

POTENTIAL SITES FOR WETLAND RESTORATION, ENHANCEMENT, AND CREATION: CORPUS CHRISTI/NUECES BAY AREA

EXECUTIVE SUMMARY

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Coastal wetlands provide numerous biological, physical, and chemical functions, including groundwater discharge/recharge, flood storage and desynchronization, shoreline erosion control, sediment trapping, water quality improvement, food chain support/nutrient export, fisheries and wildlife habitat, and recreation/education/culture. Despite their value, coastal wetlands are disappearing. Recent estimates of wetland loss, coastwide, show that estuarine emergent wetlands decreased by 9.5% between the mid-1950s and the early 1990s; palustrine emergent wetlands declined by about 29 %; forested wetlands or bottomland hardwoods declined by 10.9%; and palustrine scrub-shrubs increased by 58.7%. As a consequence of the importance of coastal wetlands and the losses and degradation of both marine resources and wetland habitats, restoration, enhancement, and habitat creation are receiving greater attention.

This report is the result of the cooperative efforts between Environmental Protection Agency (EPA), Texas General Land Office (GLO), Center for Coastal Studies (CCS), and the Corpus Christi Bay National Estuary Program (CCBNEP). Funding was provided by EPA, Region 6, through a State Wetlands Grant to the Coastal Division, GLO. Both GLO and CCS staff produced the document, and CCBNEP provided technical assistance and published the final report.

The purpose of this report is to help state and federal agencies, conservation organizations, and other resource managers restore, enhance, or create wetlands on a watershed scale using grants or other financial sources for project planning, implementation, and monitoring. The report is intended to serve as a reference for agencies and organizations interested in restoration, enhancement, or creation of wetlands in the Corpus Christi/Nueces Bay area. It does not represent a consensus view of priority activities, nor identify all areas potentially suited for wetlands restoration, enhancement, or creation. A site-specific evaluation will be necessary at these and other potential sites to determine their feasibility and cost effectiveness. In addition, efforts to satisfy broader system-wide needs will be contingent upon status and trend results of wetlands in the study area. These wetland restoration, enhancement and creation efforts

Some areas identified in the report are contained within or adjacent to private lands. Efforts were made to contact property owners where possible, but some owners were not identified or contacted during document preparation. No lands were entered without landowner permission. All assessments of sites whose landowners were not contacted were made from adjoining publicly accessible areas. Identification of such lands within this document does not constitute consent by the landowner to include their property in restoration or enhancement projects. This report simply identifies potential restoration sites and presents conceptual plans for those sites. Organizations interested in implementing restoration projects should identify property owners and contact them regarding their interest in the project before moving forward.

The Corpus Christi/Nueces Bay study area is on the south central Texas coast and includes all of Nueces County and approximately the southeast one-fourth of San Patricio County. The study area of this report is only part of the overall study area for the Corpus Christi Bay National Estuary Program (CCBNEP). Wetlands in the study area have been variously described and mapped; however, little has been published about their current status and trends.

Field investigations of potential sites for wetland restoration, enhancement, and creation were conducted from October 1995 through May 1996 within each of the following ecological areas: Nueces River and delta, Oso Creek and Bay, Encinal and Live Oak peninsulas, North Nueces/Corpus Christi Bay drainage, Indian Point/Corpus Christi Beach, upper Laguna Madre, and Mustang Island. Field visits, historical photographs, and correspondence with advisory group members were used to evaluate the sites for causes of wetland degradation or loss. Sites on private lands were assessed from adjacent public property, aerial photographs, and descriptions in published literature, or accessed with permission of the landowner.

Based on all available information for each site, a conceptual restoration, enhancement, or creation plan was developed incorporating all appropriate components: construction, modification of water regime, and restoration and protection of wetland vegetation and/or wetland fauna. The importance of establishing goals at the development stage of a project and defining and implementing an appropriate monitoring strategy was addressed, particularly in regard to functional assessments. Sites were evaluated for existing functions and values and potential restoration, enhancement, or creation of functions and values. Discussions of site and functional design criteria, monitoring, and functional assessments were included to assist in achieving project goals and objectives.

Four broad categories were used for estimating implementation costs for each project: low (projects less than \$10,000); medium (projects ranging from \$10,000 to \$50,000); and high (projects greater than \$50,000 but less than \$1,000,000) and very high (projects greater than \$1,000,000). Potential partnerships were suggested for planning, implementation, and/or monitoring for each site and descriptively by programs, with principal contacts included for each program.

Thirty-nine sites were identified and evaluated for potential wetland restoration, enhancement, or creation. Six sites are located within the Nueces River delta, eight sites along the Nueces/Corpus Christi Bay shorelines, two sites within Corpus Christi Beach area, three sites on Indian Point, four sites within the Oso Creek and Bay complex, three sites on Encinal Peninsula, three sites on Live Oak Peninsula, eight sites on Mustang Island, and two sites within upper Laguna Madre. Four

classes of wetland systems, Estuarine, Palustrine, Riverine, and Lacustrine, were represented in the final sites. Some sites were representative of a single system; other sites represented three of the four systems.

Most of the sites currently would exhibit between four and six potential functions and values. Four sites provide eight potential functions and values, four sites have nine, and three sites could provide ten functions and values. All restoration, enhancement, or creation projects, when implemented, could potentially improve food chain support/nutrient export, and fisheries and wildlife habitat functions. Implementation of twenty-five projects could potentially enhance recreational values, twenty-one sites could improve water quality, nineteen sites could improve sediment trapping functions, and nineteen sites could be used as educational sites. Eleven sites could assist in flood storage and desynchronization, seven sites could be used as illustrating cultural values in the study area, and six sites as performing potential groundwater discharge or recharge.

The sites represent a wide distribution of estimated costs for implementation, with 9 designated as low cost, 10 as medium cost, one as medium to high cost, fifteen as high cost, two as high to very high cost, and two sites as very high cost. Eleven federal and five state and private programs are available to assist state and local governments, private landowners, and others in funding and providing technical assistance for implementing wetland restoration, enhancement, and creation projects.

Future studies should include expanding the geographic scope of this research on Nueces and part of San Patricio counties to include identifying potential sites for wetland restoration, enhancement, and creation in the remainder of the CCBNEP study area, or the remainder of San Patricio County, and Refugio, Aransas, Kleberg, Kenedy, Bee, Live Oak, McMullen, Duval, Jim Wells, and Brooks counties. Results of the ongoing research on current status and historical trends of wetlands in the CCBNEP study area (White *et al.*, 1996) can be used to focus on restoring, enhancing, or creating those wetland types within the Corpus Christi/Nueces Bay study area that are most threatened, scarce, and/or vulnerable. In addition, efforts should be made to incorporate wetland restoration, enhancement, and creation projects in relation to landscape-level conservation goals for long-term sustainability of natural resources in the Corpus Christi Bay management area.