COCKROACH BAY

AQUATIC PRESERVE

MANAGEMENT PLAN

APRIL 1987

DEPARTMENT OF NATURAL RESOURCES

COCKROACH BAY AQUATIC PRESERVE

MANAGEMENT PLAN

April 21, 1987

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Executive Director

Department of Natural Resources

This Plan was prepared by
The Bureau of Land and Aquatic Resource Management
Division of Recreation and Parks

Preparation of this management plan was primarily supported by a grant from the the U.S. Office of Ocean and Coastal Resource Management, National Oceanic and Atmospheric Administration, and the Florida Department of Environmental Regulation, the Office of Coastal Management, through the Coastal Zone Management Act of 1972 as amended.

EXECUTIVE SUMMARY

The Cockroach Bay Aquatic Preserve is located in Hillsborough County, and comprises an area of submerged lands located along the east side of Tampa Bay totalling approximately 3,600 acres. This area is the most pristine region in Tampa Bay.

Cockroach Bay was designated an aquatic preserve on July 1, 1976, when it was leased from the Tampa Port Authority for the primary purpose of preserving the biological resources of the Cockraoch Bay area marshes and associated waters. This area consists predominately of fringing mangroves and mangrove islands with some oyster bars, clam beds, and seagrasses. The preserve is important in protecting critical habitat to an extensive array of fish, birds and other wildlife. Maintaining the continued health of the preserve will involve minimizing water pollution and losses of wetlands resulting from urban, residential and industrial development in the region.

The major objective of the aquatic preserve management program is to ensure the maintenance of essentially natural conditions. Management will also be directed to ensure public recreational opportunities while assuring the continued propagation of fish, birds and other wildlife resources. This task will be guided by the identification and mapping of natural resources and habitats necessary to meet these objectives. An additional management objective is to review and comment on applications for the use of state-owned submerged lands. Meeting these objectives will require a fully implemented management program with the establishment of a permanent on-site manager for the aquatic preserve. Currently, the preserve is being managed temporarily by an interim manager (OPS) and is based off-site at the Department of Natural Resources' Marine Research Laboratory in St. Petersburg.

STATE OF FLORIDA

BOARD OF TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND

R E S O L U T I O N

WHEREAS, the Board of Trustees of the Internal Improvement Trust Fund is charged with the acquisition, administration, management, control, supervision, conservation, protection, and disposition of all lands title to which is vested in the Trustees under Chapter 253, Florida Statutes; and

WHEREAS, Chapter 258, Florida Statutes, directs that state-owned submerged lands within aquatic preserves be set aside forever in their essentially natural or existing condition for the benefit of future generations; and

WHEREAS, the Trustees are charged with the adoption and enforcement of reasonable rules and regulations to carry out the provisions of Sections 258.35 through 258.46, Florida Statutes, regarding the regulation of human activity within the aquatic preserves so as not to unreasonably interfere with lawful and traditional public uses of the preserves; and

WHEREAS; Section 18-20.13, Florida Administrative Code, mandates the development of management plans for aquatic preserves; and

WHEREAS, the Trustees desire to serve the public by effectively planning, managing and protecting aquatic preserves; and

WHEREAS, the Trustees have recognized the Cockroach Bay Aquatic Preserve as a biological/scientific preserve in formal action on May 18, 1976; and

WHEREAS, the Trustees recognize the importance and benefits of protecting the natural resources and preserving the natural ecosystem and aesthetics in the Cockroach Bay Aquatic Preserve area; and

NOW THEREFORE BE IT RESOLVED that the Board of Trustees of the Internal Improvement Trust Fund hereby adopts the Cockroach Bay Aquatic Preserve Management Plan; and

BE IT FURTHER RESOLVED that the Cockroach Bay Aquatic Preserve Management Plan shall serve as a fundamental policy guideline for the Trustees and other state and local agencies having jurisdiction relative to maintaining the natural resources and environmental quality of this aquatic preserve, and shall provide the overall policy direction for the development and implementation of all administrative rules and programs related to the management of state-owned submerged lands within the Cockroach Bay Aquatic Preserve; and

BE IT FURTHER RESOLVED THAT the Department of Natural Resources, Division of Recreation and Parks, is hereby designated as agent for the Trustees for purposes of aquatic preserve planning and management.

IN TESTIMONY WHEREOF The Board of Trustees of the Internal Improvement

Trust Fund have hereunto subscribed their names and have caused the Official Seal of the Board of Trustees of the Internal Improvement Trust Fund to be hereunto affixed in the City of Tallahassee, The Capitol, on this the twenty-first day of April, A.D., 1987.

(Seal)

Governor

Secretary of State

Commissioner of Education

Attorney General

Commissioner of Agriculture

Comptroller

Treasurer

As and Constituting the State of Florida Board of Trustees of the Internal Improvement Trust Fund

Approved as to form and legality

DNR Attorney

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COCKROACH BAY AQUATIC PRESERVE MANAGEMENT PLAN

CHAPTER I

INTRODUCTION

This plan addresses the management of the Cockroach Bay Aquatic Preserve, located in Hillsborough County, Florida. This Aquatic Preserve is one of 40 officially designated aquatic preserves in the statewide system (Figure 1). It comprises an area of submerged lands located along the east side of Tampa Bay totalling approximately 3,600 acres.

A submerged land lease agreement was entered into on July 1, 1976, between the Tampa Port Authority, a body politic and corporate under and by the virtue of the Laws of the State of Florida, and the Board of Trustees of the Internal Improvement Trust Fund. This agreement provided that the Tampa Port Authority as owner in fee simple of all or certain parcels of land in Cockroach Bay, pursuant to Legislative act, would for the sum of one dollar ($1.00) per year, lease said lands to the Trustees of the Internal Improvement Trust Fund of the State of Florida. This fee was later waived by the Port Authority. The term of the lease is for 40 years, from July 1, 1976 through June 30, 2016 (See Appendix D).

The Cockroach Bay Aquatic Preserve boundary (Figure 2) begins within the mouth of the Little Manatee River. It then continues in a southwesterly direction along the mean high-water line until it reaches its southern limit


AQUATIC
PRESERVES
AQUATIC PRESERVES ARE ESTABLISHED BY THE FLORIDA LEGISLATURE AND INCLUDE ONLY STATE OWNED SOVEREIGNTY SUBMERGED LANDS. THE GOVERNOR AND CABINET SITTING AS TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND ARE MANAGERS OF THESE AREAS.
FOR MORE INFORMATION REGARDING AQUATIC PRESERVES CONTACT:
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF RECREATION AND PARKS
BUREAU OF LAND AND AQUATIC RESOURCE MANAGEMENT
3900 COMMONWEALTH BLVD
TALLAHASSEE, FLORIDA 32303

Figure 1.

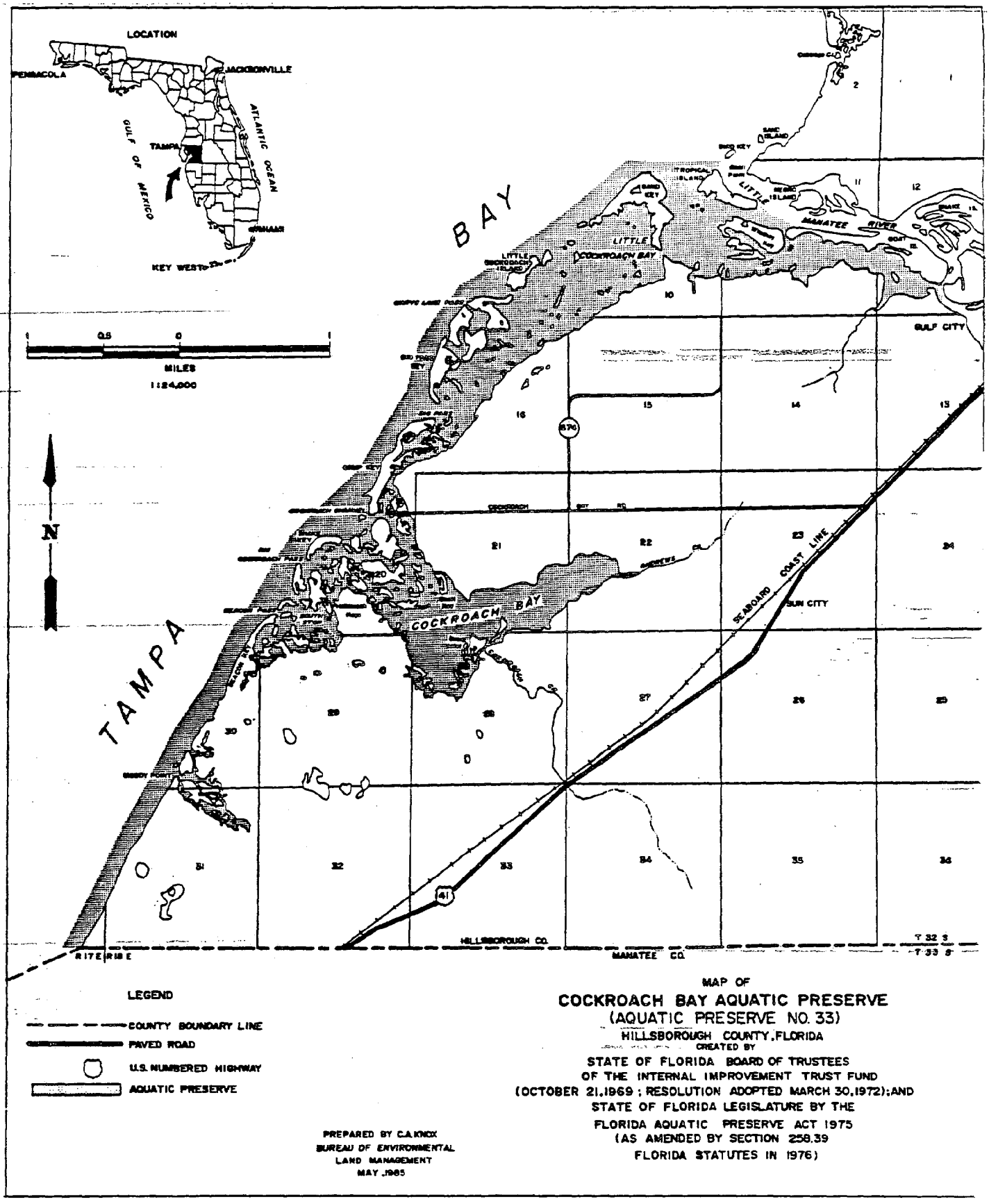
LOCATION
PENSACOLA
JACKSONVILLE
TAMPA
GULF OF MEXICO
ATLANTIC OCEAN
MIAMI
KEY WEST
0.5
0
1
MILES
1:24,000
N
TAMPA BAY
LITTLE COCKROACH BAY
COCKROACH BAY
MANATEE RIVER
GULF CITY
SUN CITY
SEABOARD COAST LINE
HILLSBOROUGH CO.
MANATEE CO.
RITE RIBE
T 32 S
T 33 S
LEGEND
COUNTY BOUNDARY LINE
PAVED ROAD
U.S. NUMBERED HIGHWAY
AQUATIC PRESERVE
PREPARED BY C.A. KNOX
BUREAU OF ENVIRONMENTAL
LAND MANAGEMENT
MAY 1985
MAP OF
COCKROACH BAY AQUATIC PRESERVE
(AQUATIC PRESERVE NO. 33)
HILLSBOROUGH COUNTY, FLORIDA
CREATED BY
STATE OF FLORIDA BOARD OF TRUSTEES
OF THE INTERNAL IMPROVEMENT TRUST FUND
(OCTOBER 21, 1969; RESOLUTION ADOPTED MARCH 30, 1972); AND
STATE OF FLORIDA LEGISLATURE BY THE
FLORIDA AQUATIC PRESERVE ACT 1975
(AS AMENDED BY SECTION 258.39
FLORIDA STATUTES IN 1976)

Figure 2

at the Hillsborough/Manatee County Line. The preserve is contained within Hillsborough County. At its northern border it is bounded by the northern edge of the Little Manatee River and to the south by the Manatee/Hillsborough County line, and Port Manatee. Included in the Preserve are Little Cockroach Bay, Cockroach Bay, South Stop to the Manatee/Hillsborough County line. The Preserve boundary extends westerly 500 feet from the mean high water line of Tampa Bay. This boundary also runs 500 feet westerly of the mean high water line of the off shore islands (Beacon Key, Snake Key, Camp Key, Big Pass Key, Little Cockroach Island and Sand Key).

Of all four aquatic preserves located in the Tampa Bay region (including the Pinellas County, Terra Ceia, and Boca Ceiga Bay Aquatic Preserves) the Cockroach Bay Aquatic Preserve is the least developed and is in the most pristine condition. This environmentally sensitive and unique preserve, harbors seagrass beds which stabilize bottom sediments, and provide food and shelter to a wide variety of species of adult, juvenile, and larval vertebrates and invertebrates. Mangroves which represent the predominant emergent vegetation, fringe the shoreline of most of the area. Saltmarsh grasses, oyster bars, clam beds, drift algae, live bottoms and tidal flats are also intricate parts of this very dynamic and productive system.

The Cockroach Bay Aquatic Preserve is designated and will be managed as both an Aquatic Preserve by the Florida Department of Natural Resources and an Outstanding Florida Water by the Florida Department of Environmental Regulation. The boundary lines of Figure 2 represent the gross boundaries of the Aquatic Preserve. The actual preserve includes those submerged lands

(formerly sovereignty land of the state) located waterward of the mean high water line (mhw) within this boundary area. The aquatic preserve will be managed to emphasize the maintenance and enhancement of essentially natural conditions. As more site specific information becomes available, essentially natural conditions shall be further identified and resources in disturbed areas restored to a natural condition, where possible.

Due to the current limitation of permanent onsite staff resources, the initial management program described in this plan will be limited in the scope of operations. However, the program will fill the minimum need for active management in the preserve and should provide the framework for future program growth. Currently, management of Cockroach Bay Aquatic Preserve is being provided by an interim manager hired on OPS status to provide minimal resource protection needs. The administrative support for this management program will be provided by the Department of Natural Resources, Division of Recreation and Park's, Bureau of Land and Aquatic Resource Management (BLARM) in Tallahassee, known as the "central office". Field personnel support and assistance will be provided through the Florida Park Service, Division of Marine Resources and the BLARM staff.

Initially, development of the resource inventory of the preserve has depended heavily on LANDSAT satellite imagery, DOT aerial photography, on-site inspection, the Future of Tampa Bay, and the proceedings from the Tampa Bay Scientific Information Symposium (BASIC) (Treat et al. 1985) held in 1982. As the program proceeds and on-site managers become more familiar with the area, additional resource information will become available and modifications to the program and the plan will be made where appropriate.

The plan is divided into chapters according to their management application. Chapter II cites the authorities upon which this management program and plan are built. Chapter III (Major Program Policy Directives) highlights the major policy areas that are applicable to this management area. Chapter IV presents a brief resource description.

Chapter V presents the management objectives of both the on-site managers, who actually work in the preserve, and the administrative staff in Tallahassee.

Chapter VI addresses how this plan will interface with local, regional, state, and federal agencies and programs, as well as its relevance to nongovernmental organizations, interest groups, and individuals.

Chapter VII through IX address the various uses, from public to private to commercial. Chapters X and XI address the use of the aquatic preserve for scientific research and environmental education, respectively.

Chapter XII is an internal management improvement section identifying problems and needs in the progressive improvement of this aquatic preserve management plan.

This plan was written by the Department of Natural Resources (DNR), Division of Recreation and Parks, Bureau of Land and Aquatic Resource Management (BLARM) staff. Funding for the plan was provided by a coastal management grant (CM-130) through the U.S. Department of Commerce's National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource management, and the Florida Department of Environmental Regulation (DER), Office of Coastal Management.

Chapter II

MANAGEMENT AUTHORITY

The primary management authorities available to the staff for implementing management directives affecting aquatic preserves are found in Chapters 258 and 253, Florida Statues (F.S.). These authorities clearly establish the proprietary management overview role of the Governor and Cabinet, sitting as the Board of Trustees of the Internal Improvement Trust Fund and are referred to as both the "Trustees" and the "Board". Furthermore, all management responsibilities assigned to the Trustees by this plan may be fulfilled directly by the Governor and Cabinet or indirectly via staff or agents of the Trustees, pursuant to delegations of authority, management agreements, or other legal mechanisms. All subsequent references to the Board of Trustees should be presumed to potentially include staff and designated agents, in addition to the Governor and Cabinet. The staff of the Bureau of Land and Aquatic Resource Management (BLARM) acting as "agents" for the Trustees, is able to review all requests for uses of, or directly affecting, state-owned sovereignty submerged lands within aquatic preserves. The review and subsequent staff comments are primarily designed to evaluate the environmental consequences of any proposed use of state-owned submerged land. The review is conducted within the confines of the criteria contained in the "maintenance" provisions for aquatic preserves in Section 258.42, F.S. Formal review

comments are provided to the Department of Natural Resources (DNR), Division of State Lands by the Bureau of Land and Aquatic Resource Management for inclusion in the comments and recommendations accompanying agenda items for Trustees' consideration. This mechanism allows the Trustees, sitting as owners or lease holders of the land, in trust for the public, to evaluate public interest and project merits within the context of environmental impact upon the preserves.

BACKGROUND

In many respects, the authorities supporting aquatic preserve planning and management are the cumulative results of the public's awareness of the importance of Florida's environment. The establishment of the present system of aquatic preserves is a direct outgrowth of public concern with dredge and fill activities rampant in the late 1950's.

