Texas Council of Engineering Companies
2007 Engineering Excellence Awards
Gold Medal Winner – Category E: Environmental, Restoration/Reclamation

Brays Bayou Freshwater Tidal Marsh Project

Brown & Gay Engineers designed the Brays Bayou Freshwater Tidal Marsh, a unique wetland habitat created along Brays Bayou in Mason Park in Harris County, Texas. Originally conceived as a channel modification as part of the Harris County Flood Control District's massive $450 million Project Brays improvement plan, this flood reduction mechanism evolved into a natural storm water treatment system that not only assists in flood control, but also positively impacts the environment and provides a living, learning laboratory for students and community residents.

The 3.5-acre wetland habitat features a three-part treatment chain—a wet pond, shallow marsh, and tidal marsh. Bound by Brays Bayou and Union Pacific Railroad tracks, the site chosen for the marsh presented major design challenges. Brown & Gay Engineers produced a three-dimensional model of the proposed marsh surface to analyze alternative habitat layouts.

The final solution incorporated a series of terraces and sloped areas to break the steep grade, maintain soil stability, and provide enough useable area for the ecosystem to flourish.

Thousands of native plants such as bulrushes and grasses were strategically planted throughout the entire marsh system to provide natural water filtration of litter and other contaminants that would otherwise flow into Brays Bayou and Galveston Bay. Habitat islands within the system support and attract birds and other wildlife. In the last part of the treatment chain—the tidal marsh—the water receives a final level of pollutant removal before it assimilates with the Bayou waters.

Brown & Gay Engineers worked closely with Harris County Flood Control District, U.S. Army Corps of Engineers, City of Houston Parks and Recreation Department and numerous environmental agencies to achieve hydraulic and environmental goals. Environmental groups that contributed their expertise included Galveston Bay Estuary Program, Texas Parks and Wildlife Department, Texas A&M University's Texas Cooperative Extension/Texas Sea Grant

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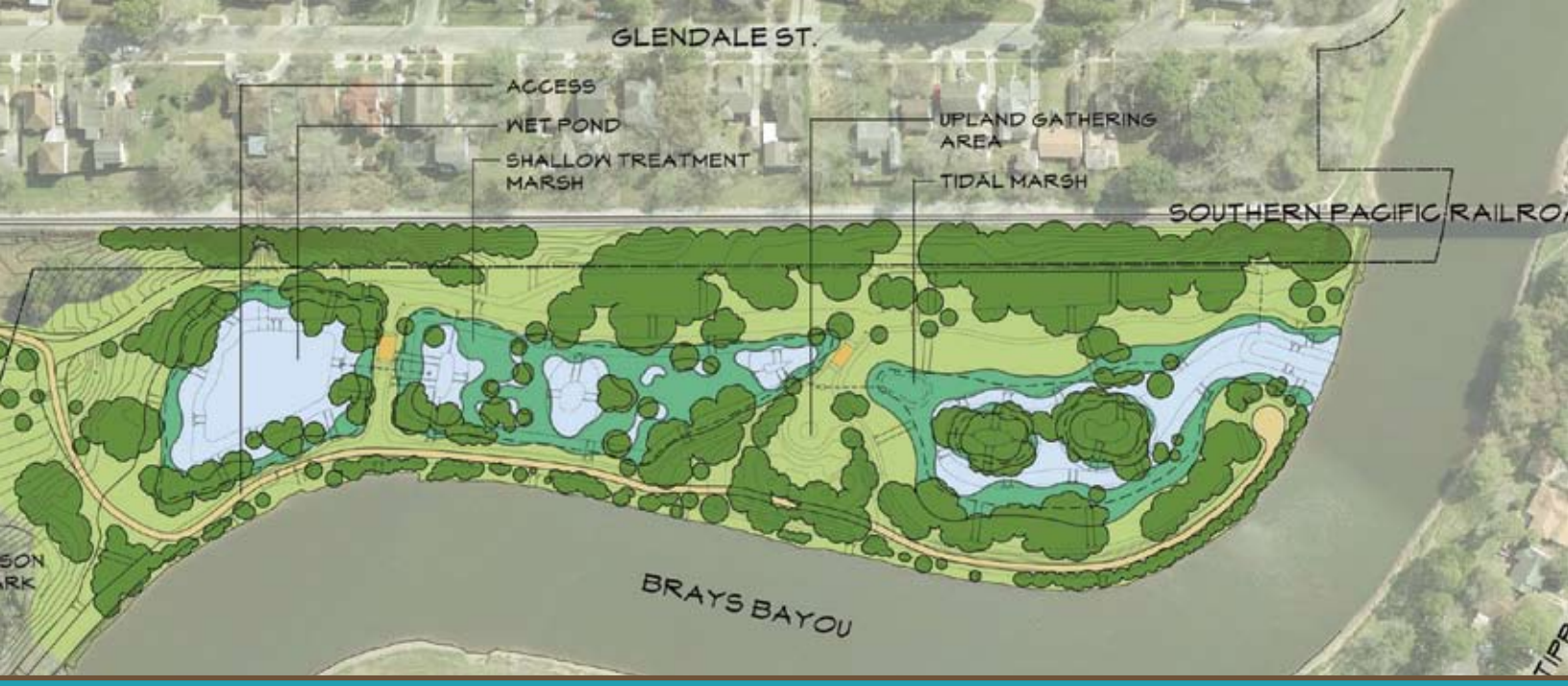

The treatment chain is made up of three parts – 0.6-acre wet pond, 1.4-acre shallow marsh and 1.2-acre tidal marsh. Storm water from an adjacent neighborhood is filtered through the marsh system and released into Brays Bayou in a much cleaner state.

Program, Texas Master Naturalist, Natural Resource Conservation Service, Texas Coastal Management Program/National Oceanic and Atmospheric Administration, U.S. Environmental Protection Agency, and U.S. Fish and Wildlife Service.

Beyond flood control and water treatment, the marsh provides a mechanism for education and community involvement. Texas Cooperative Extension/Texas Sea Grant Program teamed with a group of students from Houston Independent School District's Stephen F. Austin and Cesar E. Chavez High Schools to populate, perpetuate, and parent the new ecosystem. The students collected and planted more than 25 different species of native plants to create the habitat and provide the marsh's filtering benefits. The students are continuing to care for and clean litter from the marsh, giving them a valuable education on the importance of environmental conservation, pollution control, and community involvement.

With their successful design, Brown & Gay Engineers created a project that reduces flooding risks for hundreds of southeast Houston residents; releases cleaner water into communal waterways; establishes a new ecosystem for native plants, wildlife, and fish; provides educational opportunities; and adds aesthetic beauty for the community.

Students from nearby high schools collected, fostered, and planted the marsh's vegetation and continue to care for and clean litter from the ecosystem.