

BIG LAGOON STATE PARK

UNIT MANAGEMENT PLAN

APPROVED

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Division of Recreation and Parks
OCTOBER 13, 2006



Department of Environmental Protection

Jeb Bush
Governor

Marjorie Stoneman Douglas Building
3900 Commonwealth Boulevard, MS 140
Tallahassee, Florida 32399-3000

Colleen M. Castille
Secretary

October 17, 2006

Ms. BryAnne White
Office of Park Planning
Division of Recreation and Parks
3900 Commonwealth Blvd.; M.S. 525
Tallahassee, Florida 32399

Re: Big Lagoon State Park

Lease # 2977

Dear Ms. White:

On October 13, 2006, the Acquisition and Restoration Council recommended approval of the Big Lagoon State Park management plan. Therefore, the Office of Environmental Services, acting as agent for the Board of Trustees of the Internal Improvement Trust Fund, approved the management plan for the Big Lagoon State Park. Pursuant to Sections 253.034 and 259.032, Florida Statutes, and Chapter 18-2, Florida Administrative Code this plan's ten-year update will be due on October 13, 2016.

Approval of this land management plan does not waive the authority or jurisdiction of any governmental entity that may have an interest in this project. Implementation of any upland activities proposed by this management plan may require a permit or other authorization from federal and state agencies having regulatory jurisdiction over those particular activities. Pursuant to the conditions of your lease, please forward copies of all permits to this office upon issuance.

Sincerely,

Paula L. Allen
Office of Environmental Services
Division of State Lands
Department of Environmental Protection

"More Protection, Less Process"

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INTRODUCTION

Big Lagoon State Park is located in the southwestern corner of Escambia County (see Vicinity Map) about 10 miles west of Pensacola. Access to the park is from Gulf Beach Highway, State Road 297 (see Reference Map). The vicinity map also reflects significant land and water resources existing near the park. The park consists of 732.40 acres. Acquisition began in 1977, under the Land and Water Conservation Fund.

The scrub ridges, green wetlands, marshes and estuarine backwaters that characterize the park endure in contrast to surrounding urban developments. The park preserves a significant natural area along the north shoreline of Big Lagoon and the Intracoastal Waterway in the far southwestern portion of Escambia County. The park provides habitats for wildlife and a variety of plant communities, including rare species. The park preserves large wetland expanses in a rapidly developing, low-lying area of the county. Additionally, recreational opportunities for visitors abound. The park is ideal for swimming, fishing, canoeing, hiking, camping, boating, windsurfing, picnicking, wildlife viewing, nature appreciation or seeking refuge in a tranquil place.