In 1967, the Florida Legislature passed the Randall Act (Chapter 67-393, Laws of Florida), which set up procedures regulating previously unrestricted dredge and fill activities on state-owned submerged lands. That same year the legislature also provided statutory authority (Section 253.03, F.S.) for the Trustees to exercise proprietary control over state-owned lands. In 1967, this governmental focus on protecting Florida's productive estuaries from the impacts of development led to the establishment of a moratorium by the Governor and Cabinet on the sale of submerged lands to private interests. In that same year, this action was followed by the creation of an Interagency Advisory Committee on submerged land management. In late 1968, that committee

issued a report recommending the establishment of a series of aquatic preserves. Twenty-six separate waterbodies were addressed in the original recommendation. Also in 1968, The Florida Constitution was revised, declaring in Article II, Section 7, the State's policy of conserving and protecting the natural resources and scenic beauty of the state. That constitutional provision also established the authority for the legislature to enact measures for abatement of air and water pollution.

It was not until October 21, 1969 that the Governor and Cabinet acted upon the recommendations of the Interagency Advisory Committee and adopted, by resolution, 18 of the waterbodies as aquatic preserves.

Prior to the October 1969 action by the Governor and Cabinet, the Legislature had created the Boca Ciega Bay Aquatic Preserve. Subsequent legislative action in 1972, 1973, and 1974, created the Pinellas County, Lake Jackson and Biscayne Bay Aquatic Preserves, respectively.

In 1975, the Legislature established a Florida Aquatic Preserve Act (codified in Chapter 258, F.S.), thereby bringing all existing preserves under a standardized set of maintenance criteria. Additional acts were passed subsequent to the 1975 action, such as the addition of the Cockroach Bay Aquatic Preserve in 1976 and the Gasparilla Sound-Charlotte Harbor Aquatic Preserve to the system in 1978.

The Charlotte Harbor Aquatic Preserve Management Plan, approved by the Trustees on May 18, 1983, was the first management plan for an aquatic

preserve. The following aquatic preserves have approved plans: Estero Bay-September 6, 1983; North Fork-St. Lucie - May 22, 1984; Loxahatchee River-Lake Worth Creek - June 12, 1984; and Indian River Lagoon - January 22, 1985. Banana River - September 17, 1985; Indian River-Malabar to Vero Beach - January 21, 1986; Nassau River, St. Johns River Marshes and Fort Clinch Park - March 22, 1986 and Alligator Harbor - September 23, 1986.

In June 1985, the Legislature passed Senate Bill 762 which expanded the boundaries of the Banana River, Malabar to Vero Beach, Loxahatchee River Lake Worth Creek, Wekiva River and Rookery Bay Aquatic Preserves; and created Guana River Marsh and Big Bend Seagrasses Aquatic Preserves. In June of 1986 the Legislature passed Senate Bill 607 which added the Rainbow Springs and Lemon Bay Aquatic Preserve to the state-side system.

The State Lands Management Plan, adopted on March 17, 1981 and amended July 7, 1981 by the Trustees, contains specific policies. The Plan also establishes policies concerning spoil islands, submerged land leases, "Outstanding Native Florida Landscapes", unique natural features, submerged grassbeds, archaeological and historical resources, and endangered species. All of these issues provide management guidance to the aquatic preserve program.

ADMINISTRATIVE RULES

Chapters 18-21 and 18-20, Florida Administrative Code (F.A.C.), are two administrative rules directly applicable to the DNR's/Trustees's actions

regarding allowable uses of submerged lands, in general, and aquatic preserves specifically. Chapter 18-21. F.A.C. controls activities conducted on all sovereignty submerged lands, and is predicated upon the provisions of Sections 253.03 and 253.12, F.S. The stated intent of this administrative rule is:

"(1) To aid in fulfilling the trust and fiduciary responsibilities of the Board of Trustees of the Internal Improvement Trust Fund for the administration, management and disposition of sovereignty lands;

(2) To insure maximum benefit and use of sovereignty lands for all the citizens of Florida;

(3) To manage, protect, and enhance sovereignty lands so that the public may continue to enjoy traditional uses including, but not limited to, navigation, fishing, and swimming;

(4) To manage and provide maximum protection for all sovereignty lands, especially those important to public drinking water supply, shellfish harvesting, public recreation, and fish and wildlife propagation and management;

(5) To insure that all public and private activities on sovereignty lands which generate revenues or exclude traditional public uses provide just compensation for such privileges; and,

(6) To aid in the implementation of the State Lands Management Plan."

Chapter 18-20, F.A.C. specifically addresses aquatic preserves and derives its authority from Sections 258.35, 258.36, 258.37 and 258.38, F.S. The intent of this rule is contained in Section 18-20.01, F.A.C., which states:

"(1) All sovereignty lands within a preserve shall be managed primarily for the maintenance of essentially natural conditions, the propagation of fish and wildlife, and public recreation, including hunting and fishing where deemed appropriate by the board and the managing agency.

(2) The aquatic preserves which are described in Section 258.39, 258.391, 258.392 and 258.393, F.S.; Chapter 85-345 Laws of Florida; and in Section 18-20.02, F.A.C., were established for the purpose of being preserved in an essentially natural or existing condition so that their aesthetic, biological and scientific values may endure for the enjoyment of future generations.

(3) The preserves shall be administered and managed in accordance with the following goals:

(a) Preserve, protect, and enhance these exceptional areas of sovereignty submerged lands by reasonable regulation of human activity within the preserves through the development and implementation of a comprehensive management program;

(b) To protect and enhance the waters of the preserves so that the

public may continue to enjoy the traditional recreational uses of those waters such as swimming, boating, and fishing;

(c) To coordinate with federal, state, and local management programs, which are compatible with the intent of the Legislature in creating the preserves;

(d) To use applicable federal, state, and local management programs which are compatible with the intent and provisions of the act and these rules, to assist in managing the preserves;

(e) To encourage the protection, enhancement or restoration of the biological, aesthetic, or scientific values of the preserves, including but not limited to the modification of existing manmade conditions toward their natural condition, and discourage activities which would degrade the aesthetic, biological, or scientific values, or the quality, or utility of a preserve, when reviewing applications, or when developing and implementing management plans for the preserve;

(f) To preserve, promote, and utilize indigenous life forms and habitats, including but not limited to: sponges, soft coral, hard coral, submerged grasses, mangroves, salt water marshes, fresh water marshes, mud flats, estuarine, aquatic and marine reptiles, game and nongame fish species, estuarine, aquatic and marine invertebrates,

estuarine, aquatic and marine mammals, birds, shellfish and mollusks;

(g) To acquire additional title interests in lands wherever such acquisitions would serve to protect or enhance the biological, aesthetic, or scientific values of the preserves.

(h) To maintain those beneficial hydrologic and biologic functions, the benefits of which accrue to the public at large."

OTHER MANAGEMENT AUTHORITIES

Other Department of Natural Resources management authorities applicable to aquatic preserves include: fisheries and marine mammal management and protection; beach and shore preservation programs outlined in Chapters 370 and 161, F.S., respectively; and land acquisition programs conducted under the Conservation and Recreation Lands Program authorized by 253, F.S.

Chapter 403, F.S., is an important adjunct to Chapters 253 and 258, F.S. This governs, in part, the State's regulatory programs affecting water quality and biological resources. The Department of Environmental Regulation (DER), through a permitting and certification process, administers this program. Section 253.77, F.S., as amended by the Warren S. Henderson Wetlands Protection Act of 1984, requires that any person requesting use of state-owned land shall have approval of the proposed use from the Trustees before commencing the activity. An interagency agreement between DNR and DER provides an avenue for staff comments on potential environmental impacts of projects in aquatic preserves through the DER permitting process.

Additionally, the DER has designated, by administrative rule, a series of water bodies with strigent use criteria called "Outstanding Florida Waters" (OFW). The inclusion of all aquatic preserve waters within this classification greatly enhances the protective provisions of Chapter 258, F.S. As the designated "306" Coastal Zone Management Agency, the DER also provides a source of funding for data collection and planning in areas such as the Cockroach Bay area, as well as being the state agency responsible for implementing "federal consistency" provisions of the federal Coastal Zone Management Act.

The DER's administrative rules of primary significance to the Aquatic Preserve Management Program are Chapters 17-3, 17-4 and 17-12, F.A.C. These rules are based upon the authorities contained in Chapter 403, F.S. Chapter 17-3, F.A.C. addresses water quality standards and establishes the category of "Outstanding Florida Waters", while Chapters 17-4 and 17-12, F.A.C. address permit requirements and dredge and fill activities, respectively.

In December, 1982 a Memorandum of Understanding (MOU) between the DER, DNR, and the U.S. Army Corps of Engineers (COE) was executed. This MOU clearly establishes a process whereby the proprietary concerns of the Trustees, stated in Chapter 253, F.S. can be integrated into the DER/COE joint permit processing system.

Tampa Port Authority having leased the submerged bottoms of Cockroach Bay to the Internal Improvement Trust Fund established a process whereby the proprietary concerns of the Trustees, stated in Chapter 253, F.S. can be integrated into the TPA permit processing system.

Other opportunities for environmental review and input into activities potentially affecting aquatic preserves are afforded by the Department of Community Affairs (DCA), the Environmental Protection Commission (EPC) of Hillsborough County, Tampa Bay Regional Planning Commission (TBRPC), and the Department of State, Division of Historical Resources (DHR). The Executive Office of the Governor also provides a mechanism for public input into federal projects via the State clearinghouse process.

The DCA and TBRPC are statutorily responsible for administering the "Development of Regional Impact" (DRI). The DRI program, authorized by Section 380.06, F.S. was established by the Legislature to provide a review and monitoring procedure for those development projects potentially affecting more that one county. To understand the maze of authorities involved in authorizing, permitting or reviewing development plans in Tampa Bay, the agency prepared an Existing Authorities Matrix (Appendix E). This matrix identifies the types of activities for which each agency is responsible. Aquatic preserve personnel must not only coordinate with but be conversant of these agencies policies in order to facilitate comprehensive and consistent review input.

Chapter 267, F.S. establishes the state policy regarding preservation and management of Florida's archaeological and historical resources. This responsibility is legislatively assigned to the DHR, which holds title to those cultural resources located on state-owned lands. This also applied to sovereignty submerged lands, including aquatic preserves.

The Hillsborough County Department of Health and Rehabilitative Services, under their public mandate, administers two programs directly affecting the aquatic preserve management program. These programs are (1) septic tank regulation, usually administered by county health departments and (2) arthropod (mosquito) control programs, usually implemented through local mosquito control districts. Septic tanks and arthropod controlling each holds the potential for creating significant impacts upon the aquatic preserves. Establishment of close working relationships between the aquatic preserve staff and the Department of Health and Rehabilitative Services will be a necessary element of the aquatic preserves management program.

Each of the above referenced programs may provide an effective means of protecting aquatic preserve and their ecologically sensitive resources.

The appendices contain a list of the appropriate statutes and administrative rules.

Chapter III

MAJOR PROGRAM POLICY DIRECTIVES

This plan contains a number of management policy issues. This section highlights those major policy areas that comprise the basic thrust of this management effort. Adoption of these policies will provide specific staff direction for implementing the day-to-day aquatic preserve management program. Major program policy directives are:

(A) Manage all submerged lands within the aquatic preserve to ensure the maintenance of essentially natural conditions to ensure the propagation of fish and wildlife, and public recreation opportunities.

(B) Prohibit the disturbance of archaeological and historical sites within the aquatic preserve, unless prior authorization has been obtained from the Trustees and DHR, and such disturbance is part of an approved research design or authorized project.

(C) Develop a resource inventory and map natural habitat types within the aquatic preserve, with an emphasis on those habitat types utilized by threatened and/or endangered species.

(D) Protect and, where possible, enhance threatened and endangered species

habitat within the aquatic preserve.

(E) Prohibit development activities within the aquatic preserve that adversely impact saltmarshes and other valuable submerged habitat, unless a prior determination has been made by the Board of overriding public importance and that no reasonable alternatives exist.

(F) Prohibit the trimming and/or removal of saltmarsh vegetation and other natural shoreline vegetation within the aquatic preserve, except when necessitated by the pursuit of legally authorized projects and local protection ordinances.

(G) Provide and actively encourage research and educational opportunities for scientists and other interested researchers within the framework of a planned research program in the aquatic preserve.

(H) Acquire, where feasible, privately owned submerged lands and adjacent lands and islands located within the boundaries of the aquatic preserve pursuant to the authorities contained in Section 253.02(4), F.S. Of greatest interest are the barrier islands that are at the mouth of the Little Manatee River and those along the coast of Cockroach Bay.

(I) Prohibit the drilling of oil and gas wells, the mining of minerals, and dredging for the primary purpose of obtaining upland fill within the aquatic preserve.

(J) Prohibit non-water dependent uses of submerged lands within the aquatic preserve except in those cases where the Board has determined that the project is overwhelmingly in the public interest and no reasonable alternatives exist. This prohibition shall include floating residential units, as defined in Section 125.0106(2), F.S.

(K) Prohibit storage of toxic, radioactive, or other hazardous materials within the aquatic preserve. Any hazardous waste dumps now located within the aquatic preserve should be closed and eliminated.

(L) Prohibit mosquito control practices within the aquatic preserve that require habitat modification or manipulation (i.e. diking, ditching) unless there are no reasonable alternatives and failure to conduct such practices would result in a threat to public health.

(M) Limit pesticide and biocide use within the aquatic preserve to those that are approved by the Environmental Protection Agency (EPA) for wetland and aquatic application.

(N) Prohibit the construction of new deep water ports within the aquatic preserve boundaries.

(O) Prohibit any activity commercial or recreational that might impact the integrity of hard bottom communities within the aquatic preserve.

(P) Insure that artificial reef construction does not adversely impact

environmentally fragile areas within the aquatic preserve and that the construction will maintain the essentially natural condition while enhancing the quality and utility of the preserve.

(Q) Manage spoil islands within the aquatic preserve as bird rookeries and wildlife habitat areas.

(R) Encourage public utilization of the aquatic preserve, consistent with the continued maintenance of its natural values and functions.

(S) Develop a well coordinated aquatic preserve management mechanism that recognizes and utilizes local government programs and authorities.

(T) Require, through the efforts of DER and the South West Florida Water Management District (SWFWMD), the maintenance and upgrading of the water quality of the estuary and ensure the natural seasonal flow fluctuations of freshwater into the estuary. In particular, encourage the Department of Environmental Regulation and the Environmental Regulatory Commission to expand OFW designation to wetlands above the MHW line in areas within or adjacent to the Aquatic Preserve.

(U) Apply the management criteria contained in the adopted Cockroach Bay Aquatic Preserve Plan to all subsequent legislative additions of land to the the aquatic preserve.

(V) Encourage the assistance of federal, state, and local government agencies in implementing the aquatic preserve management plans, especially in areas of protection of natural and cultural resources and the enforcement of applicable resource laws and ordinances.

(W) Prohibit Marinas and associated construction activities in Resource Protection Areas 1 and 2.

(X) Identify and document any problems caused by fishing, shellfishing, and collecting activities and report them to the Marine Fisheries Commission.

(Y) Insure that the aquatic preserve management plans are consistent with all other state and local planning processes and completed plans that may impact aquatic preserves.

(Z) Recognize that successful shellfish culture and harvesting efforts in the aquatic preserve are dependent upon pollution prevention and abatement and careful comprehensive planning.

Chapter IV

RESOURCE DESCRIPTION

A. Resource Setting

1. The Tampa Bay Area

The Cockroach Bay Aquatic Preserve comprises an area of approximately 3,600 acres and is located in the lower southeastern portion of the Tampa Bay estuarine system. Due to the fresh and saltwater influence as well as the subtropical climate, this estuary supports a wide variety of plant and animal communities. The preserve is composed of open water, several inlet bays, and tidally influenced creeks and rivers. Some of the area along Cockroach Bay contains extensive mosquito ditching and in the Little Manatee River there is one area of residential canals. The rest of the preserve remains relatively unspoiled.

Tampa Bay is the largest estuary in Florida. It is a complex network of creeks, rivers, and bays that drain some 2,200 square miles of Florida's west central peninsular coast. Lining the shore are Florida's third and fourth largest cities, Tampa and St. Petersburg, their suburbs, and the seventh busiest port in the nation. Stresses caused by channel dredging (for commercial and private navigational purposes), large scale urban alterations

to the natural shoreline, and discharges of thermal, biological, and chemical pollutants have had a negative impact on the bay. The primary impact has been the loss of marine habitat and the reduction in the overall productivity of Tampa Bay. The major problems facing this area include: development on the mangrove islands and shoreline, sewage and industrial effluents entering the system, and agricultural and urban runoff.

Concern about Tampa Bay's ecosystem resulted in a number of landmark studies, including the Tampa Bay Area Scientific Information Symposium held in 1982 (Treat et al. 1985), and the Future of Tampa Bay (Tampa Bay Regional Planning Council 1985) which constitutes a comprehensive overview of 42 management issues relating to the Bay area. These two studies, augmented by local land use information, the Florida Statistical Abstract (Shoemyen 1985), and other studies more particularly oriented to the lower Tampa Bay area, are the basis for most of the material found in this chapter.

Despite its overall urban context, the shoreline of Tampa Bay includes some relatively undeveloped areas, the most extensive of which lies between the mouth of the Little Manatee River near Ruskin and the south shore of Terra Ceia Bay adjoining the city of Palmetto. The offshore waters of this stretch include the Terra Ceia Aquatic Preserve and the Cockroach Bay Aquatic Preserve, the latter of which is the subject of this management plan.

