
INTRODUCTION

Purpose

The purpose of this study is to determine the effectiveness of the programs which comprise the environmental management framework for the Christmas Bay Coastal Preserve. Common sense suggests that the basic question in evaluating effectiveness would be to measure how well each program is meeting its environmental management objectives. However, this type of strictly objective measurement is not feasible in the Christmas Bay watershed because environmental trend data is incomplete and management objectives have not been defined for each regulatory program.

Rather than a strictly objective approach, this report assesses the appropriateness of existing regulatory mechanisms for dealing with the environmental problems facing Christmas Bay. Agencies with responsibility for environmental regulation in the preserve have been described in terms of legal authority (legislation and rules), resources (budget and staff), and administrative priority (agency policy). By comparing this framework with current or potential environmental problems, regulatory gaps and insufficiencies have been identified, as well as overlaps and opportunities for enhanced interagency coordination. Based on this analysis, action steps for improved regulatory effectiveness have been recommended.

The findings and recommendations of this study will be utilized in ongoing management planning for the preserve. This report and the companion document for Armand Bayou are also "pilot studies" for a regulatory effectiveness assessment covering the entire Galveston Bay system.

Scope

The scope of this report is to evaluate the effectiveness of the major environmental regulatory programs governing the Christmas Bay Coastal Preserve and its watershed. The overall management framework is assessed and specific program evaluations have been conducted in the following categories of environmental regulation:

- point source discharges
- protection of wetlands
- protection of living resources and habitat
- recreational cabins
- agricultural runoff

- landfill siting and inspection
- septic tanks

These categories were selected because each included activities identified in the Galveston Bay National Estuary Program (GBNEP) *Priority Problems List* and the *Environmental Inventory of the Christmas Bay Coastal Preserve* as presenting existing or potential environmental problems for the preserve or the surrounding watershed.

