Q & A for Freshwater Inflows

What is freshwater inflow?

Freshwater inflow is water that is less saline than marine water, and generally refers to water which flows downstream from the inland sources. This water enters into the bay and mixes with the more saline seawater, creating an estuary area that is less salty than the ocean.

Why do freshwater inflows matter?

The lower salinity environment created by freshwater inflows is crucial to the productivity of the bay and estuary system. Inflows carry crucial nutrients and sediments into the coastal system and provide the necessary salinity balance that supports nursing and breeding grounds for developing marine life.

Why are estuaries so important?

As mentioned above, estuaries provide crucial breeding and nursing grounds for many species. Texas estuarine ecosystems are also key factors in the state's economy, they are used for navigation, as natural source of waste treatment, and they provide the resource base for seafood, minerals, and recreational opportunities at the coast.

How does the state of Texas determine the amount of water that is released as a "freshwater inflow"?

A series of studies have been performed over the last 25 years by the Texas Water Development Board and the Texas Parks and Wildlife Department. The purpose of the studies was to determine the lowest amount of freshwater needed to ensure minimum productivity (Min Q) and the amount for maximum productivity (Max H). The studies on the seven major estuaries have been completed, and final reports have been released for four of them. These reports are available at hyper20.twdb.state.tx.us/data/bays_estuaries/b_nEpage.html

What happens if not enough freshwater inflows reach the bays and estuaries?

If insufficient volumes of freshwater inflows are received in the bays and estuaries, the environment becomes unnaturally salty and is very damaging to the marine populations that depend on the estuaries for their breeding and nursing grounds.

Though droughts are fairly common in Texas history, drought conditions are likely to be more frequent and severe when increasing volumes of water are held up in reservoirs and diverted for other uses. Though it may be difficult for inland populations to understand the importance of freshwater inflows, the coastal populations and their economies are completely dependent on these flows reaching the coast.

What types of species in Texas depend on a lower salinity environment?

The state recognizes some of the more economically important and ecologically characteristic species as oysters, blue crabs, shrimp, anchovy, kingfish, mullet, flounder, sea trout, and red drum.

How would reduced freshwater inflows impact the Texas coastal economy?

There are numerous ways reduced freshwater inflows could impact the coastal Texas economy. The impact on the state's economy just from commercial fishing, sport fishing, and other recreational activities in the bays has been estimated at over ~$3.5 billion/year (1994 dollars), or ~$1,333/acre annually. The real value of the bays and estuaries is many times this, and could only be understood by trying to estimate the cost of replacing the value of these ecosystems and all the goods and services provided by them once they are gone.[1] This is happening in the Florida Everglades, where an $8 billion dollar project is being undertaken to restore the Everglades. See www.evergladesplan.org for more information about this project.

Wildlife watching is another huge component of the value of the coastal ecosystems and wildlife habitats. In 1996, wildlife watching contributed $1.2 billion to the Texas economy. With 622 documented species, Texas has the richest bird diversity in the United States.

A few studies have attempted to quantify the value of the bay and estuary systems to the Texas economy. Some numbers generated from the Tanyeri-Abur (1998) study are (shown in 1998 dollars):

Expenditures for Fishing - $2,869,558,000
Overall Economic Impact - $6,366,580,439
Salaries and Wages - $1,711,404,281 1996

Expenditures for Saltwater Fishing - $887,612,938
Overall Economic Impact - $1,989,532,703
Salaries and Wages - $503,068,996[2]

	Inshore commercial landings	Total commercial harvest	Direct regional impact from water-related recreation
Upper and Lower Laguna Madre	$1,210,000 in 1996	$2,400,000	$221,500,000
Guadalupe Estuary	$4,350,000	$20,130,000	$10,810,000
Nueces-Mission-Aransas	$12,910,000	$71,490,000	$545,280,000
Lavaca-Tres Palacios Estuary	$10,760,000	$62,650,000	$94,850,000
Galveston Bay		$200,000,000[3]	$364,000,000[3]
Trinity-San Jacinto	$23,390,000	$92,080,000	$757,690,000
Sabine-Neches	$850,000	$1,240,000	$34,400,000

[1] TWDB, Briefing Statement, Texas Bays and Estuaries Program, Freshwater Inflow Needs Studies.
[2] Tanyeri-Abur, et al. 1998)
[3] (Tanyeri-Abur, et al. 1998) 1996 Survey of Fishing, Hunting, and Wildlife-Associated Recreation (USFWS 1997) Linda Shead

Do Texas regulations provide for the freshwater inflow needs of our bays and estuaries?

Texas first addressed this issue in 1985, and water permits written since must include conditions to protect environmental flows. However, 92% of water currently permitted was done so before 1985. This method addresses the matter of environmental flow and freshwater inflow on a piece by piece basis – it only minimizes damage, and does not provide any guarantee that the water needed for minimum productivity at the bays will reach them. As more water rights are granted, it has the effect of lessening the chance the bays and estuaries will get their necessary water in a dry period. This system of protection also puts a disproportionate burden on the more recently issued permits.

For more information about Texas regulations for water needs of fish and wildlife, see www.texaswatermatters.org/environment.htm

What are some of the most immediate threats?

There are a number of other parties, including river authorities, who would like you to believe that this problem is already taken care of via their planning process, or the implementation of the Consensus Water Planning Criteria (or "Environmental Water Planning Criteria). It is not. This was a temporary, rough first-cut measure that was a negotiated decision for what numbers could be used as a placeholder during the first round of Regional Planning. We now have answers for how much water is needed to maintain healthy bay and estuary systems in Texas. There are a few big projects where water would be pumped from the mouth of the rivers at the coast that could jeopardize these flows even further.

What are some of the solutions?

The have been over 25 years of studies done on the freshwater inflow requirements for the Texas Bays and Estuaries. The science has been applauded in research circles, and while it is always possible to further refine science, the numbers that they have decided upon are more than adequate for action. It is time for the decision makers in Texas to commit to implementing measures to protect flows to the bays and estuaries. There are a variety of options whereby they could do this. Read more about them on www.texaswatermatters.org/pdfs/env_flow.pdf.

The Texas bays and estuaries are a huge cultural, recreational, and economic resource that should be protected for your future and your children's future. Don't let people looking to make a profit on water tell you that it is OK. It isn't. To take action, please call toll free at 1- 800-919-9151or email info@texaswatermatters.org. We will put you in contact with the people in your area that will help you make a difference.