Bay management at this time is conducted by the federal, state and local governments, often in a totally independent manner. These overlapping and sometimes conflicting interests and jurisdictions have contributed to a number

of growth and land management problems that affect all of Tampa Bay. These concerns stated in the Tampa Bay Area Scientific Symposium Information (Treat et al. 1985), were the basis for the formation of a Tampa Bay Management Study Committee. These groups, and the resulting Agency on Bay Management, have recommended that Tampa Bay can and should be managed in a comprehensive manner as a single ecological system. The boundaries were recognized as the uplands and freshwaters contained within the combined watersheds of all rivers and tributaries which flow into Tampa Bay. Because of this overall acceptance of the importance of Tampa Bay and its watershed to the health of all areas within its influence, this management plan, with its goals and objectives, can make a significant contribution to Bay management. Also, the management plan for Cockroach Bay Aquatic Preserve incorporates many of the issues and concerns of the various governing bodies in an attempt to provide consistent and equitable management policies for all the aquatic preserves in the Tampa Bay area; these include: Pinellas County, Boca Ceiga Bay, Cockroach Bay, and Terra Ceia Aquatic Preserve.

In the remainder of this chapter a profile of the coastal area is provided with historical notes, population characteristics, and a land and water use overview, and those sections are followed by more particular discussions of the various marine and emergent habitats and other resources to be found in the Cockroach Bay Aquatic Preserve.

2. Historic Notes

When Panfilo de Narvaez and the first Spanish explorers arrived on the shore of Tampa Bay in 1528, they found the area already settled by the Tocobago

Indians whose sustenance was provided by the abundant fish and shellfish resources which were so readily harvested from the Bay. Before these Spaniards moved on, they angered the Indians so that three subsequent attempts during the 1500's at missionary activity or colorization resulted in armed resistance by the Indians. European explorers left a grim legacy in the form of smallpox and other diseases to which the indians had no resistance, and by the early 1600's the area was almost devoid of human inhabitants. The only lasting remains of the Tocobago Indians are the shell mounds and other archaeological sites found throughout the Tampa Bay area, as well as the local place names such as "Tampa", originally given to a native village in the vicinity.

Various explorations and visitations occurred throughout the 17th and 18th centuries. Spanish fishermen working out of Cuba maintained limited settlements in the Tampa Bay area for use as a base for their Gulf coast operations. These fishermen planted the first citrus groves in the area. Permanent settlements, however, awaited the coming of an American named Robert Hackley in 1823. Hackley's initial settlement was preempted by the Army which built Fort Brooke on the site. The garrison which was established, stimulated further settlement both in the immediate Tampa Bay area and along the lower Gulf Coast in general. In 1834 Hillsborough County was created by the Florida Legislature, and the 1840 census revealed a total of 452 inhabitants.

Tampa Bay was important to the early settlers primarily as a source of food and secondarily as a harbor. This situation began to change shortly after settlement. The Bay was the scene for numerous skirmishes between Union

forces and Confederate blockade runners who were running local agricultural goods, hides, and lumber during the Civil War. During the 1880's, a much more significant natural resource, phosphate, was discovered in the interior of Florida, west of Tampa, and its extraction and shipment has been a major economic focus in the area ever since.

In particular, the bulk tonnage of phosphate ore was an incentive for construction of both railroad lines and port facilities. It was recognized that the natural shallow basin of Tampa Bay would present a continual obstacle. Therefore, the 1871 survey done by the Army Corps of Engineers recommended that a channel be dredged in upper Hillsborough Bay. That initial dredging has initiated excavations throughout the Tampa Bay area ever since. Competition between the initial harbor facilities at the mouth of the Hillsborough River and subsequent development of Port Tampa on the eastern shore of Old Tampa Bay was later augmented by the creation of shipping channels to serve the Big Bend and Bartow electric plants. In 1969, a 40 foot channel to Port Manatee was built. This channel now separates the Terra Ceia and Cockroach Bay Aquatic Preserves.

The complex system of shipping channels in Tampa Bay has always presented environmental problems. The great effort involved in creating and maintaining what is now a 43-foot deep channel has resulted in major disruptions to the bottom contours of the Bay. Spoil disposal, which in the past was responsible for burying extensive acreages of seagrass beds and oyster bars, remains one of the most intractable problems of overall bay management.

Development within the three counties adjoining Tampa Bay has had different economic roots. Hillsborough County in the Tampa area has emerged as a leading business and industrial center, while Pinellas County, the most densely settled county in Florida, has long been famous as a retirement community. Manatee County's growth has been more recent and more mixed in type. The north coast of Manatee County and the southwestern coastline of Hillsborough County are still largely agricultural. Although they differ in magnitude, both urban and rural areas impact the environmental integrity of Tampa Bay. Stormwater runoff, wastewater treatment effluent, and concentrations of fertilizers and pesticides all contribute to the pollution of Bay waters.

The challenge of resource management in Tampa Bay entails the maintenance of the historic assets (industrial shipping, commercial and recreational fishing, and aesthetic and recreational use) as well as the upgrading and maintenance of the Bay's present environmental condition. Since both the Terra Ceia and Cockroach Bay Aquatic Preserves are located in some of the least disturbed areas of Tampa Bay, it is extremely important that they be carefully maintained.

3. Archaeological Sites

The earliest known inhabitants of Florida were from the Paleo-Indian Period which existed prior to 8,000 B.C. As large Pleistocene animals became extinct, the Indians became more dependent on small game. Freshwater shellfish became an important part of the Indian diet and semi-permanent villages developed. The discarded shellfish resulted in large middens, and

Warren (1966) has shown that portions of the middens left in now sunken river channels in Tampa Bay were left by Archaic period peoples.

Early Archaic period projectile points were found in spoil material on Shell Island in Little Cockroach Bay (Warren 1965). Several sites have been identified in the area and are listed with the Division of Historical Resources. There are many sites that have not yet been registered and probably many more sites are undiscovered due to the undisturbed nature of the preserve. Many archaeological sites have already been disturbed or destroyed in the Tampa Bay region due to rapid growth, and therefore, preservation of any remaining sites is critical.

4. Present Population Characteristics

The growth management concerns of Florida are readily reflected in the tri-county area encompassing Tampa Bay. The 1.67 million people who dwell in Pinellas, Hillsborough, and Manatee Counties represent approximately one-sixth of the state's population and have an overall growth rate that closely parallels that of the state's 4.35% annual growth (as averaged from 1970 to 1984). In Manatee County, the least populous of the three counties, the growth rate has been even greater, averaging over 5.0% per year. Projections suggest that although the growth rate will trail that of the state, the difference will not be very great. By the turn of the century the Tampa Bay region is expected to be home to 2.1 million people, or roughly one-seventh of the projected 14.67 million in Florida.

The provision of housing for these additional 431,000 people will be a major

developmental issue throughout the region, for the above mentioned population increase will translate into approximately 172,000 dwelling units. Substantial areas exist in all three counties where development could occur that would not directly affect Tampa Bay, but virtually all of it would have an indirect impact. The Tampa Bay watershed includes about 90% of the land area of the three surrounding counties. Even those residents living well away from the waterfront have an indirect impact in a number of ways: their sewage is treated and pumped into the bay or its tributaries, they drive across the Bay area bridges, they launch boats in the Bay on weekends, and they use electricity from power plants situated near the water. Viewed from this perspective it is clear that the overall impacts on the Bay will continue to increase even if all growth is directed away from the waterfront.

The actual economic importance of Tampa Bay is a composite of several separate functions. Some economic values are in partial or total conflict with each other, as for example, the value of a pristine seagrass bed as a fishery resource verses its value as part of a navigational channel, or the use of waterfront site as a public access point for boat launching versus its development as a residential waterfront community.

The waterborne commerce utilizing Tampa Bay is substantial. The Port of Tampa in 1984 handled 47.9 million short tons of export and import goods, while Port Manatee in 1983-84 handled another 5.5 million short tons. Not only does the direct and indirect value of this commerce total several hundred million dollars annually, but the Tampa Bay Regional Planning Council in their study,

Documenting the Economic Importance of Tampa Bay, calculates that the savings in transportation costs alone total $281 million.

Bay waters also are used extensively for receiving wastewater effluent from several sewage treatment plants and for providing cooling water for the production of electrical energy. These uses of the Bay result in the savings of hundreds of millions of dollars above alternative strategies. Commercial fishing, despite its reduction in relative value from earlier years, is still worth some $20 million annually, while recreational fishing represents several times that figure. Other recreation pursuits in the waterfront areas, such as waterfront residential development, and the sale of boats and marine accessories, contribute significantly to the overall economics benefits provided by the bay. Finally, the Bay serves an important economic function by providing habitat, nursery areas, and food for the various biological communities found in the Bay.

5. Coastal Area Land Use and Infrastructure

Southwest Hillsborough County is the least developed area of the county. The land area adjacent to Cockroach Bay Aquatic Preserve represents a mix of uses with numerous concerns and implications of management.

The immediate shoreline from the mouth of the Little Manatee River to just north of the Hillsborough--Manatee County line is an almost unbroken fringe of mangroves, except for mosquito control ditches. This stretch, and its continuation south beyond Port Manatee into the Terra Ceia Aquatic Preserve, is the most extensive stretch of mangroves remaining in Tampa Bay. Most of

this area has been designated as a preservation area in Hillsborough County's Comprehensive Plan. The one exception is the area immediately North of the county line which is designated as industrial (known as the McInnis Site) has been identified by the Tampa Electric Company as a suitable site for development of a power plant at an indefinite time in the future.

From a point near the northern tip of Cockroach Bay running almost to the county line and roughly parallel to US-41 is a levee shoreward of which there is no development. Between the levee and US-41 and in most of the land area north of Cockroach Bay and west of US-41 the predominant land use is agriculture. Fish hatcheries and scattered residences also exist in this area. This complex of agricultural land has presented water quality difficulties in the aquatic preserve because of the runoff of high nutrient loads from fertilizers and toxic compounds in pesticides. This has been aggravated by the mosquito ditching in the area. This nutrient loading has contributed to the recent closures of the waters in the vicinity of Cockroach Bay to shellfish harvesting.

Along the northern bank of the Little Manatee River is the community of Ruskin. Ruskin has been identified in the Hillsborough County Comprehensive Plan as an urban development area where housing densities run as high as 7.5 units per acre. Most of the land surrounding Ruskin is designated urban transitional, and there is clear evidence that the area is experiencing increased developmental pressure. While some of the land running north to ..

Apollo Beach remains in agricultural use, most of it is in the process of

being converted to low density residences with extensive dredging, filling and hardening of the shoreline. Along the southern bank of the Little Manatee River just off US-41 is the residential community of Gulf City, an unincorporated are served by septic tanks.

B. Natural Systems and their Components

1. Geologic Features and Land Forms

Like most estuaries, Tampa Bay is a product of the fluctuations in sea level caused by Pleistocene and earlier glaciation. During times of lowered sea level, the river valley of Tampa Bay was cut into underlying limestones by the paleo-Hillsborough, Manatee, and Alafia rivers. As sea level rose during glacial retreat, the area was flooded and became Tampa Bay (Doyle 1985).

Underlying Tampa Bay are limestones and dolomites of Oligocene age and older. The early Miocene St. Marks formation, which consists of dolomitic limestones interbedded with terrigenous clastics, directly underlies the unconsolidated surface sediments in the northern portion of the Bay. The Hawthorn formation is absent in the northern portions of Tampa Bay but is present at the surface throughout the entire southern two-thirds of the bay, including the Cockroach Bay Aquatic Preserve. The Hawthorn Formation also outcrops along portions of eastern Tampa Bay. In the deeper portions of Tampa Bay, the Pleistocene river valley has down cut as must as 90 feet into the underlying limestones. This archaic bed has filled in with unconsolidated estuarine and fluvial sediments (Doyle 1985).

Surface sediments are composed of fine to very fine quartz sand with varying

amounts of organic muds and coarse carbonates, mostly in the form of mollusk shells. A band of phosphate-bearing sand occurs just west of the Interbay Peninsula and runs south to the eastern shore of the Bay, then southwest to the entrance off Bradenton. This band runs parallel to the shore of the Cockroach Bay Aquatic Preserve (Doyle 1985).

The sand side sediments in Tampa Bay were probably derived for the major rivers during the last rise in sea level. At the present time, essentially no sand size material is being added to the system from the rivers but input from the Gulf of Mexico may occur in the Terra Ceia area. Streams carry only small loads of fine sediments but it may be that considerable amounts of fine materials are added through surface runoff (Doyle 1985).

Surface sediments within the Bay are constantly being reworked by benthic organisms by tidal currents and wind generated waves, as well as by dredging. When the sand veneer is dredged from the surface, mud deposits irregularly located beneath may be mobilized. Dredging may be a process which selectively removes sand size materials and results in increased proportions of silt and clay sized muds. When spoil is impounded in the physical process of dredging, coarser material is selectively removed but the fine fraction tends to leak back into the system (Doyle 1985).

Depending on the amount of runoff at any one time, Tampa Bay can be classified as a moderately stratified to vertically homogenous estuary. It has been postulated that these types of estuaries serve as fine sediment sinks, that little fine sediment escapes them and that bottom water movement tends to bring sediment into the system from offshore (Doyle 1985).

Estuaries serve as "filters" for suspended sediment received from the land. Salinity distributions, circulation patterns and other factors control the distribution and transportation of suspended sediment and the deposition of fine particles within the estuary. In turn, the distribution of silt and fine suspended matter affects the distribution of many constituents such as nutrients, radionuclides, and some metals. The rate and occurrence of sediment deposition is also greatly influenced by the biological component of the estuary (Doyle 1985).

2. Plant Associations

The plant communities of the Cockroach Bay Aquatic Preserve are a major factor in the continued health and productivity of the natural systems of the Preserve. The major plant associations recognized in the Preserve include mangrove forests, marine grassbeds, salt marshes, and drift and benthic marine algae. Each community is presented separately although the communities are often intermixed and are energetically interdependent. Subsections address animal life, particularly endangered species, associated with plant communities of the aquatic preserve.

a. Mangrove Forest. Three species of mangrove trees dominate the mangrove community. These trees extend from the shoreline inward to the extent of tidal influence. Tampa Bay is generally recognized as the northern limit for extensive mangrove forests on the west coast of Florida. Although mangroves may extend further northward in the state, the annual occurrence of freezes gives the mangroves a stunted growth pattern and limits their

distribution. In Tampa Bay, 17,514 acres of mangroves have been reported (McNulty 1972) and Cockroach Bay is recognized as a mangrove dominated community (Estevez and Mosura 1985).

The three species of mangroves occurring are the red mangrove (Rhizophora mangle), found nearest to the bay; the black mangrove (Avicennia germinans) generally inland of, but sometimes mixed with the reds; and the white mangrove (Laguncularia racemosa) generally upland, of but also mixed with blacks. The zonation of the mangrove association is a result of tidal inundation and saline conditions of the soil. In Tampa Bay, due to freeze damage and rising tide levels, these zonation patterns have become indistinct and overlapping of mangrove species occurs (Estevez and Mosura 1985).

The dominant mangrove forest type in Cockroach Bay is the "overwash" forest in which the island is completely inundated by daily tides. Also present in the preserve is the "fringe" forest type (Lugo and Snedaker 1974). This forest type is characterized by: growth on mainland shorelines of gradual slope; exposure to tides but not daily overwashed; having sluggish internal water flow on high tides, and minor to no scouring; and exporting particulate as well as labile organic matter.

The mangrove community is a highly productive system. The prop and drop roots of the red mangrove along with the pneumatophores of the black mangrove trap sediments and nutrients thus providing a rich food source for benthic, planktonic, and fish communities. The leaf fall from the mangrove community also adds another detrital food source to the system. Mangrove communities

filter land runoff and the above ground submerged root system acts as a substrate for algal attachment. Because of the high nutritive content in mangrove communities, they act as a habitat for small fish, invertebrates, and birds. They also act as a food base for much of the shellfish and fish communities. Mangroves provide a buffer against erosion and storm damage to inland area.

Within the Cockroach Bay Aquatic Preserve, the primary influence on mangrove communities is through human changing of drainage patterns in upland areas, indirect destruction through increased wave action associated with increased boating activity, and direct destruction through excess pruning and tree uprooting for building or water access. Since mangroves serve to stabilize shore bottom sediment, disturbances to mangrove forests increases turbidity in adjacent waters which in turn affects seagrass and other benthic communities.

b. Seagrasses. Five species of seagrass are found in the Cockroach Bay Aquatic Preserve. These marine flowering plants occur on both sandy and organic sediments in depths down to two feet below mean spring low tides. In Tampa Bay 14,203 acres of seagrasses have been reported. An 81% loss of seagrasses has occurred in Tampa Bay from human impact. Most of the seagrass beds are now limited to inshore areas due to human increased turbidity and decreased water quality in the Bay (Lewis et al., 1985).

The five species found in Cockroach Bay preserve include turtle grass (Thalassia testudinum), manatee grass (Syringodium filiforme), shoal grass (Halodule wrightii), star grass (Halophili englemannii) and widgeon grass

(Ruppia maritima). The seagrass communities in Cockroach Bay are mainly classified as fringe perennial, and occur mostly along shallow shore areas outward into the Bay until increased depth or turbidity limit light penetration and therefore, growth. The zonation of seagrasses in general starts with widgeon grass occurring closest to the shore then shoal grass, followed by turtle grass and manatee grass. Seagrasses may be found intermixed or in monospecific stands.

Seagrass communities play an integral part in the cycling of nutrients in an estuarine environment. They are eaten directly by urchins, conchs, fishes, as well as by the endangered West Indian manatee (Trichechus manatus) (Zeiman 1982). Also, decomposition of seagrasses serve as the primary food source for detrital feeders, which in turn are consumed by fish and other marine life higher up the food chain. Seagrasses serve as an attachment site for many forms of epiphytic algae that may be consumed by small fish and juvenile shrimp. (Zeiman and Wetzel 1980, Dawes 1981).

