be dated exactly and the climate information is relatively easy to extract from properly dated samples. "We intend to expand on this current research by locating additional trees such as old cypress trees and historical structures with original timbers for Dr. Cleaveland to sample," said Votteler.

The University of Arkansas' Tree-Ring Laboratory (TRL) was established in 1979. It specializes in the development of exactly-dated annual ring-width chronologies from ancient forests worldwide. The TRL can reconstruct past climate and stream flow, the socioeconomic impacts of past climatic extremes, the dating of historic structures, and the identification and mapping of ancient forests. The TRL focuses its research in the southeastern United States, the southern Great Plains including Texas, as well as California and Mexico.