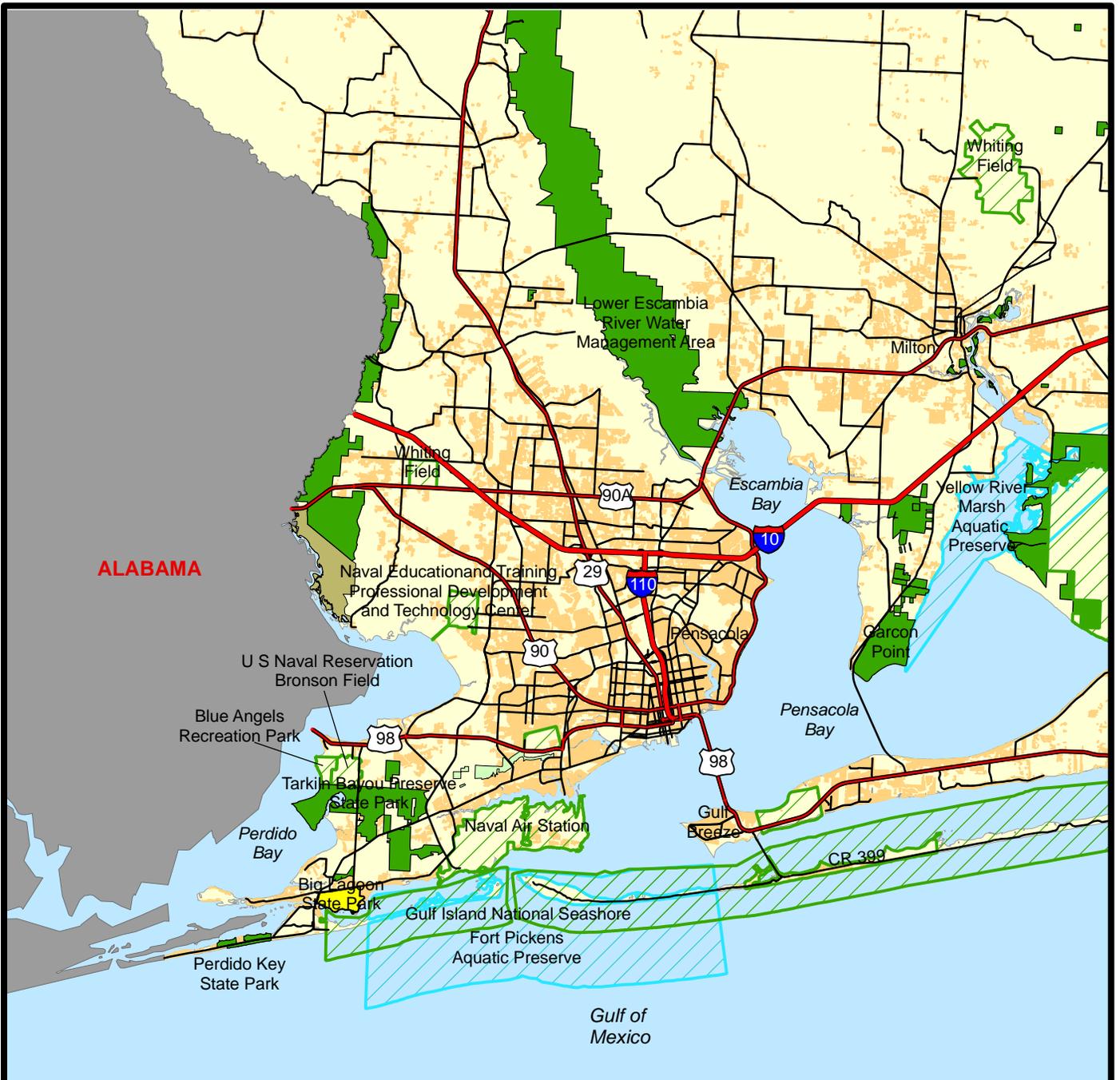
At Big Lagoon State Park, public outdoor recreation is the designated single use of the property (see Addendum 1). There are no legislative or executive directives that constrain the use of this property.

PURPOSE AND SCOPE OF THE PLAN

This plan serves as the basic statement of policy and direction for the management of Big Lagoon State Park as a unit of Florida's state park system. It identifies the objectives, criteria and standards that guide each aspect of park administration, and sets forth the specific measures that will be implemented to meet management objectives. The plan is intended to meet the requirements of Sections 253.034 and 259.032, Florida Statutes, Chapter 18-2, Florida Administrative Code, and intended to be consistent with the State Lands Management Plan. With approval, this management plan will replace the current approved plan of February 3, 2000. All development and resource alteration encompassed in this plan is subject to the granting of appropriate permits, easements, licenses, and other required legal instruments. Approval of the management plan does not constitute an exemption from complying with the appropriate local, state or federal agencies. This plan is also intended to meet the requirements for beach and shore preservation, as defined in Chapter 161, Florida Statutes and Chapters 62B-33, 62B-36 and 62R-49, Florida Administrative Code.

The plan consists of two interrelated components. Each component corresponds to a particular aspect of the administration of the park. The resource management component provides a detailed inventory and assessment of the natural and cultural resources of the park. Resource management problems and needs are identified, and specific management objectives are established for each resource type. This component provides guidance on the application of such measures as prescribed burning, exotic species removal, and restoration of natural conditions.

The land use component is the recreational resource allocation plan for the unit. Based on considerations such as access, population and adjacent land uses, an optimum allocation of the physical space of the park is made, locating use areas and proposing types of facilities and volume of use to be provided.



Legend

- Interstates
- FDOT US Routes
- FDOT State Roads
- FDOT Local Roads
- Park Boundary

Public Lands

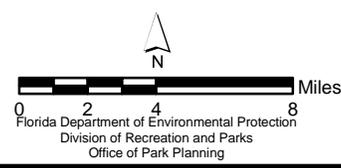
- Federal Managed Areas
- State Managed Areas
- Local Managed Areas
- Private Managed Areas
- Aquatic Preserves

Private Lands

- Developed
- Undeveloped

Sources: Florida Natural Areas Inventory, 2004
Florida Land Use, Cover and Forms Classification System, 2001