Seagrass blades provide a baffling effect that slows the water current trapping nutrients and sediments. The roots and rhizomes of the seagrasses bind the sediment thus promoting the building of an organic substrate which encourages a diverse meiofauna (Zieman and Wetzel 1950). The forest-like density of the grassblades provides shelter for many small fish and invertebrates. Due to this sheltering effect and the high nutrient level, seagrass beds provide nursery areas for many fishes. When the loss of seagrass beds occurs, the effect causes a reduction in water quality, a reduction in the survival of many larval and juvenile fishes and invertebrates, and a reduction in the availability of food throughout the food chain which ultimately affects humans.

The most destruction done on seagrass beds is caused by dredge and fill activities. In Florida 60,000 acres of basic estuarine habitat have been filled (Durako et al. 1985). Even if the fill is not deposited directly on top of seagrass beds, they are often affected through increased water turbidity. The unconsolidated particles of the fill are continually resuspended into the water column so recolonization of seagrasses is inhibited. Although providing nutrients, sewage outfall often causes a phytoplankton bloom or a dramatic epiphytic algae growth which shade the seagrasses causing a loss in productivity. Propeller cuts also cause damage to seagrass beds. Since few of the grasses in Tampa Bay set seed, the recolonization of the damaged areas is quite slow or nonexistant.

c. Benthic and Drift Algae. In Tampa Bay 217 species of algae have been identified (Dawes, 1985). Most of these species of algae could occur in the Cockroach Bay Aquatic Preserve since all habitat types are present, from deep to shallow water and from sandy to hard substrate. These species vary from benthic macroalgae to microscopic algae. The highest diversity and abundance is found in lower Tampa Bay (Dawes, 1985), which includes the Cockroach Bay Aquatic Preserve.

The benthic algae present may either be attached to the sand or to hard surfaces depending upon the species. Some rhizomatous algae such as Calurpa sp. help bind the sand in much the same way as do seagrass beds. Algae may become detached from the substrate by wave action or because of the grazing activity of organisms. In these ways much of the drift algae of the preserve is generated. Algae need to settle on a substrate to begin growth, but once

growth has been initiated, attachment is often unnecessary for further growth. Because of this ability, large quantities of algae can be found along the shoreline during periods of high growth. These algae provide a shelter and food source for small invertebrates and fish.

Dredge and fill activities affect algae in much the same way as they affect seagrass beds. The algae community is damaged by direct deposition of fill or by low light penetration when the turbidity increases through such activities. Since the algae are able to quickly assimilate nutrients, poorly treated sewage outfall may cause extensive algae growth which hinders fishing activities and causes odor problems for shore residents when the algae wash ashore and decompose.

d. Salt Marsh. Salt marshes can be defined as grass dominated communities that grow intertidally along protected shorelines and backwaters that are periodically flooded by salt or brackish water. The predominant salt marshes in Tampa Bay are needle rush (Juncus roemerianus) marshes. The salt marshes serve as a transition zone between mangroves and freshwater marshes (McNulty 1972). In Tampa Bay 1,728 acres of salt marsh have been reported (McNulty 1972).

The zonation of the salt marsh normally starts with smooth cordgrass (Spartina alterniflora) occurring at the shoreline or behind a fringe of red mangrove (Estevez and Mosura 1985). Landward of the smooth cordgrass, needle rush is usually present. Landward of this band the salt flats are present with vegetation such as seashore saltgrass (Distichlis spicata), glasswort

(Salicornia perennias), and saltwort (Batis maritima). The salt flats are areas of highly saline soil which experience occasional flooding.

The salt marsh community is also important in detrital production for export into the estuarine food web. Along the shore where there is tidal inundation, epiphytic algae grow attached to the base of the salt marsh grasses. Salt marshes filter land runoff, thereby maintaining the water quality of the area.

Dredge and fill activities can destroy or reduce salt marsh communities. Air boat traffic can also severely damage the salt marsh plants. Some success has been achieved in replanting salt marshes in Tampa Bay, but the new marshes take years to grow and may never reach the productivity of a natural marsh.

3. Animal Life

The combination of subtropical climate, diverse vegetation and habitat provides ideal conditions for the survival of an abundant and wide variety of wildlife species in the aquatic preserve. The mangroves, seagrass beds and salt marshes also provide a refuge for animal species visiting this area during migrations, for daily feeding purposes and during times of environmental stress (i.e., drought and storms). These visitors form an extensive species list including live bottoms, oyster beds, marine fishes, colonial water birds, migratory waterfowl, marine mammals, reptiles, amphibians, various shellfish and other marine invertebrates and several endangered species. Many water and shorebirds use the mangrove islands as nesting sites. However, mosquito impoundments, dredge and fill projects, causeways, road and bridge construction have modified much of the original habitat. These man-made modifications have caused a variety of changes to the animal life of the estuary.

a. Live Bottom. Live bottom communities are present in the Cockroach Bay Aquatic Preserve. These communities represent "areas containing biological assemblages of such sessile invertebrates as sea fans, sea whips, hydroids, anemones, ascidians, sponges, bryozoans, and hard corals living upon and attached to naturally occurring hard and rocky formations" (Harris 1981). Although the Cockroach Bay communities do not contain reef forming corals the live bottom species that are present are an important habitat and food source for a range of vertebrates and invertebrates (Derrenbacker and Lewis 1985). The rarity of these types communities in the Tampa Bay area makes the preservation of live bottom communities especially important.

Man can destroy live bottom communities by depositing fill material directly on the site or depositing the fill nearby thereby clogging the filter feeders in the the community. Destruction may also occur when nets are hauled across the site, by excessive collecting by divers or by a reduction in water quality.

b. Oyster Beds. The primary oyster indigenous in Tampa Bay is the American oyster (Crassostrea virginica). Oysters tend to form aggregations of varing sizes on a variety of substrates. Oysters are commonly found attached to dead oyster shells or mangrove roots. Oyster beds and bars are usually limited to the mid-intertidal zone where minimum inundation and heat determine the upper limit and predation determines the lower limit of the oyster bed. Oysters serve as attachment sites for other invertebrates and algae and also provide a feeding area for crabs, raccoons, and wading birds (Bahr 1982).

Since oysters filter feed directly on suspended particulate matter in the water column, they tend to concentrate pollutants present in the water. Because of this characteristic shellfish harvesting is only permitted in areas that pass stringent water quality tests. Cockroach Bay is one of the few areas left in Hillsborough County still open to shellfish harvesting, although it is temporarily closed. Scallops and clams are also present in the preserve.

Dredge and fill activities can damage oyster beds through direct removal, deposition or through clogging of the filtering mechanisms of the oyster.

c. Fisheries. Two hundred and three species of fish are found in the Tampa Bay area (Comp 1985). The commercial fishing industry in Tampa Bay area accounts for 12.8% of the total landings in Florida. Hillsborough County landings alone account for 10.5% of the total Tampa Bay landings.

A majority of marine species important to man are inextricably linked to the estuarine environment (Lindall 1981). It has been estimated that up to 97.5% by weight of the commercial fishery resources in the Gulf of Mexico and over 90% of the sport or recreational species in the United States depend upon estuarines during all or part of their life cycle (Comp 1985). In Florida, at least 72% of the 89 commercially-landed species of finfish and shellfish and 74% of the 84 recreational species are estuarine dependent (Durako et al. 1985). Estuaries serve as nursery grounds for invertebrate and fish species by providing food, shelter, and refuge from predators.

Species of special concern in Florida that are found in the preserve include the snook (Centropomus sp.) and red drum (Sciaenops ocellata). The snook has been classified as a gamefish, which prohibits the commercial harvesting of the species, but allows for limited sports fishing with set size and bag limits and season of the year. The recent rise in popularity of Cajun food and particularly of blackened redfish (red drum) has increased the pressure on this species and has markedly reduced its population. The Fisheries Service as an agency of the Commerce Department's National Oceanic and Atmospheric Administration has implemented an emergency regulation for the management of the directed net fisheries in Federal waters. This action is seen as a first step in the regulation of commercial use of this species.

Other species of economic importance include: black drum (Pogonias cromis), flounder (Paralichthys albigutta), black muller (Mugil trichodon), spotted sea trout (Cynoscion nebulosus), and sheepshead (Archosargus probatocephalus).

d. Amphibians and Reptiles. Information on amphibians and reptiles is scarce. Species known to occur in the coastal areas of Tampa include nine species of frogs and 27 species of reptiles including the American alligator (Alligator mississippiensis), two tortoises, four terrapins, five lizards and 18 snakes (Long 1975). Most amphibians and reptiles cannot tolerate the saline environments within and immediately adjacent to the aquatic preserve and their numbers are reduced because of this. The loggerhead sea turtle (Caretta caretta--a threatened species), green sea turtle (Chelonia mydas--an endangered species) and leatherback sea turtle Demochelys coriacea--an endangered species) are known to nest along the coastal beaches and may occasionally nest within the preserve. Sitings and nestings of these species should be carefully monitored and documented.

The American alligator is designated as a species of special concern by the State of Florida, and the indigo snake, (Drymardron corais) is on the State's threatened species list. The abundance of both of these species should be monitored within the preserve.

e. Bird Populations. Climate, vegetation and habitat combined with the geographic location of Florida and Tampa Bay adjacent to a major migratory path contribute to the wide variety of bird species found either as permanent, winter or summer residents or as transients to the area. Eighty-nine species are found in the vicinity of Cockroach Bay Aquatic Preserve (Long, 1975). Of those species found in the area two are classified by the Federal Fish and Wildlife Service[1] and/or the Florida Game and Fresh Water Fish Commission[2] as endangered species (Southern Bald Eagle[1,2], and Wood Stork[1],), and five as species of special concern (Brown Pelican[2], Roseate Spoonbill[2], Little Blue Heron[2], Snowy Egret[2] and Tri-colored Heron[2]).

Mangrove areas and scattered openings within the mangrove forests provide excellent foraging and resting habitat for herons, ibis, Wood Storks and waterfowl (Long 1975). The mangrove fringe and mangrove islands are used as nesting habitats by both the larger wading birds (herons, ibis, egrets, etc.) and also by vireos, warblers and Mangrove Cuckoos. Cockroach Bay nesting populations include Osprey, which nest along the Little Manatee River and within the preserve and can often be seen foraging along Cockroach Bay. There are also two small Yellow-crowned Night Heron nest sites on small islands or keys just below the Little Manatee River, numbering approximately 42 nests for the two keys. The eastern shore of Hillsborough Bay has been identified as a major winter shorebird area, this area might extend into the preserve.

Research is needed to quantify the number of species and individuals and habitat use of the preserve by these population.

f. Mammals. Twenty species of marine mammals are reported in the greater Tampa Bay area (Reynolds and Patton 1985). Most of these species are rarely seen in the Bay area, only the bottlenose dolphin (Tursiops truncatus) and the West Indian manatee (Trichechus manatus) are considered year round residents. In 1872, Maynard described the manatee as being "remarkably abundant" in Tampa Bay. The peak population in Tampa Bay now is estimated as being between 70 and 80 individuals.

Manatees are known to use Cockroach Bay as a migratory path from Upper Tampa Bay to the Gulf of Mexico. There are currently no protected areas, under Chapter 16N-22 of the Florida Manatee Sanctuary Act, within this preserve. As suggested by the Manatee Protection Plan, multi-family and single family docks will be limited to one boat slip for every 100 ft. of natural shoreline. Multi-slip docks will also be required to be clumped to minimize the disturbance to the shoreline. New marinas in high manatee use areas will be prohibited. Activities within the preserve should be managed to guarantee the health and safety of manatees and all other endangered species.

All other mammals within the preserve are fairly common with the exception of the river otter (Lutra canadensis) and the bob cat (Lynx rufus). Both of these species are uncommon. Species common to the coastal scrub and mangrove area include the nine-banded armadillo (Dasypus novemcinctus), the cotton rat (Sigmodon hispidus), the raccoon (Procyon lotor), common oppossum (Didelphis virginiana) and marsh rabbit (Sylvilagus palustris).

Chapter V

RESOURCE MANAGEMENT

A. Introduction

The main objective of the resource management plan in the aquatic preserve is to protect the resources of the aquatic preserves for the benefit of future generations (Section 258.35, F.S.). The management of this preserve will be directed toward the maintenance of the existing or essentially natural conditions and the restoration of degraded areas. This part of the management plan addresses the policies and procedures which the onsite and administrative personnel will pursue. The onsite management will involve DNR's field personnel assigned to the aquatic preserve. The administrative management will involve Division of Recreation and Park's personnel (both in the field and in Tallahassee) and the Division of State Lands' personnel, cooperating in the review of applications for use of state-owned lands and related activities surrounding the preserve. These personnel will be interacting with various government and non-governmental entities, interest groups and individuals.

B. Onsite Management Objectives

The onsite management objectives are reflected in the activities that the field personnel become involved in (i.e., observation, research, public interaction, emergency responses, etc.) to protect and enhance the resources

within the Aquatic Preserve. Other activities, such as the interaction with other government and nongovernmental entities, are covered in more detail in Chapter VI (Management Implementation Network). The field personnel's duties are, with respect to management of the various uses of the aquatic preserve, addressed in more detail in Chapters VII through XI. The field personnel will generally be involved in all management activities concerning the Cockroach Bay area.

1. Plant Communities

The communities of aquatic and wetland plants within the Preserve perform five major functions vital to the health and productivity of the estuarine system.

a. they stabilize geologic features such as beaches in the face of dynamic forces (i.e., currents, tides, winds, and waves), which often act in concert to both erode and deposit;

b. they create, from recycled nutrients and solar energy, the organic material that fuels the estuarine food web which support the area's fisheries, endangered species, migratory waterfowl, colonial waterbird nesting colonies, raptors, marine mammals, and marine and estuarine invertebrates;

c. they provide protected fisheries habitat for spawning and juvenile development, many of which are of economic importance to the commercial fisheries of the state and the nation;

d. they provide roosting and nesting habitat for water birds; and,

e. they physically buffer estuarine and riverine waters from contaminated and channelized runoff from uplands within the estuarine watershed and, in some cases, buffer the uplands from storm waves and winds.

The management objectives for plant communities will be to maintain and enhance these functions. Because these plant communities are critically important to the well-being of the Preserve, a program to work toward the protection and restoration of those communities now damaged or destroyed by human activities should be developed.

Management Policy

a. Field Familiarization and Documentation. Field personnel will become familiar with the plant species and communities present in the aquatic preserve, and locations of their occurrences. Field maps will be updated on a bi-yearly basis.

b. Literature Familiarization. Field personnel will continue to assemble a working library of existing pertinent literature concerning the species and communities present in the aquatic preserve. Staff will become familiar with the ranges, life histories, ecological requirements, productivity, importance to water quality, contribution to landform stabilization, wildlife habitat provision, fisheries habitat provision, and fisheries food production of the plant communities within the aquatic preserve.

c. Preparation of Guidelines for Management of Endangered Species. Field personnel, with the help of the scientific community, personal field observations and literature reviews, will develop maps (using 7.5 minute quadrangles) showing the locations of threatened and endangered plant species within the aquatic preserve. A set of management guidelines for each species, outlining the habitat requirements and the methods to sustain and/or restore these habitats will be developed. Field personnel, in the course of documenting the occurrence of threatened and endangered animals, will develop maps showing the locations and types of plant communities used by these animals for nesting, roosting, feeding, resting, spawning, etc. Guidelines for maintaining or restoring "critical habitat" required by each species will then be developed using all appropriate scientific resources available.

d. Monitoring of Plant Communities for Natural Changes. Field personnel will become familiar with the use of aerial photography and LANDSAT imagery, for the study and monitoring of plant communities (historical and present) and will use this remote sensing in conjunction with field observations to monitor and document natural changes such as:

1. freeze damage to, and recovery of, mangrove communities;
2. wind and wave damage to mangrove communities from storms and hurricanes;
3. accretion-related seaward extension of mangrove communities;
4. erosion-related landward retraction of mangrove communities;
5. depositional burying of marine grassbeds communities;
6. invasions of exotic plant species and revegetation by native species after exotic plant removal projects;

7. pathogen damage to and recovery of plant communities;

e. Identification of Areas and Communities in Need of Restoration. Field personnel will in conjunction with their resource mapping systematically survey the aquatic preserve to determine the location, nature, and extent of environmental damages from human activities and assess the possibility of restoring each site according to whether the site is publicly or privately owned, and the cost and effort required.

f. Protection of Plant Communities. Field personnel shall protect the plant communities from the various uses within the aquatic preserve according to the following guidelines.

1. Field personnel in their biological reports shall not recommend for approval any proposed use of submerged lands when the plant communities in the proposed use area appear to be jeopardized.

   i. Pruning of mangroves shall only be permitted for minimum access from the mean high water line to a dock or pier. The destructive clearing of mangroves in the preserve shall be strictly prohibited.

   ii. Marine grassbed communities shall not be removed or shaded to such an extent as to cause the death of a significant area of the community. They shall not be subjected to unacceptable turbidity, decreased light penetration, propeller or net damage.

2. Field personnel shall be notified of applications for uses of submerged lands within the aquatic preserve by the Bureau of Land and Aquatic

Resource Management (BLARM) central office. No applications will be approved within any Resource Protection Areas 1 and 2 (see section C of this chapter) without a through review by the field personnel. The field personnel will inspect the site, assess the potential impact to the plant communities, and then convey their recommendations to the central office as required.

3. Field personnel will initiate various educational programs and supplement existing educational programs designed to increase public awareness of the damage that recreational, private and commercial uses (i.e., propeller damage) can inflict on marine grassbed communities. Educational programs can also be undertaken with other federal, state or local groups (i.e., Florida Sea Grant, Agency on Bay Management, and school boards, etc.).

