



Site Navigation

- Cleanups, Remediation
- Emergency Response
- Licensing
- Permits, Registrations
- Preventing Pollution
- Recycling
- Reporting
- Rules

- Data
- Forms
- Maps
- Public Notices
- Publications
- Records
- Webcasts

- About Us
- Contact Us

How 's our Customer Service? Please fill out our [Customer Satisfaction Survey](#)

You are here: [Home](#) → [Publications](#) → [Periodicals](#) → [Natural Outlook](#) → [Fall 2003](#) → On the Waterfront

» Questions or Comments: [ac@tceq.texas.gov](mailto:ac@tceq.texas.gov)

# On the Waterfront

As the state's long-range water plan is being revised, Texans are grappling with a number of issues concerning water quality and availability. Some of those pressing concerns are highlighted in this issue.

## As Texas examines future needs, new options emerge for water resources

### *In this story:*

- [Planning: Round 2](#)
- [Conservation Gains Support](#)
- [Environmental Flows](#)
- [Desalination](#)
- [Water Dispute](#)
- [Exploring Options](#)

Ten years of drought and then it floods. That's been the story in recent months along the Texas border. Heavy rains in September and October led the normally meager Rio Grande to crest at almost 24 feet above sea level in Brownsville--surpassing the usual 4.1 feet. Weeks of saturating rains interrupted a long dry spell, causing heavy flooding in several border communities.



Welcome to Texas, where much of the state can be described as arid land occasionally punctuated by floods.

Planning for water needs under these conditions is anything but easy. But while Texas weather remains unpredictable, other state forecasts are more reliable, such as continued population growth.

The number of Texans is expected to almost double--from 21 million in 2000 to 40 million in 2050--resulting in a corresponding jump in demands on water supplies.

However, the volume of water available from existing sources will likely decline, leaving Texas with insufficient water to supply people and industry--unless more resources are developed.

Legislators, state agencies, and water specialists are analyzing how Texas can get through the coming decades with its natural resources in tact and sufficient water available to fuel the economic engines. Consumers will play a role, too, by changing the way they use this natural resource.

*Natural Outlook* takes a look at some of the leading water issues to surface so far this decade.

[Back to the top](#)

## Planning: Round 2

Compiling a master water plan began in the late 1990s with 16 regional planning groups and the Texas Water Development Board (TWDB) evaluating how water was being consumed in Texas and what would be needed over the next five decades.

The regional groups, drawing heavily on public participation, looked at a range of possibilities to stem predicted shortages, such as reducing demands on water resources, developing more water suppliers, acquiring more water, and encouraging conservation and reuse.

One of the key findings was that drought conditions, under current scenarios, could leave Texas municipalities, manufacturers, and agricultural interests short of water by 2.5 million acre-feet a year. Looking ahead to 2050, planners estimated a drought-related shortfall could swell to 7.5 million acre-feet a year--if nothing is done to boost water supplies.

Following years of public hearings and meetings, the regional groups' findings and recommendations were compiled into the State Water Plan, which now serves as the basis for deliberations concerning long-range planning.

In accordance with legislation that requires water planning to be updated every five years, a second round of water

**definition**  
An acre-foot of water would cover an acre of land with one foot of water. It also represents about 326,000 gallons of water.

planning has begun as the regional planning groups reconvene to examine new census data and water management strategies. The TCEQ will help by providing technical assistance and its water availability models.

The regional recommendations will be issued in 2005. The TWDB will incorporate them in a revised State Water Plan due for completion in 2007.

[Back to the top](#)

## Conservation Gains Support

Water conservation has long been considered one of the most cost-effective ways of meeting long-term water needs, but previous state policies on conservation were deemed fragmented and lacking in focus.

An assessment of water conservation, prepared last year by the TWDB and the Texas State Soil and Water Conservation Board, concluded that "additional water conservation is possible and necessary."

While the 16 regional groups acknowledged the importance of conservation, they did so with varying degrees of enthusiasm. The Legislature responded by declaring that conservation projects should be identified in all the regional plans.

Lawmakers took another step in 2003, saying the planning groups will consider conservation strategies for all identified water needs before looking at any other strategies. If a regional group fails to make any conservation recommendations, it will have to explain why.

Acknowledging the role conservation plays in long-term savings, the Legislature also formed the Water Conservation Implementation Task Force.

Led by the TWDB, the task force has a wide-ranging membership representing such categories as state and federal agencies, municipal utilities, industry, agriculture, groundwater districts, and environmental groups. The TCEQ also is a member.

The panel is charged with recommending optimum levels of water-use efficiency and conservation throughout the state. To that end, members will focus on:

- identifying best management practices for efficient water use by municipal, industrial, and agricultural users, and evaluating the associated costs and benefits;
- evaluating the implementation of water conservation strategies recommended in regional and state water plans;
- considering the need for a public awareness program on water conservation;
- studying the proper role, if any, for funding incentives;
- advising the TWDB and the TCEQ on a standard method of reporting and using per-capita water-use data, and establishing per-capita water-use targets and goals; and
- evaluating the appropriate state oversight and support of conservation initiatives adopted into law.