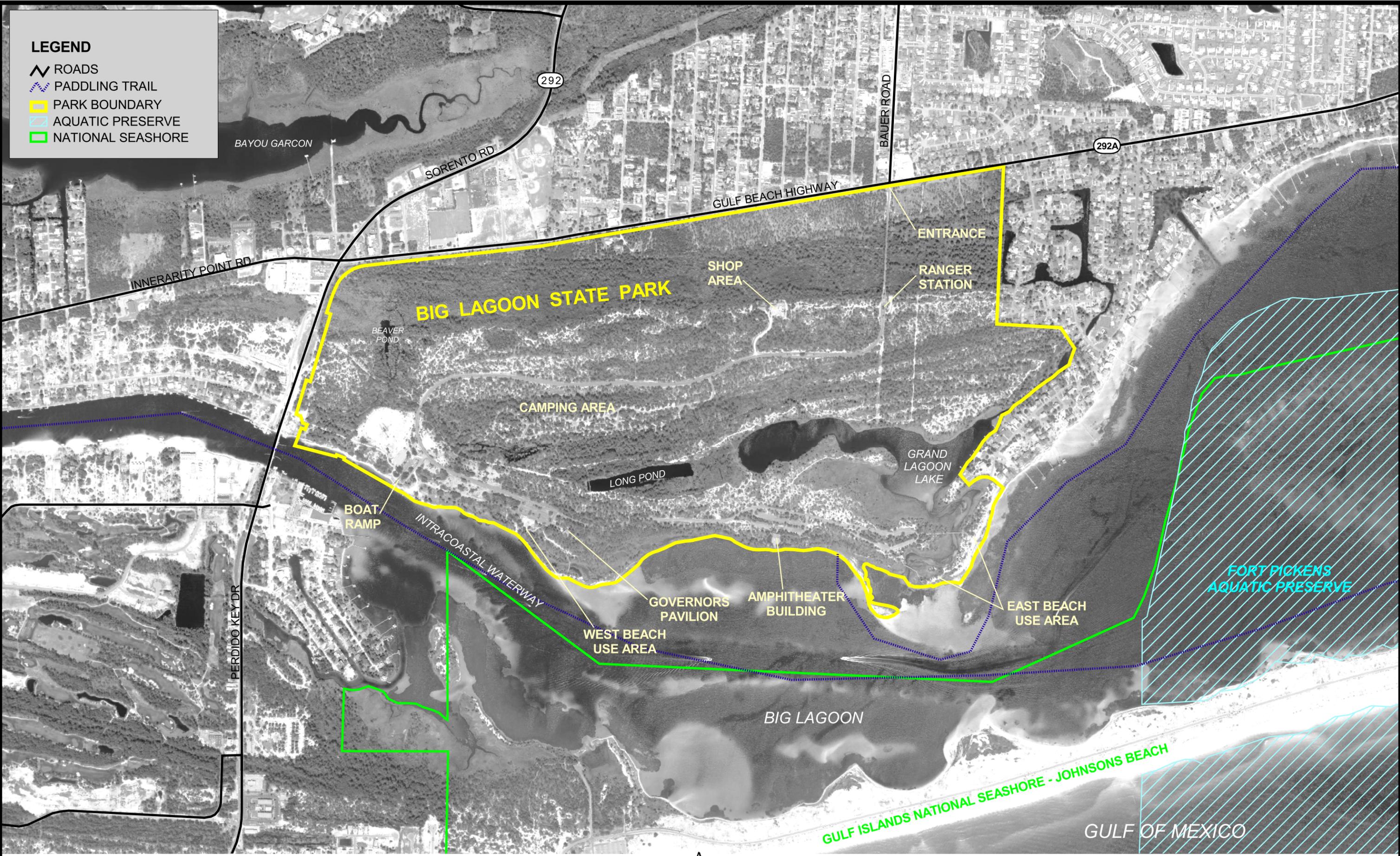
**BIG LAGOON
STATE PARK**



**VICINITY
MAP**

LEGEND

- ROADS
- PADDLING TRAIL
- PARK BOUNDARY
- AQUATIC PRESERVE
- NATIONAL SEASHORE



BIG LAGOON STATE PARK



REFERENCE MAP

In the development of this plan, the potential of the park to accommodate secondary management purposes (“multiple uses”) was analyzed. These secondary purposes were considered within the context of the Division’s statutory responsibilities and an analysis of the resource needs and values of the park. This analysis considered the park natural and cultural resources, management needs, aesthetic values, visitation and visitor experiences. For this park, it was determined that no secondary purposes could be accommodated in a manner that would not interfere with the primary purpose of resource-based outdoor recreation and conservation. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park.