4. Field personnel will develop an exotic plant control and removal plan after monitoring the rate and extent of invasion by exotic species, such as Brazilian pepper, Australian pine, and melaleuca.

5. In cooperation with the Hillsborough County Planning Council, and the Tampa Bay Regional Planning Council, field personnel will familiarize themselves with 'The Future of Tampa Bay' The Future of the Region' BASIS' and the federal 'Coastal Zone Management Act' so as to assess the potential impacts of oil spills or natural castastrophe on the natural resources of Cockroach Bay.

g. Restoration of Plant Communities. Field personnel will consult with professionals in the wetlands restoration/vegetation field to determine the advisability of using healthy beds of marine grasses as a stock source to restore damaged grassbeds. They will develop guidelines for restoring marine grassbeds in the aquatic preserve.

Field personnel will identify easily accessible mangrove communities within the aquatic preserve where a high density of mangrove seedlings could serve as a nursery stock source for transplanting to restoration sites. Guidelines for restoring mangrove communities within the aquatic preserve will be developed after consultations with professionals in the wetlands restoration/revegetation field concerning proven procedures for transplanting and nurturing mangroves.

Because restoration/mitigation projects have had variable results, developments that require restoration or mitigation will be discouraged. If after careful consideration a development is found to be overwhelmingly in the public good or no alternative plan devised, restoration/mitigation will be considered. In the event that restoration/mitigation is required as the result of a permit application with DER, DNR, or any other process, field personnel will be responsible for monitoring and documenting all restoration activity. This might include advising the individuals involved in the actual restoration work on the best techniques under the available restoration guidelines. All restoration/mitigation plans will be reviewed prior to the commencement of the proposed development, and assessed as to its feasiblilty. Field personnel will monitor the success of all restoration projects and document their success/failure, so as to provide more precise guidelines for future projects or more strigent requirements if attempts are unsuccessful.

h. Identification of Research Needs. Field personnel will identify research needs concerning plant communities within the aquatic preserve. Special emphasis will be given to research which will provide data that increases the capability of field personnel to manage plant communities. Immediate research needs include how plant communities respond to environmental stress. Included in this study should be a determination of how threshold tolerances of plant community health and diversity are related to degraded environmental conditions.

i. Coordination with Other Researchers. Field personnel will become familiar with research projects being conducted within the aquatic preserve by state and federal agency biologists and non-government researchers. Personnel will coordinate, assist and encourage research projects by the faculty, graduate, or undergraduate students at the six research institutes in the area (University of South Florida, University of Tampa, Eckerd College, Hillsborough Community College, New College in Sarasota and Mote Marine Lab). Water quality research issues, as they affect plant communities, should also be closely followed. This familiarization should lead to a better understanding of both agencies' personnel and a better awareness of the data finding and uses. The research liaison will also be addressed in Chapter X (Scientific Research).

2. ANIMAL LIFE

The richness of the animal life in the Cockroach Bay area was an important factor in its designation as an aquatic preserve. The fish, shrimp, and crabs within the aquatic preserve are valuable resources on which recreational and

commercial fisheries depend. Large areas of undisturbed wetlands are excellent habitat for many types of wildlife. These wildlife include an extensive list of endangered species, migratory waterfowl, colonial waterbirds, invertebrates and vertebrates.

Management objectives for the fauna within the aquatic preserve will be focused on the protection through preservation or restoration of habitats within the preserve.

Management Policy

a. Field Familiarization and Documentation. Field personnel will become familiar with the major animal species in each habitat in the aquatic preserve. This identification process will include the location, number, season of sighting, weather conditions and any other factors which may be necessary to build a working knowledge of the species, and their interaction and occurrence in the aquatic preserve.

b. Literature Familiarization. The field personnel will continue to assemble a working library of existing pertinent literature concerning the animal species and communities present in the aquatic preserve. Staff will become familiar with the ranges, life histories, ecological requirements, position in the community, habitat and other factors necessary for sound management.

c. Preparation of Guidelines for Management of Endangered Species. Field personnel will become familiar with the guidelines of the Florida Game and Fresh Water Fish Commission, U.S. Fish and Wildlife Service, Department of

Natural Resources' Division of Marine Resources, National Marine Fisheries Service, Marine Fisheries Commission, and any other applicable agencies and non-governmental organizations involved in the management of endangered species. These guidelines will be used in conjunction with the field familiarization, documentation, and mapping to develop management guidelines for each species, outlining their habitat requirements. Field Personnel, in the course of documenting the occurrence of threatened and endangered animals, will develop maps showing the locations and types of plant communities used by these animals for nesting, roosting, feeding, resting, and spawning, etc. Literature information and personal observations will then be used to develop guidelines for maintaining (or restoring if necessary) the "critical habitat" required by each species.

d. Manatee Management. When application for the use of submerged lands within the aquatic preserve or adjacent upland activities will affect a manatee sanctuary, critical manatee habitat, or manatees known to use an area (see Chap. IV-B3f), field personnel will notify the State Manatee Coordinator. These applications or activities will require the coordinator's authorization and approval before they can be recommended by BLARM. Field personnel will also work with the coordinator in the practice and procedures of the following activities:

i. Monitor the preserve for manatee activities and maintain a manatee sighting map for the preserve. This mapping will take special note of large seasonal aggregations. A manatee reporting and data collection system will be established and will make use of other governmental personnel and private individuals where possible.

ii. Identify and map shallow water and narrow areas where manatee boat/barge collisions are more likely.

iii. Identify any other areas for additional manatee sanctuaries, special channel marking, and slow speed zones.

iv. Application for use of submerged lands will be reviewed for design and operation that are least dangerous and disruptive to manatees. Approved uses within manatee areas should require manatee caution signs and any other requirements that will guarantee manatee health and safety.

v. The creation of new marinas and multiple slip residential docking facilities should be prohibited in manatee sanctuaries and severely limited in identified manatee use areas.

vi. The creation of canals and basins within or contiguous to manatee sanctuaries shall be prohibited.

vii. Assist local governments in the incorporation of manatee issues into their marina siting elements.

viii. Schedule and monitor activities within manatee use areas during seasons of lowest use.

ix. Assist in public awareness education efforts.

e. Monitoring Changes in Animal Populations. Field personnel will study and monitor changes in animal species that are caused by natural phenomena, such as:

i. freezes;

ii. storms and hurricanes;

iii. changes in habitat due to changes in plant types;

iv. changes in habitat due to water quality changes; and

v. geologic or hydrologic changes including erosion, estuarine current flow changes, and any other physical changes.

f. Protection of Animal Life from Human Uses of the Aquatic Preserve. The protection of animal species shall be considered when reviewing applications in or affecting the preserve. The reviewer shall also consider the potential effects of the proposed use on plant communities that function as habitat for the animal life. Disturbances that alter or hinder the natural activities and functions of the animal species living within the preserve (e.g., air pollution, excessive noise or bright lights affecting a bird rookery), shall also be analyzed and concerns addressed in the permitting process. Field personnel will be notified of any proposed activities (e.g., seismic testing, mammal capture by permit) within the aquatic preserve that might affect the well-being of animal life, and personnel should be involved in planning the activity so as to cause the least amount of stress on animal life.

g. Identification of Research Needs. Field personnel in the course of their duties shall identify research needs required to improve the management of animal life in the aquatic preserve. This identification process is more fully described in Chapter XII (Identified Program Needs).

3. GEOLOGIC FEATURES

The management of geologic features will require that the field personnel become aware of the natural geologic features and the changes, both human and natural, which affect these features within the aquatic preserve. This

knowledge should strengthen the review process for applications on state-owned land as they might affect these features. These geologic features will include inlets, islands, shoals, shorelines, embayments, and channels. The overall objective of the management of these features is to allow the naturally dynamic system to operate without man's influence or interference. Active management in this area shall include the review of proposed uses that might affect the geologic features within the aquatic preserve. The majority of these reviews will probably concern bulkheads, revetments, groins, dredge and fill, bridges and channels as they might affect state-owned lands. Bulkheads are not allowed within the preserve, except as stated in Sections 258.42(2), and 258.44 F.S. and in accordance with the management objectives of the preserve. Bulkheads placed upland of the aquatic preserve shall be constructed following the natural contour of the shore. Drainage patterns will be maintained or shall only be minimally altered. The use of rip-rap with mangroves or other suitable native plantings are always preferable to bulkheads. Management will make every effort to educate the public about the economic and environmental advantages of vegetated shorelines.

Existing bridges and causeways throughout the state have resulted in losses of grassbeds, mangroves and the degradation of the water quality. Causeways restrict natural flushing and create unnatural circulation patterns. Proposals for bridge and causeway construction within the preserve will be reviewed in light of these potential impacts.

Maintenance dredging of existing channels will be carefully studied to remove conditions that require perennial maintenance and chronic environmental

disturbances. Channel dredging has adversely impacted other waterways, with varying influences, depending on channel location and current. Proposed channel dredging will be reviewed in light of these past experiences.

Field personnel shall also be involved in the review of project proposals submitted to other agencies, such as the U.S. Army Corps of Engineers, Department of Environmental Regulation, the Department of Transportation, Southwest Florida Water Management District or the Tampa Port Authority, and shall formally review and comment on any permit application that impacts the aquatic preserve. These projects shall be reviewed jointly with those agencies' personnel whenever possible. Field personnel will review these projects and act as advocates on behalf of the aquatic preserve and its resources.

4. ARCHAEOLOGICAL AND HISTORICAL SITES

Archaeological and historical sites have several characteristics which must be recognized in a resource management program.

i. They are a finite and non-renewable resource.

ii. Each site is unique because individually it represents the tangible remains of events which occurred at a specific time and place.

iii. While these sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. They also preserve traces of past biotic communities, climate, and other elements of the environment that are of interest to both the scientific community and the general public.

iv. These sites, particularly archaeological sites, are very fragile because their significance is derived not only from the individual artifacts within them, but especially from the spatial arrangement of those artifacts in both horizontal and vertical planes.

Administering Agency

The management of the archaeological and historical sites is authorized and administered by the Division of Historical Resources, (DHR) in the Florida Department of State. The management authority for this area of management is presented in Chapter II (Management Authority).

Management Policy

The management policy presented here is one of conservation, as recommended by the DHR and subject to the agency's changes. Their policy is as follows:

1. The field personnel and all other agencies planning activities within the aquatic preserve shall coordinate closely with DHR in order to prevent any unauthorized disturbance of archaeological and historical sites that may exist on the affected tract. DHR is vested with the title to archaeological and historical resources abandoned on state lands and is responsible for administration and protection of such resources (subsection 267.061(1)(b), F.S.). It is illegal to destroy or otherwise alter sites on state lands without a permit from DHR (Section 267.13, F.S.). Therefore, agencies planning activities should coordinate their plans with DHR at a sufficiently early stage to preclude inadvertent damage or destruction to these resources.

2. The nature of these sites' fragility and vulnerability to looting and other destructive forces requires that the location of these sites not be widely known, if the location is known at all. In may instances DHR will have knowledge of the known and expected site distribution in an area. Special field surveys for unknown areas many be required by DHR to identify potential endangerment of a proposed activity to these archaeological and historical sites. This will be especially necessary in the case of activities contemplating ground disturbance over large areas.
3. In the case of known sites, activities that are expected to alter or damage these sites shall alter their management or development plans as necessary, or make special provisions so as not to disturb or damage such sites prior to professionally acceptable and authorized mitigation.
4. If in the course of a management activity, or as a result of development of the permitting of dredge/fill activities, it is determined that valuable historical or archaeological sites will be damaged or destroyed, DHR reserves the right to require salvage measures to mitigate the destructive impact of such activities on such sites (subsection 267.061 (1) (b), F.S.). Such salvage measures shall be accomplished before DHR would grant permission for site destruction.
5. Excavation of archaeological sites in the near future is discouraged. Archaeological sites within the aquatic preserve should be left undisturbed for the present, with particular attention devoted to preventing site looting by "treasure hunters".

6. Field personnel will note suspected sites for future surveys by DHR. Cooperation with other agencies in this activity is also encouraged by DHR. The DHR will help inform the field personnel about the characteristics and appearance of these sites.
7. Any discovery of instances of looting or unauthorized destruction of these sites will be reported to the DHR so that appropriate action may be initiated. The Florida Marine Patrol and other enforcement personnel of DNR shall provide enforcement assistance to DHR and make arrests or investigate cases of looting or other unauthorized destruction of archaeological sites. The field personnel will follow the above management policy and become familiar with the personnel involved with this task in DHR and their procedures for identifying suspected sites.

5. WATER RESOURCES

Responsible management of water resources for the protection of human health and recreational enjoyment of the Aquatic Preserve water, as well as for the protection and enhancement of the preserve's plant and animal communities is the most critical aspect of aquatic preserve management. Research to understand how human activity can alter or detrimentally affect the dynamic characteristics of the Preserve's various habitats can be approached confidently after monitoring data has been used to model the effects of naturally occurring variations on the same habitat. A single toxic substance may be all that is necessary to initiate irreparable ecological damage and change in the water resources of the aquatic preserve estuarine ecosystem.

Management Policy

The successful management of the water resources of the Aquatic Preserve depends heavily on other government agencies (i.e., DER and the Southwest Florida Water Management District) charged with regulating water quality and quantity. Water resource management shall have as its major objective the maintenance of water quality and the natural seasonal fluctuations of fresh water into the estuary. Water resource data is available from governmental and non-governmental agencies, among them colleges, universities, scientific foundations and private consultants working in the Tampa Bay area. For example, the Environmental Protection Commission of Hillsborough County has monitored the water quality at station #136 in Cockroach Bay monthly since 1978. These various entities have interests at many different levels and areas within the riverine and estuarine system. The aquatic preserve management program will manage the water resources through coordination with these various entities. The field personnel will not conduct water sampling, but through the review of data from other entities and from field observations, they will identify water resource problems in the aquatic preserve. Efforts will be made to ensure consistency in project design and sampling techniques so that data from various studies can be used for integrated analysis.

a. Familiarization with the Jurisdiction, Personnel and Monitoring Programs of Government Agencies and Other Entities. Field personnel will become thoroughly familiar with the jurisdiction, personnel and monitoring programs of other agencies, institutions, and corporations involved in studying, monitoring, regulation and managing water resources within the aquatic preserve and the drainage basins which provide fresh water to this

preserve. Those agencies known to be working or having potential activities affecting the preserve are listed below; others may be added as they are identified.

1. Florida Department of Environmental Regulation
2. Hillsborough County Health Department
3. Environmental Protection Commission
4. Southwest Florida Water Management District
5. Marine Fisheries Commission
6. U.S. Geological Survey
7. U.S. Fish and Wildlife Service
8. Tampa Bay Regional Planning Commission
9. Agency on Bay Management
10. Florida Game and Fresh Water Fish Council
11. Florida Department of Natural Resources Marine Research Laboratory
12. University of Tampa
13. University of South Florida
14. Hillsborough Community College
15. U.S. Environmental Protection Agency
16. Eckerd College
17. Mote Marine Lab
18. Tampa Electric Company
19. Tampa Port Authority
20. Department of Natural Resources-Shellfish Sanitation Section
21. Sea Grant Extension Service

b. Monitoring of Water Resources by Cooperative Data Collection and Review. Field personnel will: 1. promote coordination among involved agencies in

planning monitoring programs and in evaluating monitoring data; and 2. monitor water resources within the preserve by reviewing the data collected and complied by those agencies as it applies to the aquatic preserve and its resources.

c. Review of Lease Application for Aquatic preserve Uses and Watershed Activities that would affect the Preserve Water Resources. Field personnel will review sovereign land lease applications, development of regional impact reviews, and DER/COE permit applications in cooperation with other agencies as necessary, and as outlined in Chapter V (5a) for their potential impact on the water resources of the aquatic preserve.

d. Familiarization with and Monitoring of Activities and Users which Regularly Contribute Pollutants to Preserve Waters. Field personnel will become familiar with the activities and users which regularly or potentially contribute pollutants to the waters of the Aquatic Preserve. This monitoring will be accomplished directly by field observations and indirectly by review of other entities' water resource data. Field personnel will encourage and coordinate with other agencies involved with water resource monitoring to consider more detailed field monitoring in areas of the preserve where the incidence of polluting activities is found to be high. These monitoring activities will also include the monitoring of freshwater releases into the preserve and their effect on the environment.

These activities will also be applicable to Chapter X (Scientific Research), and the coordination through Chapter VI (Management Implementation Network). By onsite inspection the field personnel will be able to monitor environmental impacts as and before they occur. Interaction with other federal, state and local agencies will facilitate this regulation.

6. CUMULATIVE IMPACT ANALYSIS

Cumulative impacts are the sum total of major and minor changes or effects upon the natural system. Taken singularly these effects may not constitute a notable change in the condition of the natural system, but as these single changes or uses accumulate their combined impact may result in a substantive environmental disturbance or degradation of the natural system.

The review of proposed uses in the aquatic preserve from the perspective of cumulative impact analysis requires a thorough knowledge of the natural system and the various interactions and dynamics within the system. This aquatic preserve management program will initiate development of a cumulative impact analysis program. The evaluation of cumulative impacts shall include the following criteria from Chapter 18-20 F.A.C.:

"(1) The number and extent of similar human actions within the preserve which have previously affected or are likely to affect the preserve, whether considered by the Department under its current authority or which existed prior to or since the enactment of the Act; and,

(2) The similar activities within the preserve which are currently under consideration by the department; and

(3) Direct and indirect effects upon the preserve and adjacent preserve, if applicable, which may reasonably be expected to result from the activity; and

(4) The extent to which the activity is consistent with management plans for the preserve, when developed; and

(5) The extent to which the activity is permissible within the preserve in accordance with comprehensive plans adopted by affected local governments, pursuant to Section 163.3161, F.S., and other applicable plans adopted by local, state and federal agencies.

