

LONGER-TERM CONSIDERATIONS

As noted in the introduction to Section 5, Texas bays and estuaries have undergone major alterations over the last century in many dimensions—agricultural practices in the watersheds, fishery harvests, navigation channels, physical dimensions, inflow patterns and waste discharges. Changes in sediment and nutrient inputs to the bays discussed in Section 5 are only one dimension of these changes. All of these dimensions of change are affecting to some degree the physical characteristics, habitats, health and productivity of the bays. The situation today is far from static--each of these dimensions of change can be expected to continue to change in the future.

While the primary dimension addressed in this document is a freshwater inflow regime, inflows should not be considered in a vacuum. This short section briefly addresses two aspects—a proposal of how changes in these dimensions can be addressed in future management decisions and a specific suggestion of how environmental flow considerations might be addressed considering these other ongoing changes.

How multiple changes can be addressed--Adaptive Bay Management

The present approach to dealing with these different dimensions of change affecting the bays is substantially separate. We have agencies responsible for (or at least involved in) each aspect, but there is no entity with an overall responsibility for taking into account the varied dimensions of change and managing the health of the bays. The TCEQ Estuary Programs in Galveston and Corpus Christi address some of this need.

The term Adaptive Management has been used to describe how the situation might be addressed, but as yet there has been little in the way of specifics on how adaptive management might be implemented. One of the SAC charges in SB3 (11.02362(p)) is to assist with the development of adaptive management work plans. Going forward, the state should consider the merits of designating an entity for dealing with the integration of these various dimensions of change. One possibility might be the BBEST groups that have been established through SB 3, but other possibilities exist.

Under this proposal, an entity with representatives of major bay interests would be responsible for tracking bay conditions using data from existing agency sources, discussing and analyzing trends, and developing an annual report. It could also be responsible for the environmental flow decisions discussed below.

Environmental Flows

Another consideration is how bay inflow recommendations are addressed in the future. All of the alternative methods for defining an inflow regime described in Section 4 of this document can be implemented in some fashion in future water rights permitting. But there are some limitations that should be considered.

One limitation that is well recognized is that water uses and storage locations are often located well upstream of the bays in a different hydrologic and climatic regime. It can be challenging to structure provisions in a water right permit on bay inflow needs, based on conditions in a remote region. A simple example of the limitation is that an inflow regime developed from historical hydrologic records might require a release from upstream storage at the same time as a downstream bay was very fresh from local rains.

Another limitation is that the bays are slowly changing in response to all the factors mentioned. Data obtained in the past must be used as a guide to determine inflow regime needs, but it should be recognized that with the passage of time and changes in the bays such data become dated and will need to be renewed.

To address both the spatial disconnect, and the fact that our understanding of bay inflow needs will continue to evolve both from new knowledge and the changed conditions from all the dimensions described above, consideration should be given to structuring new water rights appropriations in a way that gives some control and flexibility to an ongoing bay management function. The specific suggestion is to move in the direction of dedicating and reserving a portion of any new water appropriation as environmental flows. These environmental flows could be called upon at the discretion of the entity responsible for bay management.

There are many details that would be site specific. In a simple example, a new water right application at an upstream location for X ac-ft/yr might include a provision that some fraction, say 10% of X, would be made available for bay environmental flow needs. If conditions in the bay were relatively wet, the environmental flow could be banked at the upstream location, up to some maximum amount or time. A bay adaptive management entity would thus have some freshwater "capital" in the "bank" to use when bay conditions were particularly in need.

Under this alternative the fundamentals of water rights permitting would still be performed. It is simply an alternative way of framing environmental flow provisions that would address recognized spatial and multi-dimension management issues. It would be one component of adaptive bay management.