By November 2004, the task force is expected to issue a guide to best management practices, which can be used by regional water planning groups and municipal utilities. Final recommendations to the Legislature are due in January 2005.

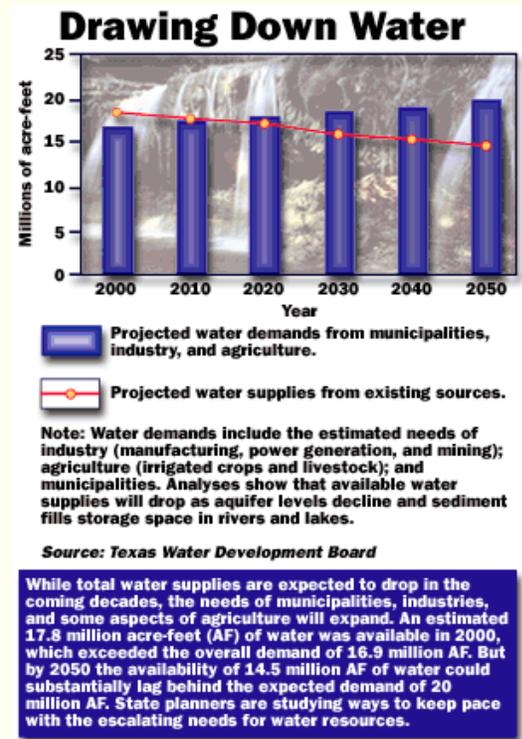
[Back to the top](#)

## Environmental Flows

The amount of water needed in rivers, streams, and coastal bays to support fish and wildlife habitat has emerged as a hotly debated issue. Many parts of the state depend on these flows to support the local economy--for example, income generated through fishing, hunting, and tourism.

The competition for available water continues to escalate as municipalities, industries, and agricultural irrigators vie for water coursing through the state's rivers and streams. Mother Nature complicates the scenario when rainfall falls below normal levels.

Texans need permission--in the form of a permit--to draw water from rivers, streams, lakes, and estuaries. Some of



the exceptions are water used for domestic and livestock purposes or wildlife management. Applicants must show they will use the water for beneficial purposes and not waste it.

As the issuer of water rights for surface water, the TCEQ was authorized in 1985 to consider the impact on environmental flows when deciding requests for new water rights and some types of permit amendments. Provisions to protect the environment are included as special conditions in water rights permits.

Debate over water rights for environmental uses will continue through the newly formed Study Commission on Water for Environmental Flows, created this year by the Legislature. The study commission, which is appointed by lawmakers, will study the broader picture: issues such as how Texas should provide water for the environment, the economic benefits of doing so, and the best balance for water needs in the future.

The results of the study could mean changes to the permitting process. The TCEQ will be a member of the study commission.

Meanwhile, the TCEQ, the TWDB, and the Texas Parks and Wildlife Department have launched instream flow studies of priority river segments. Scientists are examining the interdependence of the physical, chemical, and biological features of six rivers and how these features can be used to measure the overall health of river systems.

The studies, which were commissioned by the Legislature in 2001, will be completed by 2010.

[Back to the top](#)

## Desalination

With 360 miles of coastline, Texas is a candidate to enter the business of desalinating seawater--a process that strips salt and other minerals from ocean waters to make it drinkable. Recent improvements in membrane technology have begun to lower production and energy costs.

Florida and California are already moving to tap this water supply option. A seawater desalination plant in Tampa Bay, which began operating this year, expects to produce 25 million gallons a day (mgd). The Metropolitan Water District of Southern California has spent several years exploring desalination options and the feasibility of building as many as five plants--from San Diego to Los Angeles--to turn waters from the Pacific Ocean into a safe drinking source.

Texas has about 100 desalination plants operated by municipalities or industry. All are inland operations used to treat brackish water (water that is somewhat salty and unappealing in taste).

Now the state's attention is turning toward the Gulf of Mexico, as growing population centers along the coast demand more from existing water resources. After evaluating 13 proposals to build facilities that desalt seawater, the TWDB has narrowed the contenders for financial assistance to three. All would augment local water supplies through reverse osmosis, a method of membrane filtration.

The proposed projects are:

- **Freeport:** Located at the Dow Chemical complex, this plant would produce 25 to 50 million gallons a day (mgd) of drinkable water. Poseidon Resources Corp. would develop the project, and the Brazos River Authority would distribute the product water to wholesale customers.
- **Corpus Christi:** City owned and operated, this plant would produce 25 mgd from both seawater and brackish groundwater.
- **The Lower Rio Grande Valley:** This joint project would be run by the Port of Brownsville, the Brownsville Public Utilities Board, and the Southmost Regional Water Authority. It also predicts a yield of 25 mgd.