(6) The extent to which loss of beneficial hydrologic and biologic functions would adversely impact the quality or utility of the preserve; and

(7) The extent to which mitigation measures may compensate for adverse impacts."

The availability of onsite reserve staff who are familiar with the distinctive characteristics of this system, coupled with their ability to access LANDSAT imagery and mapping, and other data sources, is the key to development of a successful cumulative impact analysis program. As cumulative impacts are identified for specific areas and/or resources, they will become an integral part of the project analysis and decision-making process.

7. MANAGEMENT OF ENCROACHMENTS

The management of encroachments in the preserve will concern the unauthorized placement of structures, unauthorized dredging or filling, or other illegal uses in the aquatic preserve. These encroachments might also include illegal activities associated with an approved use (e.g., extension of a dock, construction of boat houses, extension of an approved channel).

The management policy for the field personnel, after identification of a suspected illegal encroachment, will involve a reporting procedure and the

monitoring of the remedial action. After a field identification of a suspected encroachment, field personnel will notify the central office to verify the title of the property and research the possibility that the use was an approved activity. The potential for unauthorized activities in such an extensive area is tremendous. A progressive system of mapping and recording will be initiated to assist the field personnel in their monitoring of the preserve. Aerial surveys will be done to facilitate reconnaissance of illegal activities and mapping.

The management action for verified illegal encroachment will be developed by the agencies specifically involved (i.e., DNR, DER). Field personnel will assist, as necessary, with field evaluation or other support activities. Final actions will be monitored by field personnel, at the direction of the Trustees to the central office. The procedures followed in these applications will be decided on a case by case basis.

C. RESOURCE MAPPING AND RESOURCE PROTECTION AREAS

The preliminary description and location of resources within the area (approximately 3,600 acres of submerged land), will require the use of remote sensing techniques. This work will be done in conjunction with DNR's Marine Research Laboratory's Assessment of Fishery Habitat Loss Study in the Tampa Bay area. Marine Research Laboratory personnel have developed resource and habitat identification mapping through the use of LANDSAT (satellite) imagery and aerial photography.

The vegetation and land use mapping done in this study will become the basis for the development of a Resource Protection Area management system in the aquatic preserves. This mapping system identifies and classifies various resources within the aquatic preserves that require protection by the management program. Acreage totals for each land use and vegetation classification in the preserve are provided. The onsite managers will supplement the vegetative portion of the mapping with wildlife and fisheries information (endangered species, bird rookeries, etc.), archaeological and historical site information and other resource factors deemed crucial to the continued health and viability of the aquatic preserve.

These maps will then provide the information needed to develop and update a Resource Protection Area (RPA) mapping program. The RPA mapping system is based on three levels of resource classification. The RPA 1 level contains resources of the highest quality. Uses proposed for these areas receive the most rigorous review. The RPA 1 level includes one or more of the following: marine grassbed; live bottom; mangrove swamp; saltwater marsh; oyster bars; archaeological and historical sites (upland and submerged); endangered species habitat; colonial waterbird nesting sites; and other appropriate factors.

The RPA 2 areas are defined as those areas containing the resources of RPA 1, but in a transitional condition compared to RPA 1. These resources may either be building toward RPA 1 status or declining to RPA 3 status. RPA 2 areas will require careful field review as to the specific area's sensitivity to each proposed use. In some respects, these areas may be as more sensitive to disturbances than RPA 1 areas. The resources of RPA 2 will include: marine

grassbeds; mangroves in scrub condition or colonizing new lands; beaches undergoing restoration; saltwater marsh colonizing new lands; and other resources of RPA 1 type that fit in the RPA 2 condition.

RPA 3 areas are characterized by the general absence of the attributes of the above two classes. RPA 3 areas may have small localized RPA 1 or 2 areas within them. RPA 3 generally have deep water areas or areas with no significant vegetation or wildlife attributes. Nearshore and bottom areas significantly modified by man are designated RPA 3.

These RPA maps will require periodic revisions as the onsite managers learn more about the resource's reactions to man's uses. Scientific research and other data additions may also require modification of this system. Natural changes will also require modification of this classification system. Periodic checking by LANDSAT satellite imagery will become useful for remote sensing monitoring as its use is more fully developed.

The RPA maps will become a planning tool for both onsite and central office staff. More detailed field review will still be required to supplement this information on a case by case basis, as necessary.

The initial development, as well as periodic review, will require the support and assistance of the many other resource regulating and managing agencies, as well as local and regional government entities. Support will also be requested from the colleges, universities, foundations and other interested groups and individuals.

The RPA mapping may use the USGS 7.5 quadrangle map format for vegetation and these maps will be available at the central office. It is recognized that mapping at this scale may not adequately define small areas which do not qualify for the RPA class level assigned to a general area.

D. ADMINISTRATIVE MANAGEMENT OBJECTIVES

This section of the chapter addresses the role of the central office, in the aquatic preserve management planning and implementation process. The central office's role is generally interpreted within the context of coordinating activities with the field personnel. This coordination linkage is important to many program aspects, including project review evaluation, local contact initiation, administrative rule development, contractual services and conflict resolution, and the routine support (payroll, operating expenses, etc.) usually extended by the central office to the onsite managers. All program activities identified within this context are designed to protect and enhance the environmental, educational, scientific, and aesthetic qualities of the natural systems of the aquatic preserve.

1. Objectives

Specifically, the following administrative objectives are an essential part of the aquatic preserve management program.

a. To ensure a comprehensive, coordinated review and evaluation of proposed activities potentially affecting the environmental integrity of the aquatic preserve.

b. To serve as the link between aquatic preserve field personnel and state agencies and programs which originate in Tallahassee.

c. To serve as the primary staff in the development of administrative rule additions, deletions, and revisions.

d. To serve as the administrative staff for contractual agreements and services.

e. To establish and maintain a conflict resolution process.

f. To review all existing and past activities as to their affect on the environmental integrity of the aquatic preserve.

2. Project Review and Evaluation

A major element in the administration of an aquatic preserve management system is the establishment of a thorough project review process. It is the program intent that the central office staff review all proposed activities requiring the use of state-owned lands within the preserve. Sections 258.42 through 258.44, F.S., establish the legal context within which all proposed uses of the aquatic preserve must be evaluated. Essentially, these sections require that projects be basically water dependent or water-enhanced, not contrary to the lawful and traditional uses of the preserve, and not infringing upon the traditional riparian rights of the upland property owner.

The primary mechanism through which proposed uses are reviewed is accomplished by participation in the state lands management process as established by Chapter 253, F.S., and modified by Chapter 258, F.S. The central office was administratively designated, on October 4, 1982, as an agent of the Trustees, for the purposes of evaluation the environmental consequences of proposed uses of state-owned lands within aquatic preserves.

In conducting the environmental evaluations, the central office staff will rely heavily upon the most current, readily available data such as Department of Transportation (DOT) aerial photography, LANDSAT imagery, DER biological reports, and other data resources. If a proposed activity is legally consistent with the maintenance criteria outlined in Section 258.42 F.S. and Chapter 18-20, F.A.C., and is generally of negligible environmental concern, then the project review will likely be conducted in its entirely by the central office staff, utilizing the generalized environmental data. The field personnel will be requested to conduct a more detailed environmental assessment of the project if the central office staff, during the course of the preliminary application review, determines that the requested use of state-owned lands may have a significant effect upon the environmental integrity of the preserve. Copies of all applications received will be provided to the field personnel for project monitoring and assessment of the possible cumulative impacts.

Field personnel will be encouraged to establish direct communication links with the various regulatory and management agencies for purposes of obtaining advance notifications of projects potentially affecting the preserve. All environmental review and assessment, however, will be channeled through the central office unless other arrangements have been previously cleared with the central office.

While the State Lands Management Program authorized by Chapters 253 and 258, F.S. and Chapters 18-21 and 18-20, F.A.C., is expected to be the primary management implementation vehicle for the aquatic preserve, it is by no means

the only vehicle. Section 253.77, F.S., as amended, and the December, 1982 Memorandum of Understanding between the COE, DER, and DNR provide direct access to DER 's permitting process for DNR. The Development of Regional Impact (DRI) and other regional or state level review processes represent other implementation mechanisms. The basic review approach and the evaluation between the field personnel and the central office staff will be the same as the case involving the State Lands Management program.

One aspect of the aquatic preserve review and evaluation program is the identification of proposed activities that are either generally or specifically prohibited. Immediately upon review of such project application, the central office staff will notify the Division of State Lands (or other program managers) that the proposed activity is legally unapprovable for the stated reasons. For those proposals which are subject to denial due to their adverse environmental impacts, even though the activity may be permissible, Section 258.42, F.S., specifically provides that:

"(1) No further sale, lease, or transfer of sovereignty submerged lands shall be approved or consummated by the trustees except when such sale, lease, or transfer is in the public interest.

(2) The trustees shall not approve the waterward relocation or setting of bulkhead lines waterward of the line of mean high water within preserve except when public road and bridge construction projects have no reasonable alternative and it is shown to be not contrary the public interest.

(3) (a) No further dredging or filling of submerged lands shall be approved by the trustees except the following activities may be authorized pursuant to a permit:

1. Such minimum dredging and spoiling as may be authorized for public navigation projects.
2. Such minimum dredging and spoiling as may be authorized for creation and maintenance of marina, piers, and docks and their attendant navigation channels.
3. Such other alteration of physical conditions as may, in the opinion of the trustees, be necessary to enhance the quality or utility of the preserve or the public health generally.
4. Such other maintenance dredging as may be required for existing navigation channels.
5. Such restoration of land as authorized by S. 253.124(8).
6. Such reasonable improvements as may be necessary for public utility installation or expansion.
7. Installation and maintenance of oil and gas transportation facilities, provided such facilities are properly marked with marine aids to navigation as prescribed by federal law.

(b) There shall, in no case, be any dredging seaward of a bulkhead line for the sole or primary purpose of providing fill for any area landward of a bulkhead line.

(c) There shall be no drilling of gas or oil wells. However, this will not prohibit the state from leasing the oil and gas rights and permitting drilling from outside the preserve to explore for oil and gas if approved by the board.

(d) There shall be no excavation of minerals, except the dredging of dead oyster shells as approved by the Department of Natural Resources.

(e) There shall be no erection of structures within the preserve, except:

1. Private docks for reasonable ingress or egress of riparian owners;
2. Commercial docking facilities shown to be consistent with the use or management criteria of the preserve; and
3. Structures for shore protection, approved navigational aids, or public utility crossings authorized under subsection (3)(a).

(f) No wastes or effluents shall be discharged into the preserve which substantially inhibit the accomplishment of the purposes of this act.

(g) No nonpermitted wastes of effluents shall be directly discharged into the preserve which substantially inhibit the accomplishment of the purposes of this act."

Generally, applicants desirous of appealing staff recommendations will have to follow those appellate procedures outlined in the appropriate authorizing statutes. In the case where applications requesting the use of state-owned lands are denied, three appellate procedures are available to the applicant.

Depending upon the type of application submitted, an applicant may:

a. Request the Governor and Cabinet to overturn an application decision rendered by the Executive Director or Department of the Natural Resources (or his designee) under a delegation of authority;

b. Request an Administrative Hearing under the procedures outlined in Chapter 120, F.S.; or

c. Appeal the action of the Board of Trustees of the Internal Improvement Trust Fund to the District Court of Appeals.

3. Liaison Between Field Personnel and Other Interested Parties

One of the most important aspects of the field personnel's job is to establish a mutually beneficial communication link with pertinent interest groups. The central office staff will assist in initially identifying and contacting governmental bodies, special interest groups and interested individuals requiring aquatic preserve program coordination.

When requested by the onsite managers, the central office staff will assist in arranging for specialized management expertise not generally available locally. This may include, for example, such things as arranging for DAHRM to conduct a detailed cultural resource assessment for certain areas of the preserve.

Chapter VI

Management Implementation Network

This chapter of the management plan will address the various relationships of aquatic preserve management to the different government agencies and program, non-governmental entities, interest groups, and individuals within the aquatic preserve area. The activities of both field personnel and central office staff as they relate to these other organizations will be presented.

A. Federal

Many federal agencies have property interests, land and wildlife management programs, research activities, construction activities, and regulation programs existing or potentially existing within the aquatic preserves. The objective of the aquatic preserve management program will be to complement the various activities wherever possible. The field personnel will assist those federal agencies in areas where they have common goals. The field personnel and central office staff will also review the federal activities as to their effect on the objectives of the aquatic preserve management. This review shall be coordinated through the DER's Office of Coastal Management for the purposes of enforcing the provisions of the Federal Coastal Zone Management Act of 1972, as amended.

1. United States Fish and Wildlife Service The aquatic preserve program will be involve in the review of proposed preserve uses in conjunction with the Fish and Wildlife's Division of Ecological Services in Vero Beach. This division reviews dredge and fill requests and other federal level permitting under the Fish and Wildlife Coordination Act.

Another management program in which the field personnel could possibly interact with the Fish and Wildlife Service is the protection and recovery of endangered species and bird rookeries within the aquatic preserve. Field personnel will become involved in using available recovery techniques for this purpose, as necessary.

2. U.S. Army Corps of Engineers The U.S. Army Corps of Engineers (COE) is charged with providing technical guidance and planning assistance for the nation's water resources development. The COE also provides supervision and direction to many engineering works such as harbors, waterways and many other types of structures. Their major responsibility, as it applies to the aquatic preserve, is the protection of navigable waters, pollution abatement and maintaining water quality and the enhancement of fish and wildlife.

The COE activities in the Tampa Bay area include their involvement with the DER in the dredge and fill permitting process, technical oversight of channel, inlet and canal maintenance, and evaluation requests for new personnel will become familiar with the various programs, policies and procedures as they apply to the aquatic preserve.

Field personnel and central office staff will also review activities proposed by the COE for conformance to the objectives of the aquatic preserve management plan. This involvement should begin in the early stages of project planning in order to facilitate the best protection of the aquatic preserve possible.

3. U.S. Geological Survey The U.S. Geological Survey (USGS) under the Department of the Interior has the responsibility to perform surveys, investigations, and research pertaining to topography, geology, and the mineral and water resources of the United States. USGS also publishes and disseminates data relative to those preceding activities. In the past the USGS has conducted many studies on various resources in the region.

The field personnel and central office staff will become familiar with these studies and the data results as they apply to their management activities.

4. U.S. Environmental Protection Agency. The U.S. Environmental Protection Agency (EPA), in cooperation with state and local governments, is the federal agency responsible for the control and abatement of environmental pollution. The six areas of pollution within which the EPA is concerned are air, water, solid waste, noise, radiation and toxic substances. The DER is the state agency responsible for handling most of these programs on the state level in lieu of a federal program. Within the aquatic preserve, the field personnel will assist the EPA in planning field activities and where there are common goals.

5. U.S. Coast Guard. The U.S. Coast Guard is the federal agency involved in boating safety, including search and rescue when necessary. The Coast Guard is also charged with the permitting of structures which affect navigation and boating safety. These structures include bridges, causeways, aerial utilities and other structures which may be in conflict with navigational uses. The field personnel, in conjunction with the central office staff, will also review projects which the Coast Guard may be evaluating for permits.

6. National Marine Fisheries Service. The National Marine Fisheries Service (NMFS) under the U.S. Department of Commerce is active in the Tampa Bay area in recording commercial fish landings. The NMFS also has enforcement officers in the area checking for illegal fishery activities. Field personnel will work with these personnel whenever they have common goals within the aquatic preserve.

B. STATE

Many state agencies have programs which affect the resources or regulate activities within the aquatic preserve. There are also other DNR programs that are within or affect the Cockroach Bay Aquatic Preserve. This section will describe the interactions and relationships of these various agency programs and how they relate to aquatic preserve management.

1. Department of Environmental Regulation. The Department of Environmental Regulation (DER) is responsible for regulating air and water quality and, in some cases, water quantity (through the water management district) within the

Tampa Bay area. The DER is also the local contact for the initiation of dredge and fill applications in conjunction with the COE and DNR. With respect to water quality and dredge and fill regulation, the DER is possibly one of the most important agencies to the management of the aquatic preserve. The water quality of the preserve is the most important factor to the health of the estuarine complex, and dredge and fill activities are one of the most potentially destructive activities within the preserve. The DER also regulates other forms of pollution, such as air, noise, wastewater and hazardous waste, which may be important in the future to the preserve.

Field personnel will become familiar with the water quality, dredge and fill, and other regulatory programs that are important to the aquatic preserve. The field personnel should develop a close working relationship with DER staff and become familiar with DER field activities and programs that are in common with the objectives of the aquatic preserve management program. Field personnel should open the most efficient line of communication with the local offices to receive the permit applications for DER as soon as possible to improve the response time within the review process.

The DER, Office of Coastal Management is charged with coordinating activities related to coastal management in the state and reviewing federal actions for consistency with the State Coastal Management Program, Section 280.20, F.S. The central office staff will maintain a close relationship with the Office of Coastal Management for assistance in the review of federal actions, data and research needs, and other program support.

2. Department of Community Affairs. The Department of Community Affairs (DCA) is responsible for reviewing Developments of Regional Impact (DRI) and for designating Areas of Critical State Concern (ACSC). DRI's are major developments that have impacts on a scale which is greater that county level and require a regional review from neighboring local governments and state agencies. Both the central office staff and field personnel of the aquatic preserve program will be involved in reviewing DRI's. Field personnel should receive notice of a DRI through the central office staff and will proceed with the field review. The central office staff will coordinate field review findings and work with the other state agencies in Tallahassee in the review of DRI.