The potential for generating revenue to enhance management was also analyzed. Visitor fees and charges are the principal source of revenue generated by the park. It was determined that multiple-use management activities would not be appropriate as a means of generating revenues for land management. Instead, techniques such as entrance fees, concessions and similar measures will be employed on a case-by-case basis as a means of supplementing park management funding.

The use of private land managers to facilitate restoration and management of this unit was also analyzed. Decisions regarding this type of management (such as outsourcing, contracting with the private sector, use of volunteers, etc.) will be made on a case-by-case basis as necessity dictates.

MANAGEMENT PROGRAM OVERVIEW

Management Authority and Responsibility

In accordance with Chapter 258, Florida Statutes, and Chapter 62D-2, Florida Administrative Code, the Division of Recreation and Parks (Division) is charged with the responsibility of developing and operating Florida's recreation and parks system. These are administered in accordance with the following policy:

It shall be the policy of the Division of Recreation and Parks to promote the state park system for the use, enjoyment, and benefit of the people of Florida and visitors; to acquire typical portions of the original domain of the state which will be accessible to all of the people, and of such character as to emblemize the state's natural values; conserve these natural values for all time; administer the development, use and maintenance of these lands and render such public service in so doing, in such a manner as to enable the people of Florida and visitors to enjoy these values without depleting them; to contribute materially to the development of a strong mental, moral, and physical fiber in the people; to provide for perpetual preservation of historic sites and memorials of statewide significance and interpretation of their history to the people; to contribute to the tourist appeal of Florida.

The Trustees have also granted management authority of certain sovereign submerged lands to the Division under Management Agreement MA 68-086 (as amended January 19, 1988). The management area includes a 400-foot zone from the edge of mean high water where a park boundary borders sovereign submerged lands fronting beaches, bays, estuarine areas, rivers or streams. Where emergent wetland vegetation exists, the zone extends waterward 400 feet beyond

the vegetation. The agreement is intended to provide additional protection to resources of the park and nearshore areas and to provide authority to manage activities that could adversely impact public recreational uses.

Many operating procedures are standard system wide and are set by policy. These procedures are outlined in the Division Operations Manual (OM) and cover such areas as personnel management, uniforms and personal appearance, training, signs, communications, fiscal procedures, interpretation, concessions, camping regulations, resource management, law enforcement, protection, safety and maintenance.

In the management of Big Lagoon State Park, major emphasis is placed on maximizing the recreational potential of the recreation area; however, preservation of resources remains important. Depletion of a resource by any recreational activity is not permitted. In order to realize the unit's recreational potential, development in the park is aimed at providing facilities that are accessible, convenient and safe, as needed to support recreational use or the unit's natural, aesthetic and educational attributes.

Park Goals and Objectives

The following park goals and objectives express the Division long-term intent in managing the state park. At the beginning of the process to update this management plan, the Division reviewed the goals and objectives of the previous plan to determine if they remain meaningful and practical and should be included in the updated plan. This process ensures that the goals and objectives for the park remain relevant over time.

Estimates are developed for the funding and staff resources needed to implement the management plan based on these goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers and partnerships with agencies, local governments and the private sector, for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

Natural and Cultural Resources

1. Establish and maintain prescribed fire program.
 - A. Develop a detailed prescribed fire plan addressing elements delineated in the management measures section of this plan.
 - B. Prioritize and implement prescribed fire objectives according to recommendations of the prescribed fire plan.
2. Design and implement restoration of highly altered communities or areas.
 - A. Implement recommendations for pitcher plant habitat restoration as outlined in the 2001 Statewide Pitcherplant resource management evaluation (RME).
 - B. Map all drainage ditches occurring in the park, in order to determine current hydrological regimes, and the park's role in the management of local stormwater. This information will help determine the extent of hydrological restoration necessary for pitcher plant habitat restoration.

