Galveston Bay Freshwater Inflows Study

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As a member of the Environmental/Water Resources segment at Brown & Root – Civil Engineering, Mr. Villalon has served as Project Manager and Project Engineer on numerous projects ranging from planning to design: for water supply facilities, wastewater systems, flood studies as well as hydrologic/hydraulic computer modeling studies.

GALVESTON BAY FRESHWATER INFLOWS STUDY
TRANS-TEXAS WATER PROGRAM-SOUTHEAST AREA

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As a part of the Trans-Texas Water Program (TTWP) for the Southeast Area, a number of important environmental issues were identified which are associated with future water resources management in the region. The Policy Management Committee for the Southeast Area TTWP subsequently created several focus groups to deal with some of these specific water issues. One of the groups was the Galveston Bay Freshwater Inflows Group (GBFIG), an ad hoc committee concerned with the health and productivity of Galveston Bay. As a result of the GBFIG's work, an analysis of projected freshwater inflows into Galveston Bay was conducted as a part of the TTWP and this paper summarizes the result of those studies.

The State of Texas has studied the health and productivity of Galveston Bay for several years. This work has recently lead to a determination of recommended freshwater inflow targets for maximum productivity of Galveston Bay. In anticipation of these recommendations, the GBFIG was concerned over a number of issues related to current and future freshwater inflows into Galveston Bay, with their focus on the following questions:

- Based on existing authorized water rights permits, what are the impacts of current and future diversions on freshwater inflows to the bay?
- Will the geographic distribution of freshwater inflows significantly change over time due to existing authorized diversions?
- How do current and future projected freshwater inflows compare to the recommended freshwater inflows necessary to maximize fisheries productivity?

A water availability model, using the Texas A&M Water Rights Analysis Package (WRAP3), was used to determine the impact of current and future water right diversions on freshwater inflows into Galveston Bay. WRAP3 is a water availability model, designed to simulate a river/reservoir system under the priority-based allocation system. The Galveston Bay watershed model, developed in the GBFIG, includes 2 river basins, 3 coastal basins and multiple reservoirs.

A brief update will be included on the current effort of Texas Natural Resource Conservation Commission (TNRCC) to develop a water availability model for the waters inflowing into Galveston Bay for both the Trinity and San Jacinto river basins, including the Trinity-San Jacinto and Neches-Trinity coastal basins.