The ACSC program is intended to protect the areas of the state where unsuitable land development endanger resources of regional or statewide significance. When an area is identified as a possible ACSC, a Resource Planning and Management Program (RPMP) is established. The RPMP evaluates the resources, and the local government's land development practices. After this evaluation is complete, the RPMP committee makes recommendations to the local governments on how their land development practices could be improved to ensure an orderly and well-planned growth that would protect the critical resources. The local governments, counties and cities, are now in the process of making these land development modifications, based on the RPMP recommendations. If these modification are not made to the RPMP Committee's approval, these areas of local government that are not in conformance could be designated as ACSC or the entire area may be designated an ACSC by the Legislature. Under the ACSC designation, the local governments are required

to notify DCA of any application for a development permit. The entire land development process will require the state's oversight until that local government modifies its land development practices to conform to the ACSC requirements.

3. Department of Natural Resources. The aquatic preserve management program is associated with several other Department of Natural Resource (DNR) programs in the Tampa Bay area.

DNR's Marine Research Laboratory in St. Petersburg, under the Division of Marine Resources, has several programs and projects within this area which will benefit the aquatic preserve program. The Marine Lab is presently involved in numerous studies on fishery habitat losses in the Tampa Bay area. The Resource Protection Area mapping, which will be used in the management of the aquatic preserves, was created as a product of that fishery habitat loss study. The data from this project, when it is completed, will be incorporated into this management plan. The Marine Lab staff are also involved in manatee protection programs and the lab is the headquarters of the State Manatee Coordinator. Field personnel will become familiar with these studies and programs, and will consult the Marine Lab for their data needs whenever possible.

The Division of Marine Resources also handles the permitting for the collection of certain marine species and use of certain chemicals. The field and central office staff will become familiar with this permitting process and request notification of these permits within the aquatic preserve.

The Marine Patrol, under DNR's Division of Law Enforcement, also operates in Tampa Bay. The field personnel will become familiar with their programs and operation, and will call on the Marine Patrol for law enforcement support as required.

The Division of State Lands within the DNR is charged with overseeing uses, sales, or transfers of state-owned lands. The aquatic preserve staff will interact with State Lands in all transactions concerning submerged lands within the aquatic preserve. These would include potential acquisition of privately titled submerged lands or contiguous uplands important to the integrity of the preserve.

The Division of Resource Management, through the Bureau of Geology and Aquatic Plant Research and Development, is responsible for various programs potentially affecting the aquatic preserve. Staff will establish communication links with this Division to ensure that adequate consideration is given to potential impacts upon the preserve that may result from the conduct of their various programs.

The Division of Recreation and Parks, in addition to the work related to aquatic preserves by BLARM and the Florida Park Service, is also involved in the management of State Park Service, is also involved in the management of State Parks and Recreation Areas nearby. The aquatic preserve will work closely with these programs as they relate to aquatic preserve management objectives.

4. Marine Fisheries Commission (MFC).

The MFC was established as a rulemaking authority pursuant to Section 370.027. F.S. The seven members are appointed by the Governor and are delegated full rulemaking authority over marine life (subject to approval by the Governor and Cabinet), with the exception of endangered species. This authority covers the following areas: a) gear specifications, b) prohibited gear, c) bag limits, d) size limits, e) species that may not be sold, f) protected species, g) closed areas, h) quality control codes i) season, and j) special considerations related to eggbearing females and oyster and clam relaying. Field personnel and central office staff will become familiar with and enforce the rules of the MFC.

The MFC is also instructed to make annual recommendations to the Governor and Cabinet regarding marine fisheries research priorities. The field and central office staff will use these recommendations to direct research the aquatic preserve.

5. Florida Game and Fresh Water Fish Commission (GFWFC). The GFWFC's Environmental Services office in Vero Beach sends biologists into the preserve to review projects which may have potential impacts on local fish and wildlife habitat as necessary. The central office will use the GFWFC's assistance in their review process, when possible, and in developing fish and wildlife management for the aquatic preserve.

The GFWFC is also the state coordinator of the Endangered Species in Florida.

The field personnel and central office staff will work with GFWFC personnel in developing program needs in this area.

6. Department of Transportation (DOT). The DOT has an office in Tampa and the field personnel and the central office will work with the resident engineer on anticipated projects having possible impacts on the aquatic preserve. The field personnel and administrative staff will review any major highway or bridge projects that may be proposed in the future.

7. Department of State. The Division of Archives, Historical Resources (DHR) in the Department of State will have a close working relationship with the field personnel and central office staff in the protection of archaeological and historical sites. The field personnel will be directed by DHR, through the central office, in any activities or management policy needs for these sites.

8. Health and Rehabilitative Services (HRS). Both the central office staff and field personnel will establish communication and coordination linkages with HRS and their locally conducted programs of septic tank regulation and mosquito control. Although mosquito control serves a useful public function, the effects of pesticides (adulticides and larvacides) in the waters of the preserve are a primary concern. Additionally, the central office staff will become involved in future meetings and management programs developed by the Governor's Working Group on mosquito control. Subsequent policy recommendations coming out of this group will be evaluated for applicability to the ongoing aquatic preserve management program.

C. REGIONAL

The regional level of the management implementation network as it applies to the Cockroach Bay Aquatic Preserve will include the Southwest Florida Water Management District, the Tampa Bay Regional Planning Council and the Tampa Port Authority. These organizations have broader activities than the local government, but are on a smaller scale than the state level.

1. Southwest Florida Water Management District (SWFWMD). SWFWMD includes Hillsborough, Manatee, Pinellas and 13 other counties. The water management district administers permitting programs for the local consumable use of water, storm water discharges, and dredge and fill type activities. This includes the withdrawal and use of water from rivers, streams, and wells. The types of water uses they permit in the preserve area include irrigation and public water supply. Field personnel will become familiar with the review and permitting procedures as they apply to water supply in this area. The water management district is also involved in various studies on water supply and management, and other related research that may be of use to aquatic preserve management.

2. Tampa Bay Regional Planning Council (TBRPC). The TBRPC serves as a regional planning body for the local governments of Hillsborough, Pinellas, Manatee, and Pasco Counties, while the Hillsborough County City County Planning Commission serves Hillsborough County. The Agency on Bay Management acts as an advisory board for the TBRPC. Among their duties, the TBRPC and HCCCPC:

a. aid local governments with planning expertise;

b. are the regional representatives for the Development of Regional impact (DRI) review process;

c. serve as regional clearinghouses for state and federal projects and programs; and

d. convey information from the local governments to the state and federal levels.

Field personnel will become familiar with the various projects, programs, and data sources that the TBRPC, ABM, and HCCCPC, have within their administration that may affect or prove useful to the aquatic preserve program.

The DRI review of projects which affect the aquatic preserves will be reviewed by the central office staff, with the field personnel's field review, when necessary. DRI's for large marinas, large subdivisions on the uplands above the preserve, and commercial or industrial developments will require a field review by the field personnel as to their effect on the aquatic preserve.

D. LOCAL GOVERNMENTS AND SPECIAL DISTRICTS.

This section will address the relationship of the aquatic preserve management program to the various local government agencies, special districts and their programs. The Cockroach Bay Aquatic Preserve is entirely contained within Hillsborough County and does not have any incorporated cities adjacent to it. The various special districts (drainage, inlet and mosquito control) and their relationship to aquatic preserve management, are also presented.

Field personnel will be the local liaison for the aquatic preserve to these local government entities to assist them in modifying their policies and practices to conform to the objectives of the aquatic preserve's management plan, and to exchange information and expertise for mutual benefits.

1. Relationship to local management plans. The local governments are required by the Local Government Comprehensive Planning Act of 1975 (LGCPA), (Section 163.3161, F.S.) to have a comprehensive management plan with elements relating to the different governmental function (i.e. housing, physical facilities, conservation, land use, and coastal zone protection). These plans, in effect, are long-range plans for the orderly and balanced development of the city or county. The comprehensive plans guide local zoning policies and practices toward a future as set out in the plan. No development is permitted that does not conform to the local government's comprehensive plan.

The aim of the aquatic preserve, with respect to these local government comprehensive plans, is to have their plans be consistent with the aquatic preserve management plans. Field personnel will become familiar with the above plans and how they support or are in conflict with the objective of the aquatic preserve management. Field personnel will assist local planning officials in having their plans meet these objectives. The field personnel It is hoped that local governments will join in the spirit of aquatic preserve management and be willing to work for these changes.

2. Relation to local development codes. The local zoning and development codes (e.g., building codes) provide the major local regulation that defines what an owner can do on a particular parcel of property. The zoning prescribes the allowable uses and the intensity of those uses. Certain uses along an aquatic preserve can potentially have a profound effect on the preserve.

This section will operate in conjunction with the preceding section on local management plans. The field personnel will become familiar with the local zoning, development codes and their potential effects on the nearby aquatic preserve. Field personnel will assist local planning and zoning officials in identifying areas where changes in zoning would better conform to the objectives of the aquatic preserve management. Field personnel might also offer to assist local planning and zoning officials in the review of proposed subdivisions upland of the preserve.

3. Suggested policies and practices in support of Aquatic Preserve Management. This section will address any other policy or practice not covered in the two preceding sections. These policies and practices might include local government mangrove ordinances; recreation problems where a park is in or near an aquatic preserve, or any other problems as they might relate to local governments. The field personnel will offer assistance or information to local officials or will coordinate with other agencies to help solve these problems as they occur. Field personnel will also comment, through the central office, on any local practice that is identified as endangering the well-being of the aquatic preserve.

4. Special Districts (Drainage, Inlet and Mosquito Control. The special districts are taxing authorities established to correct drainage and mosquito control problems. This is one drainage district that directly affects the preserve. Hillsborough County has only one mosquito control district.

This district may not have its own official comprehensive management plan, but it does have a management policy and program statement that is similar to such a plan. Field personnel will become familiar with these policies and the activities of this district and will monitor its effect on the aquatic preserve. For example, field personnel might recommend identifying areas that should not receive mosquito spraying or other alternative management because of the remoteness to inhabited areas and possible, but unnecessary damage to the resources of the aquatic preserve; or drainage districts might be asked not to use certain types of herbicides or to use them only at certain times of the year.

E. OTHER ORGANIZATIONS

This section will apply to the numerous organizations that have an interest in the aquatic preserve but are non-governmental agencies. This will include, but not be limited to, the environmental interest groups (i.e., Audubon Society, Sierra Club and Native Plant Society), the scientific organizations, the fishing and sports interest groups (i.e., Florida League or Anglers, Organized Fishermen of Florida), the universities that may have research activities in the preserve (i.e., University of South Florida, University of Tampa, University of Florida, Hillsborough Community College) and any other interest groups or individuals. The relationship of these organizations to

aquatic preserve management might include the coordination of activities, such as scientific research, environmental education, management of rookeries or other natural areas, or numerous other possible activities. A worthwhile aquatic preserve management process will depend on the continued support and help of these interest groups in the preserve. Field personnel will be active in communicating the aquatic preserve management process and activities to the various groups and consulting with them for their help in their areas of expertise.

Preface

(Chapters VII -IX)

Authorized Activities and Uses of Aquatic Preserves

The following chapters provide a description of public, private and commercial activities/uses that are allowable pursuant to statutory direction and all other applicable authorities in aquatic preserves. These activities/uses are subject to the approval of the Board (Governor and Cabinet) or their designee. Approval of these activities/uses is normally predicated upon a demonstration that the proposed activity/use is environmentally sound and/or is, in the opinion of the Board, necessary in conjunction with an overriding public need.

In all cases, approved activities/uses that adversely impact the resources of an aquatic preserve shall only be approved when accompanied by adequate compensation measures that contribute to an overall net public benefit.

Mitigation measurers, other than those associated directly with programs for habitat reestablishment or rehabilitation, are viewed by the Board as inadequate attempts to compensate for alteration of essentially natural ecological conditions through the establishment of artificial resource systems. Therefore, mitigatior will only be encouraged in conjunction with on and off-site projects that are designed to reestablish natural habitat values and where the aquatic preserve will biologically and aesthetically benefit from the proposed restoration actions.

Chapter VII

Public Uses

This chapter addresses the public use of the preserve. The public in this case shall refer to the general public or those persons without riparian rights. The "Florida Aquatic Preserve Act of 1975" (Section 258.35, F.S) allows for the lawful and traditional public uses of the aquatic preserve, such as sport fishing, boating and swimming (as adapted from subsection 258.43(1), F.S.). These and other traditional uses that do not involve a commercial intent or the use of a riparian right to place a structure in the preserve, and do not degrade or otherwise destroy the preserve will be considered public uses. This section will be further divided into consumptive and non-consumptive uses as applicable to each resource.

A. Consumptive Uses

Consumptive uses involves the removal of resources from the preserve. These uses include fishing, hunting, shellfishing, and other related activities. They also include the unintentional removal of resources by propeller damage to seagrass beds and air boat damage to salt marshes. The management of these uses (see Chapter V. Resource Management, Section B: Onsite Management Objectives) will include the observation and monitoring of the effects of these uses on the resources. The field personnel will periodically assess the

impacts through the use of the Marine Research Laboratory's LANDSAT capabilities, aerial photography, boat surveys and current studies or data sources for identifying habitat losses or disturbances in the Cockroach Bay area. This management will also include the protection of the resources from unlawful or excessive practices of these uses. Field personnel will, for example, become familiar with and monitor the success of adopted by the Marine Fisheries Commission. These will include regulations on fishing gear, bag and size limits, closed areas, seasons, etc,

These consumptive uses will also be monitored for their effect on other resources (e.g. bird rookeries, marine grassbeds, live bottom communities, archaeological and historical sites). The field personnel will also be sensitive to additional enforcement needs (i.e., the need for added enforcement staff during nesting seasons).

B. Non-consumptive Uses

These uses are those which do not generally remove resources from the preserve. Examples of these include swimming, diving, boating, bird-watching, and other related activities. Although boating and diving are usually considered non-consumptive uses, they can become consumptive when boat operators carelessly place anchors in seagrass beds, navigate into waters that are too shallow for their boats, or divers remove components of a live bottom community. Also air boat traffic across sensitive salt marsh or other wetland communities will be considered a consumptive use (i.e. destruction of plants,. disturbance of rookeries). The management practices involved with these uses will be the same as those previously described under Section A., except that

these uses are not generally controlled by law. The guiding principle in these cases will be whether or not the activity causes a disruptions of the preserve's resources (e.g. destroys marine grassbeds or salt marshes, disturbs rookeries). Only in the event of these disruptions will the field personnel become involved. Some of these uses may possibly be involved in environmental educational programs (Chapter XI) .

Chapter VIII

PRIVATE NON-COMMERCIAL USES

This section will apply to those private, non-commercial uses which are derived from riparian land ownership. The management of the aquatic preserve recognizes the traditional riparian rights of the upland property owners. The right of ingress, egress, boating, swimming, fishing, and other incidental uses of sovereignty lands historically allowed for the placement of certain structures, such as docks, within the preserve. This right to make any preemptive use of sovereign lands is a qualified one and can only be exercised with the prior consent of the Board after a finding that such uses will not impair public uses or destroy or damage areas of environmental significance. The review of these will require the interaction of the Resource Protection Area mapping with administrative and possible field review and later monitoring by field personnel as projected by Chapter V., Section B.

Private non-commercial uses shall be designed to avoid critical Resource Protection Areas 1 and 2 and shall be designed to reduce the user's impact to the preserve in general. Individual applications for these private non-commercial uses shall be reviewed by the applicable Resource Protection Area Map and criteria. In addition, private dock proposals will be reviewed by the criteria described in Section 18-20.04(5),F.A.C.) of the revised General aquatic preserve rule:

1. no dock shall extend waterward of the mean or ordinary high water line more that 500 feet or 20 percent of the width of the waterbody at that particular location whichever is less;

2. certain docks may fall within areas of special or unique importance. These areas may be of significant biological, scientific, historic and/or aesthetic value and require special management considerations. Modifications may be more restrictive than the normally accepted criteria. Such modifications shall be determined on a case-by-case analysis, and may include, but shall not be limited to changes in location, configuration, length, width and height;

3. the number, lengths, drafts and types of vessels allowed to utilize the proposed facility may also be stipulated;

4. where local governments have more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail;

5. any main access dock shall be limited to a maximum width of four (4) feet;

6. the dock decking design and construction will insure maximum light penetration, with full consideration of safety and practicality;

7. the dock will extend out from the shoreline no further than to a maximum depth of minus four (- 4) feet (mean low water);

8. when the water depth is minus four (-4) feet (mean low water) at an existing bulkhead the maximum dock length from the bulkhead shall be 25 feet, subject to modifications accommodating shoreline vegetation overhang;

9. wave break devices, when necessary, shall be designed to allow for maximum water circulation and shall be built in such a manner as to be part of the dock structure.

10. terminal platform size shall be no more that 160 square feet; and

11. dredging to obtain navigable water depths in conjunction with private residential, single dock applications is strongly discouraged.

Bulkheads should be placed, when allowed, in such a way as to be the least destructive and disruptive to the vegetation and other resource factors in each area.

Dredging within the aquatic preserve shall be held to a minimum. Dredging proposals shall be reviewed according to the procedures in Chapter V depending on the proposed activities location within the RPA. Proposals within RPA 1 areas (Chapter V (C)) will be scrutinized to the maximum extent in order to find the best practical method of development and location if that use is deemed acceptable in that particular area of the preserve. The mitigation of

lost or disturbed resources shall be required and shall meet the above mentioned criteria. There shall be no dredging allowed in RPA 1 or 2 areas or in nearby areas if it will adversely impact these areas.

The location of proposed multiple docking facilities, such as condominium developments, shall be based on the marina siting criteria described in subsection 18-20.04(5) F.A.C. of the revised General Aquatic Preserve Rule.