Each project applicant has received a \$500,000 state grant to help prepare regional water facility plans focusing on seawater desalination. The communities will analyze the need for a local project and estimate potential costs. The regional evaluations are due to the TWDB in mid-2004.

While the TCEQ is not participating in the start-up project, it will have a role if any plants go into production.

If the treated water is to be used as drinking water, according to Tony Bennett of the TCEQ's Water Supply Division, "we will have to review all plans and specifications and pilot plant data. This is the same for any innovative treatment process. The operating plant would also have to meet all chemical, physical, and microbial standards for drinking water."

There will be disposal issues, too, because stripping salt from seawater produces a concentrated brine. "There are several disposal options, such as sending the brine back to the bay or sea or into the open waters. Another is underground injection," he said.

### Timetable for Priority Instream Flow Studies

Lower Guadalupe River (2003—2004)

Lower Brazos River (2003—2005)

Lower San Antonio (2003—2006)

Middle Trinity River (2003—2007)

Lower Sabine River (2004—2009)

Middle Brazos River (2005—2010)

The TCEQ would evaluate the proposed disposal method chosen by any plant. Approval of any discharge or disposal permits is necessary before a facility begins operation.

Finally, depending on where the seawater was drawn from, the TCEQ would have to consider permitting issues relating to the withdrawal of water from the bay or estuary area. "This would get into the issue of water rights," Bennett said. "Just as power plants and industrial facilities use seawater for cooling, the withdrawal of water along the coastline represents a use of state waters and would need to be permitted."

[Back to the top](#)

## Water Dispute

Already saddled with drought much of the last decade, Texas communities along the border were dealt continued setbacks when Mexico failed to honor the terms of a 1944 water-sharing treaty.

The agreement entitles the United States to one-third of the water entering the Rio Grande from six river systems south of the border. Specifically, the United States is entitled to a minimum average of 350,000 acre-feet per year within five-year cycles.

Texas maintains that since 1992 Mexico has failed to meet its obligations for making minimum deliveries. TCEQ calculations show the Mexican debt stands at almost 1.4 million acre-feet.

The agricultural industry in the Lower Rio Grande Valley says the withholding of water from the Rio Grande has been economically devastating. Growers of irrigated crops rely on releases from the Amistad and Falcon reservoirs for affordable water.

A Texas A&M University study has estimated that Mexico's water debt translates into an economic loss of \$400 million a year in terms of lost crop value, business activity, and jobs.

Federal officials have been negotiating with their counterparts in Mexico for several years, but with limited success. Texas is not a party to the international treaty and has no legal standing in the dispute.

In the past, Gov. Rick Perry has suggested that if diplomacy fails to correct the treaty deficit, the United States should consider withholding regular releases to Mexico from the Colorado River.

He noted that recent studies estimate the water stored in Chihuahua reservoirs doubled from 2002 to 2003, reaching 1.1 million acre-feet.

Meanwhile, municipalities and agricultural interests along the border are moving to make the most of available supplies. They welcomed news that the North American Development Bank will award a \$40 million matching grant to 20 projects on both sides of the border. Fifteen of those projects are in Texas, representing \$25.6 million to finance projects aimed at water conservation and more efficient water transfers.

[Back to the top](#)

## Exploring Options

As Texas delves into water options for a fast-growing population, policy makers are also testing the potential of various alternative strategies.

Agriculture irrigators, traditionally the largest users of fresh water, are having to rethink some of their practices. Already some have converted to dryland farming, while others are looking at using different crop varieties, changing tillage methods, metering irrigation water use, and lining irrigation canals to improve water delivery.

Another problem plaguing water users is the proliferation of nonnative aquatic weeds. Research continues on solutions to problems caused by weed infestations in lakes and rivers, including the Rio Grande. The weeds form dense mats of vegetation that can degrade fish and wildlife habitat and interfere with recreation.

State agencies also are researching ways to better manage groundwater and replenish reservoir storage capacity lost to sedimentation.

Developments on all these issues will merge in 2005 as lawmakers take up long-range water planning in the next

## Rio Grande Watershed



Much of the debate over treaty obligations has focused on Chihuahua, where the sizable Rio Conchos is supposed to discharge annual allotments into the Rio Grande. Texans have charged the Mexican state with hoarding water for its own use. As a result, levels at the international reservoirs of Amistad and Falcon dipped to unusually low levels in recent years, compounding conditions caused by drought.



The huge Amistad Dam, located on the Rio Grande upstream from Del Rio, stores much of the surface water released for use by cities and farmers. It also sends water downstream for storage at Falcon Dam, near Zapata./ Photo by the Texas Department of Transportation

regular session.

[Back to the top](#)

[Print this](#) —

---

[Site Help](#) | [Disclaimer](#) | [Web Policies](#) | [Accessibility](#) | [Helping our Customers](#) | [TCEQ Homeland Security](#) | [Contact Us](#)



Stimulus  
Funding

Last Modified Wed, 27 Jul 2011  
©2002-2011 Texas Commission on Environmental Quality