GALVESTON BAY ESTUARY PROGRAM
A PROGRAM OF THE TCEQ

Bay Briefings

Charting the Course to 2015

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Freshwater Inflow

Overview

Galveston Bay is an *estuary*, a semi-enclosed coastal water body that has a free connection with the open sea. In an estuary, freshwater from rivers and streams mixes with sea water.

Freshwater enters Galveston Bay from the Trinity River (which supplies more that half of the bay's freshwater), the San Jacinto River, and the area's numerous smaller streams and bayous.

The bay depends on freshwater inflows to dilute the salty water entering the bay from the Gulf of Mexico. The dilution of salty gulf waters with freshwater inflows is critical to the survival of young fish and shellfish, particularly oysters. Freshwater inflows ensure that the wetlands surrounding the bay remain healthy. Wetlands are important nurseries for the young of recreationally and commercially important finfish and shellfish. A decrease in the freshwater reaching the bay would likely change its salinity and may alter its ecology.

Freshwater inflows also carry important nutrients and sediments to the bay. Both are essential in supporting plant communities and sustaining marshes.

Periodic droughts affect the salinity of Galveston Bay. Drought conditions are usually short-lived and are relieved by periods of intense rainfall, such as those caused by tropical storms.

Freshwater inflows are critical for shellfish production in Galveston Bay. Source: Jamey Tidwell, Texas Sea Grant.

Freshwater Inflows

Natural variation in the timing and location of inflows to the bay helps to maintain its ability to endure a wide range of conditions. While natural variability in freshwater inflows is necessary, water uses and management practices can artificially affect inflows'

- volume,
- timing, and
- location.

The volume of inflows to the bay directly affects salinity, sediment, and nutrient loadings. The timing of inflows is important, as the young of fish and shellfish require lower salinities in the spring for their survival. The location of inflows is important: A transfer of water from one stream to another could take freshwater from a productive marsh and discharge it into a less productive area of the bay.

Bay Circulation

Several artificial structures and human practices combine to influence salinity and circulation patterns in the bay, affecting its health and productivity. For example, the Houston Ship Channel alters circulation by increasing the flow of water from the Gulf of Mexico into Galveston Bay. Additional human activities that have altered salinity and circulation patterns in the bay are the construction of the Texas City Dike, the use of water to cool power plants, and the transfer of water from the Trinity River to other watersheds.

Outlook

Supplies of freshwater appear to be adequate to meet the current human demands for the Houston-Galveston region.

As the region's population increases (as is estimated) to 10 million people by 2050, demands for freshwater for use in homes, agriculture, and industry are likely to increase to a level that may not be met by available supplies. However, if effective

water management strategies are implemented, water supplies may be adequate to satisfy future demand.

Given the importance of freshwater inflows into the state's bay systems, the Texas Legislature has passed six major acts relating to environmental needs for freshwater inflow and planning. The state's goal is ensuring adequate environmental flows while meeting human needs for water.

What the Estuary Program Is Doing

The Galveston Bay Estuary Program sponsors the Galveston Bay Freshwater Inflows Group. This group seeks to balance human needs with those of the estuary, and is currently working to develop management strategies to do so. The group's recommendations have been incorporated in Texas' regional water planning efforts.

What You Can Do

- Ensure that your home does not have leaking plumbing fixtures.
- Install *wildscapes* in your yard—designed to use native plants that tend to consume less water.
- Use landscape conservation practices such as drip sprinklers, rain barrels, mulching, and watering at dawn or dusk.

Links to water conservation programs such as the state's Watersmart Program, Texas Parks and Wildlife's Backyard Habitat Program, and other water conservation efforts can be found at the Estuary Program Web site, www.gbep.state.tx.us.

Landscaping with native plants is an effective way to conserve water. Source: Texas Cooperative Extension/Texas Sea Grant.

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