1. no dock shall extend waterward of the mean or ordinary high water line more that 500 feet or 20 percent of the width of the waterbody at that particular location whichever is less;
2. certain docks may fall within areas of special or unique importance. These areas may be of significant biological, scientific, historic and/or aesthetic value and require special management considerations. Modifications may be more restrictive than the normally accepted criteria. Such modifications shall be determined on a case-by-case analysis, and may include, but shall not be limited to changes in location, configuration, length, width and height;
3. the number, lengths, drafts and types of vessels allowed to utilize the proposed facility may also be stipulated;
4. where local governments have more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail;
5. the area of sovereignty, submerged land preempted by the docking facility shall not exceed the square footage amounting to ten times the riparian waterfront footage of the affected waterbody of the applicant, or the square footage attendant to providing a single dock in accordance with the criteria for private residential single docks, whichever is greater. A conservation easement or other such use restriction acceptable to the Board must be placed on the riparian shoreline, used for the calculation of the 10:1 threshold, to conserve and protect shoreline resources and subordinate/waive any further riparian rights of ingress and egress for additional docking facilities;
6. docking facilities and access channels shall be prohibited to Resource Protection Area 1 or 2, except as allowed pursuant to Section 258.42(3)(e)1., Florida Statutes, while dredging in Resource Protection Area 3 shall be strongly discouraged;
7. docking facilities shall only be approved in locations having adequate existing water depths in the boat mooring, turning basin, access channels, and other such areas which will accommodate the proposed boat use in order to insure that a minimum of one foot clearance is provided between the deepest draft of a vessel and the bottom at mean low water;
8. main access docks and connecting or cross walks shall not exceed six (6) feet in width;
9. terminal platforms shall not exceed eight (8) feet in width;

10. finger piers shall not exceed three (3) feet in width, and 25 feet in length;

11. pilings may be utilized as required to provide adequate mooring capabilities; and

12. docking facilities shall only be located in or near areas with good circulation, flushing and adequate water depths;

13. docking facilities and access channels shall be prohibited in Resource Protection Area 1 or 2, except as allowed pursuant to Sections 258.42(3)(e)1., Florida Statutes; while dredging in Resource Protection Area 3 shall be strongly discouraged;

14. the docking facilities shall not be located in Resource Protection Area 1 or 2; however, main access docks may be allowed to pass through Resource Protection Area 1 or 2, that are located along the shoreline, to reach an acceptable Resource Protection Area 3, provided that such crossing will generate minimal environmental impact;

15. beginning July 1, 1986 new docking facilities may obtain a lease only where the local governments have an adopted marina plan and/or policies dealing with the siting of commercial/industrial and private, residential, multi-slip docking facilities in their local government comprehensive plan;

16. the siting of the docking facilities shall also take into account the access of the boat traffic to avoid marine grassbeds or other aquatic resources in the surrounding areas;

17. the siting of new facilities within the preserve shall be secondary to the expansions of existing facilities within the preserve when such expansion is consistent with the other standards;

18. the location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet-slip docking;

19. marina siting will be coordinated with local governments to insure consistency with all local plans and ordinances;

20. marinas shall not be sited within state designated manatee sanctuaries; and

21. in any areas with known manatee concentrations, manatee warning/notice and/or speed limit signs shall be erected at the marina and/or ingress and egress channels, according to Florida Marine Patrol specifications.

Authorization of such facilities will be conditioned upon receipt of documentation evidencing the subordination of the riparian rights of ingress and egress for the remainder of the applicant's shoreline for the life of the proposed docking facility. Boat ramps and travel lift platforms or other similar launching facilities, with associated temporary mooring facilities built with minimal damage to wetlands, will be encouraged over permanent wet storage facilities. Non-residential docking facilities (commercial) are addressed in Chapter IX.

The use of seaplanes within this preserve is seen as a non-traditional use. Applications for seaplane use within the preserve will be reviewed on a case by case basis. These uses will only be recommended where such use will not affect resource protection areas or natural values of the preserve, not effect endangered species habitat, can be utilized in a safe manner, and will not preempt traditional uses within the proposed use area.

Chapter IX

Commercial Uses

This section addresses the variety of traditional and non-traditional (i.e. new uses of this area) commercial uses which might occur within the aquatic preserve. Among the traditional uses in the Cockroach Bay area are utility crossings, marinas and yacht clubs, commercial fishing, shellfishing, and other types of boats for hire (e.g. sportfishing, diving). Nontraditional uses in this area include oil and gas transportation facilities, phosphate transportation, and other commercial uses.

A. Traditional commercial uses

1. Utilities crossings. There are at present time both aerial and underwater utility crossings in the aquatic preserve. Future proposals should be designed so that the preserve is crossed by the least destructive method in the least vulnerable areas according to the RPA maps. Increased or additional use of any existing utility crossings is preferable, if their condition at the time of the proposal is acceptable. The field personnel should eventually develop a utility crossing plan for all areas with anticipated utility crossing needs to allow for clear advanced planning, for placement of these crossing in areas that would cause the least disturbance to the environment. The utility crossing plans, when completed, will become a part of this

management plan. Crossings should be limited to open water areas where live bottom communities are not present, to minimize disturbance to marine grassbeds, mangroves or other critical habitat areas.

2. Commercial Fishing. The management of the aquatic preserve shall not include the direct management of commercial fishing activities. Field personnel will monitor these activities and assess their effects on the preserve only in conjunction with the Division of Marine Resources, the Florida Marine Patrol and the Marine Fisheries Commission, and as a cooperative effort with these agencies. The field personnel will also notify the requisite authority in the event of illegal activities (Chapter 370, F.S. or by special act). The field personnel, along with other agencies and division's programs and studies, will monitor fishing activities within the aquatic preserve. Monitoring will concentrate on boat access into certain areas, prevention of marine grassbed destruction and other needs of the aquatic preserve as they are associated with commercial fishing activities. After problems with commercial fishing activities are identified and documented, the finding will be presented to the Marine Fishing Commission. It is the authority of the Commission and the Florida Legislature to regulate commercial fishing within the preserve.

3. Marinas. The locating of marinas and their related uses will be a major concern of the Cockroach Bay Aquatic Preserve management. Marinas represent a use with many potential impacts on the preserve's resources. The siting policy of Section 18-20.04(5) F.A.C. of the revised General Aquatic Preserve Rule shall be used for siting marinas in the aquatic preserve.

1. no dock shall extend waterward of the mean or ordinary high water line more that 500 feet or 20 percent of the width of the waterbody at that particular location whichever is less;

2. certain docks may fall within areas of special or unique importance. These areas may be of significant biological, scientific, historic and/or aesthetic value and require special management considerations. Modifications may be more restrictive than the normally accepted criteria. Such modifications shall be determined on a case-by-case analysis, and may include, but shall not be limited to changes in location, configuration, length, width and height;

3. the number, lengths, drafts and types of vessels allowed to utilize the proposed facility may also be stipulated;

4. where local governments have more stringent standards and criteria for docking facilities, the more stringent standards for the protection and enhancement of the aquatic preserve shall prevail;

5. docking facilities shall only be located in or near areas with good circulation, flushing and adequate water depths;

6. docking facilities and access channels shall be prohibited in Resource Protection Area 1 or 2, except as allowed pursuant to Sections 258.42(3)(e)1., Florida Statutes; while dredging in Resource Protection Area 3 shall be strongly discouraged;

7. the docking facilities shall not be located in Resource Protection Area 1 or 2; however, main access docks may be allowed to pass through Resource Protection Area 1 or 2, that are located along the shoreline, to reach an acceptable Resource Protection Area 3, provided that such crossing will generate minimal environmental impact;

8. beginning July 1, 1986 new docking facilities may obtain a lease only where the local governments have an adopted marina plan and/or policies dealing with the siting of commercial/industrial and private, residential, multi-slip docking facilities in their local government comprehensive plan;

9 the siting of the docking facilities shall also take into account the access of the boat traffic to avoid marine grassbeds or other aquatic resources in the surrounding areas;

10. the siting of new facilities within the preserve shall be secondary to the expansions of existing facilities within the preserve when such expansion is consistent with the other standards;

11. the location of new facilities and expansion of existing facilities shall consider the use of upland dry storage as an alternative to multiple wet-slip docking;

12. marina siting will be coordinated with local governments to insure consistency with all local plans and ordinances;

13. marinas shall not be sited within state designated manatee sanctuaries; and

14. in any areas with known manatee concentrations, manatee warning/notice and/or speed limit signs shall be erected at the marina and/or ingress and egress channels, according to Florida Marine Patrol specifications.

4. Deep Water Port Facilities. There are no major deep water port facilities within the boundaries of the preserve but Port of Manatee is located

immediately south of the preserve. Therefore maintenance dredging and potential pollution from accidental cargo leakage would adversely affect the preserve. New activities and maintenance work will be reviewed as to their affect on the preserve. New port facilities within the preserve shall be prohibited.

5. Other Docking. Any other type of commercial docking, not mentioned in the preceding sections, will follow the marina siting policy as stated in Section 18-20.04(5), F.A.C. of the revised General Aquatic Preserve Rule.

B. Non-traditional Commercial Uses

1. Power Plants. Power plants have the potential for causing major changes in the air quality, water quality, and plant and animal life of the aquatic preserve. For these reasons, power plants are incompatible with the purposes of this aquatic preserve. The location of proposed power plants should be evaluated as to the effects on the preserve.

2. Aquaculture. The Cockroach Bay area could potentially have proposals for aquacultural development in the future. These may include floating structures or other new techniques now being used in aquaculture. The location and type of impacts to the resources will require careful examination. If there is not sufficient data available for a valid evaluation, a small scale test of the use might be possible in a selected area.

3. Other Uses. Any other use that qualifies as a commercial use of submerged lands not mentioned above will require a review for its anticipated impact on the aquatic preserve and the best location for the activity compatible to the resource protection areas within the preserve.

Chapter X

Scientific Research

The field personnel attached to the Cockroach Bay Aquatic Preserve should serve as the area coordinators of the scientific research in the preserve. Scientific research, and any other type of research or testing within the aquatic preserve, should require the clearance of both the field personnel and the central office staff before these activities can proceed. Certain activities could be detrimental to the resources of the preserve and should be carefully reviewed before allowing them to occur. Factors including location, species selection, time of year, and life history, should be carefully reviewed for the possible disturbance or effect of the research on the other resources of the aquatic preserve. The field personnel will be aware of the possibility of working with other government agencies, colleges, universities, research foundations and government programs to fill the data needs of the aquatic preserve (see Chapter V and XII). The field personnel will assist in the selection of possible tests sites and other research needs within the preserve.

Chapter XI

Environmental Education

The aquatic preserve should be used to enhance environmental education programs at every opportunity. The goal of maintaining the aquatic preserve for the benefit of future generations can begin to be realized through the use of aquatic preserves for environmental education. Through education, the people of Hillsborough County can acquire a knowledge of the natural systems and an appreciation for the aquatic preserve program. Such appreciation helps to ensure the future protection and support of the aquatic preserve.

The field personnel will, through their normal activities in the aquatic preserve, select good examples of habitats and resources within these aquatic environments for use during educational group tours. This might include the development of environmental educational boat or canoe tours through the preserve. Other educational activities might also include prepared presentations for specific interest or user groups such as sport (boating, diving, fishing, etc.), civic and conservational groups and the development of a brochure outlining the major points of management within the preserve. These brochures could then be circulated to the various user groups.

The field personnel would also prepare slide programs on the value of

management activities of the aquatic preserve for presentation to interested groups of all ages. Educating the public about aquatic preserve management is the key to the success and future of the preserve.

Chapter XII

Identified Program Needs

This chapter of the management plan will address the various program needs that are expected to be identified during management activities. Meeting these needs will correct or generally relieve some stress on the preserve or the personnel involved in the management of the preserve. These needs may, in some cases, require legislative or administrative rule changes or acquisition of critical areas by the state. The need to identify problem areas and adjust the management plan in a manner that will positively address these problems and management needs is an essential element of any effective management program. Both field personnel and central office staff will continually monitor the management plan implementation process and specifically identify observed program needs and problems. The areas to be included are but will not be limited to:

A. acquisition of additional property,

B. boundary problems,

C. legislative needs,

D. administrative rule changes,

E. data needs,

F. resource protection capabilities, and

G. funding and staffing needs.

Staff will annually develop an implementation status report that will contain a summary of identified management needs and suggested measures to be taken in meeting these needs.

A. Acquisition of Additional Property

There are areas both within and upland of the aquatic preserve that are in public ownership under the jurisdiction of various local, state and federal agencies. Many of these lands contain important resources, such as bird rookeries, archaeological or historical sites, endangered species habitat, and freshwater source wetlands. Formal management agreements, memoranda of understanding etc., that will ensure the compatible management of these areas will be developed. Other areas within or adjacent to the preserve that are within private ownership should be closely examined to determine the advisability of bringing them into public ownership. The acquisition of these lands might act as a buffer to critical resources, prevent development of sensitive areas, allow restoration of areas adversely affected by previous development of sensitive areas, allow restoration of areas adversely affected by previous development or allow removal of disrupting uses within the preserve. The field personnel, during normal management activities, should be aware of significant upland areas and submerged land areas which, if developed, would compromise the integrity of the aquatic preserve. The field personnel will keep a running record of these areas and will prioritize these areas for possible public acquisition.

B. Boundary Problems and Systems Insufficiencies

The boundaries of the aquatic preserve are often artificial delineations of the natural systems within and surrounding the preserve. The field personnel, in their normal management activities, will be sensitive to the possible need for boundary modifications. Potential boundary changes and acquisition projects might include areas upstream of the present boundary of the streams flowing into the preserve, previously conveyed sovereign lands, or other areas not presently within the preserve. Boundary change requires Legislative approval. An additional boundary consideration would be to include all of the Outstanding Florida Water designated area of the Little Manatee River. The eastern boundary could include all waters and mangrove islands within this Outstanding Florida Water classification from the SR 674 to Cockroach Bay. Some of these islands have been recommended by the Florida Natural Areas Inventory for inclusion in the Conservation and Recreational Land (CARL) acquisition list. The northern boundary could be extended to the southern edge of Apollo Beach; this annexed area would include Wolf Creek, Hillsborough County's Simmons Park and Bahia Beach.

C. Legislative Needs

Management needs could conceivably involve changes in the legislature pertaining to the aquatic preserve or changes in the other statutes upon which the aquatic preserve is based. These changes may include boundary realignments or the strengthening of certain management authorities.

D. Administrative Rule Changes

Administrative rules are statements addressing the organization, procedures

and practices used in the implementation of aquatic preserve management plans and policies. This process includes identifying problems within the managing agency as well as other agencies, that will affect the management of the preserve.

E. Data (Information) Needs

The field personnel and central office staff will note data needs and promote research or other means to obtain them. Data needs in the near future could possibly be supplied by such ongoing projects as the U.S. Geological Survey's and the Southwest Water Management District's studies, Department of Environmental Regulation water quality monitoring or by the research of other agencies. The field personnel will be aware of the data needs as they interact with the various levels of government and with other entities. These data needs might include additional mapping, ownership information, water quality data or any other data. The major suppliers of data will probably be other public agencies that are conducting programs in and around the preserve. Other potential sources of data are the colleges and universities that have in the past, conducted or are currently conducting, research projects in the area.

F. Resource Protection and Enforcement Capabilities

The protection of the preserve's resources depends on the Florida Marine Patrol in addition to field personnel. These protection needs might also include additional enforcement support from local government or state agencies. The need for additional manpower, authority, equipment or vehicles for this task will be identified.

Since many of the inlets of this preserve are extremely shallow, bottom damage due to boat groundings or propeller damage are common. To eliminate this problem boat markers should be placed in the channels of these inlets.

The field personnel will become familiar with the staff capabilities of both the Department of Natural Resources and other agencies with enforcement responsibilities in the preserve. Annually, staff should fully assess the effectiveness of the protection and enforcement capabilities of these combined agencies.

G. Funding and Staffing Needs

The present aquatic preserve management program has been minimally implemented with funds from a variety of sources and programs. The writing of this management plan was funded through a grant from the U.S. Office of Coastal Zone Management, National Oceanic and Atmospheric Administration, and through the "Coastal Zone Management Act of 1972", as amended.

In order for the management program proposed in this plan to function and succeed, the program must have its own funding and staffing. The workload required by this program is too much for an interim staff from other programs to handle in addition to their own obligations. Funding and staffing needs are critically important to the success of the aquatic preserve program. The outline below represents a proposed budget for the onsite staffing of the preserve, as well as for the identification of the equipment and expenses for the first year of operation.

Proposed First Year Budget (Fiscal Year 1987-88) for the Cockroach Bay Aquatic Preserve Management

Salary (Environmental Specialist II) and Associated Overhead			= 30,000
OPS			= 10,000
Operating Capital Outlay (TOTAL)			= 30,000
	Utility Vehicle	= 15,000	
	Boat/Motor/Trailer	= 5,000	
	Misscellaneous	= 3,000	
Operation Expenses			= 10,000
TOTAL			$80,000

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CONTENTS OF APPENDICES

A. Florida Aquatic Preserve Act of 1975 (§ 258.35-358.46, F.S.)

B. Administrative Rules for Florida's Aquatic Preserve (§ 18-20, F.A.C.)

C. Administrative Rules for Florida Sovereignty Submerged Lands Management (§ 18-21. F.A.C.)

D. Legal Description and Lease Agreement

E. Existing Authorities Matrix

* Copies of the above appendices may be obtained from:

Bureau of Land and Aquatic Resource Management
Department of Natural Resources
Cedars Executive Center, Suite 231-B
Mailbox 21, 2639 North Monroe Street
Tallahassee Florida 32303