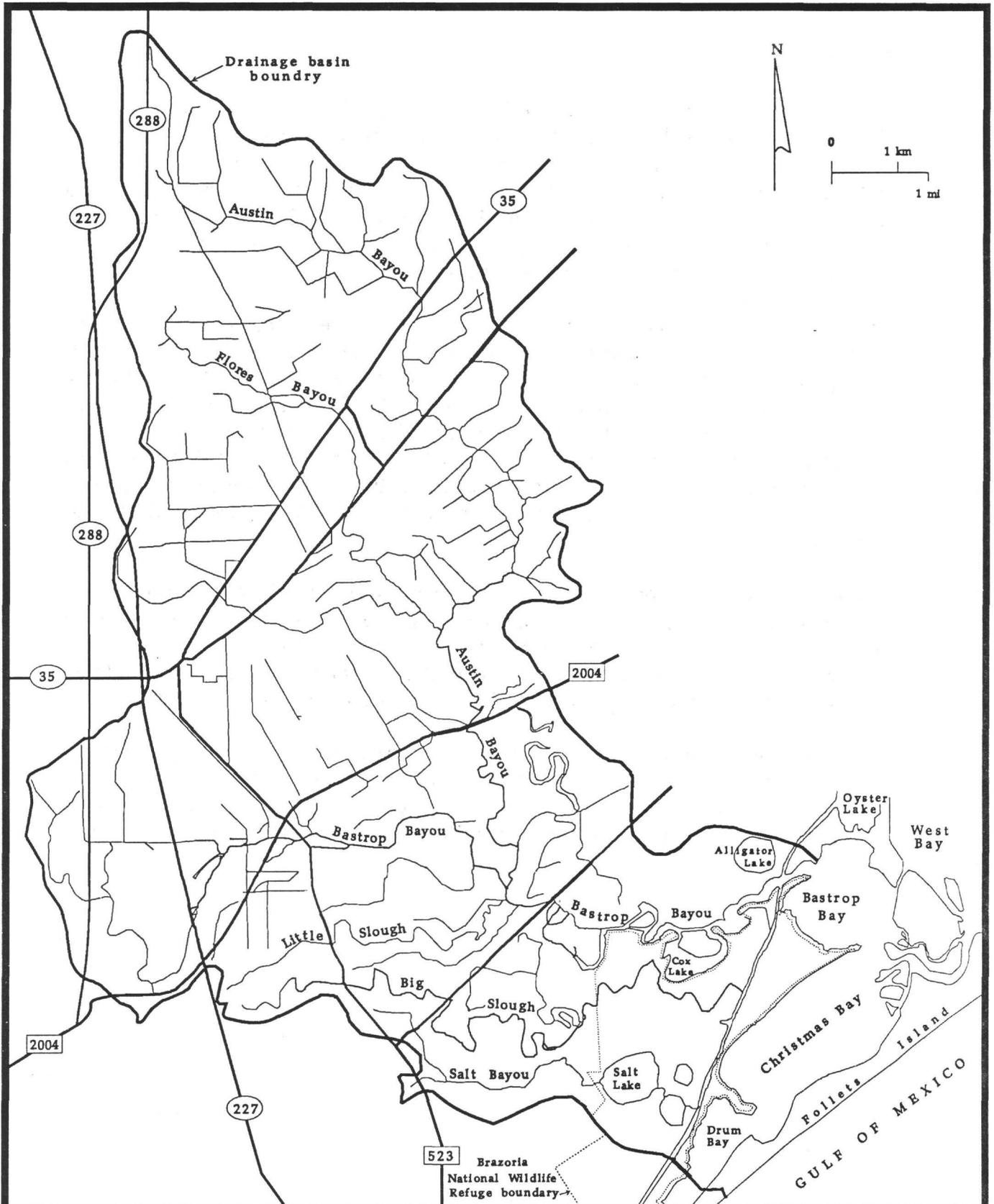
Study Area Description

Christmas Bay is a shallow 4,173-acre embayment in the southwestern portion of the Galveston Bay system. The study area for this report is Christmas Bay's 60,000-acre watershed, shown on the following page. Christmas Bay remains one of the most pristine areas in the Galveston Bay system. Despite its inaccessibility, however, the preserve area faces some of the same potentially significant risks to its water and habitat quality that threaten the entire Bay system. The management challenges for the Christmas Bay Coastal Preserve appear to be preservation-oriented, rather than rehabilitative, as in the case of Armand Bayou.

Christmas Bay enjoys high water quality, supports extensive oyster reefs, and has one of the last remaining sea grass meadows in the Galveston Bay system. The productive qualities of the Bay have led to its designation as a nursery area by the Texas Parks and Wildlife Department. The Bay is also fringed by salt marsh, and lands immediately to its northwest are contained within the Brazoria National Wildlife Refuge, a primary migratory bird habitat.

The most visible environmental threats within the Bay are posed by recreational uses. There are numerous cabins, leased by the General Land Office, which have no waste disposal facilities. The disposal of waste from these cabins into the Bay poses a pollution concern. Additionally, recreational boating has the potential to disrupt the aquatic vegetation of the Bay.

Much of the Christmas Bay watershed is cultivated and is criss-crossed by farms and drainage canals. Pollution from agricultural runoff is a concern, as is pollution from septic tanks in rural areas. There is scattered rural development along Bastrop Bayou. Cities within the watershed include Angleton, Lake Jackson and Richwood, none of which is highly urbanized. Activities within the watershed with the potential to impact Christmas Bay include oil and gas drilling, salt dome injection wells and rural septic systems. Additionally, the periodic maintenance dredging of the Gulf Coast Intracoastal Waterway may affect the amount of fresh water which enters the Bay.



<p>Christmas Bay Watershed Houston-Galveston Area Council</p>	<p>Christmas Bay Study Area</p> <p>○ State Highway □ County Road</p>	<p>— Streets and Highways</p> <p>— Waterways</p>
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Methodology

Based on the results of the *Environmental Inventory of the Christmas Bay Coastal Preserve* and the *GBNEP Priority Problems List*, the key environmental problems facing Christmas Bay were identified. The *Regulatory Survey for the Christmas Bay Coastal Preserve* provided information on the authority of the federal, state and local agencies to regulate the activities contributing to these problems. Using this background information, a series of individual survey instruments were designed for interviewing key staff of the agencies involved in environmental regulation.

The purpose of the interviews was to explore in greater detail the components of the regulatory process. Interviewees were asked to respond to questions on the adequacy of the legal authority, resources and administrative priority associated with their regulatory program. Where deficiencies or barriers to program effectiveness were noted, follow-up questions were asked to determine the root causes. The objective of this method, when used in successive interviews, was to reveal consensus opinions. The findings in the report reflect statements that were repeated several times within the same agency or across agencies. The text of the report also indicates times when opinions differed and there was not a clear consensus.

Assessments of major programs included interviews with field office, enforcement and management staff, where possible. (Appendix B contains a list of the divisions within each agency in which staff were interviewed.) This approach was taken to identify internal as well as interagency barriers to regulatory effectiveness. To stimulate frank responses, interviewees were assured that their responses would be kept confidential.

Based on the findings of the research and interviews, a series of management recommendations for the Christmas Bay Coastal Preserve were prepared and are included in this report. These recommendations constitute action steps for effective coastal preserve management under the framework of the Galveston Bay National Estuary Program.

FIGURE 1: Agency Acronyms

FEDERAL

ASCS	Agricultural Stabilization and Conservation Service
CORPS	Army Corps of Engineers
EPA	Environmental Protection Agency
FWS	Fish & Wildlife Service
NMFS	National Marine Fisheries Service
SCS	Soil Conservation Service

STATE

GLO	Texas General Land Office
RRC	Railroad Commission of Texas
SWCB	Texas Soil and Water Conservation Board
TACB	Texas Air Control Board
TDH	Texas Department of Health
TPWD	Texas Parks and Wildlife Department
TWC	Texas Water Commission
TWDB	Texas Water Development Board

REGIONAL

H-GAC	Houston-Galveston Area Council
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LOCAL

BCHD	Brazoria County Health Department
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