- C. Continue to pursue funding or opportunities to remove remaining hurricane-generated debris from natural communities. Evaluate need to revegetate in areas impacted.
 - D. Pursue access to eastern park boundary between drainage ditches through mitigation or other funding methodologies for community restoration.
3. Protect, restore and maintain native plant diversity, and natural relative abundance.
 - A. Coordinate with the Office of Park Planning to designate wetlands and areas of rare plant concentrations as protected areas.
 - B. Contact the appropriate departments of the various state universities in Florida to request a comprehensive plant inventory of the park.
 - C. Conduct a mapping survey of rare plants known to occur on the park.
 - D. Monitor rare plant populations using both photo points and GPS.
 - E. Conduct a mapping survey of prop scars in the waters of Big Lagoon within 400 feet of the shoreline. Request plantings or control measures as conditions warrant.
 - F. Stabilize shoreline west of boat ramp with plantings seaward of pavilion.
 4. Protect, restore, and maintain native animal diversity, and natural relative abundance
 - A. Map all gopher tortoise burrows using GPS/GIS technology. Coordinate surveys with prescribed burning if applicable.
 - B. Coordinate with the FWC to identify shorebird-monitoring needs.
 - C. Remove feral cats from park property.
 - D. Remove other non-indigenous predators that threaten rare/endangered native species in coordination with USDA partnership.
 - E. Re-establish eastern property boundary fence line damaged by hurricanes and falling trees.
 5. Investigate and protect cultural resources
 - A. Coordinate with the BNCR to request funding for a phase 1 archaeological survey of the park.
 - B. Follow DHR and Division guidelines for all ground-disturbing activities on park lands.
 - C. Encourage local research projects that investigate the historical land uses associated with the park.
 6. Establish and maintain invasive exotic plant species removal program
 - A. Conduct yearly surveys to locate and GPS map invasive exotic plants.
 - B. Implement exotic plant control measures according to procedures in the District 1 Exotics Continuity Folder.
 - C. Track exotic removal efforts via GIS, at the park.

Recreational Goals

1. Continue to provide quality resource based outdoor recreational and interpretive programs and facilities at the state park.
 - A. Design park facilities to facilitate and appropriately manage visitor use of the park.
 - B. Maintain opportunities for picnicking, swimming, boating, hiking, fishing, kayaking, and camping.
2. Seek funding to expand recreational and interpretive opportunities through the improvement of programs and the development of new use areas and facilities, as outlined in this management plan.
 - A. Expand boat ramp facility.
 - B. Improve overnight accommodations.
 - C. Enhance interpretive function of park with a new amphitheater and nature center.

- D. Provide canoe and kayak access.

Park Administration/Operations

- 1. Continue to provide quality administrative and operational services.
 - A. Provide administrative support in order to ensure a high quality visitor experience.
 - B. Continue to ensure that essential maintenance measures are implemented in order to provide attractive, clean and serviceable facilities for park visitors.
 - C. Provide staff with appropriate training opportunities in visitor services, resource management, park operations, general maintenance and interpretation.
 - D. Maintain park signage and support facilities in good condition.

Management Coordination

The park is managed in accordance with all applicable Florida Statutes and administrative rules. Agencies having a major or direct role in the management of the park are discussed in this plan.

The Department of Agriculture and Consumer Services, Division of Forestry (DOF), assists Division staff in the development of wildfire emergency plans and provides the authorization required for prescribed burning. The Florida Fish and Wildlife Conservation Commission (FFWCC), assists staff in the enforcement of state laws pertaining to wildlife, freshwater fish and other aquatic life existing within park boundaries. In addition, the FFWCC aids the Division with wildlife management programs, including the development and management of Watchable Wildlife programs. The Department of State, Division of Historical Resources (DHR) assists staff to assure protection of archaeological and historical sites. The Department of Environmental Protection (DEP), Office of Coastal and Aquatic Managed Areas (CAMA) aids staff in aquatic preserves management programs. The DEP, Bureau of Beaches and Wetland Resources aids staff in planning and construction activities seaward of the Coastal Construction Line. In addition, the Bureau of Beaches and Wetland Resources aid the staff in the development of erosion control projects. Emphasis is placed on protection of existing resources as well as the promotion of compatible outdoor recreational uses.

Public Participation

The Division provided an opportunity for public input by conducting a public workshop and an advisory group meeting. A public workshop was held on May 22, 2006. The purpose of this meeting was to present this draft management plan to the public. An Advisory Group meeting was held on May 23, 2006. The purpose of this meeting was to provide the Advisory Group members the opportunity to discuss this draft management plan.

Other Designations

Big Lagoon State Park is not within an Area of Critical State Concern as defined in section 380.05, Florida Statutes. Currently it is not under study for such designation. The park is a component of the Florida Greenways and Trails System.

All waters within the unit have been designated as Outstanding Florida Waters, pursuant to Chapter 62-302 Florida Administrative Code. Surface waters in this unit are also classified as Class III waters by DEP. This unit is adjacent to the Fort Pickens Aquatic Preserve as designated under the Florida Aquatic Preserve Act of 1975 (section 258.35, Florida Statutes).

RESOURCE MANAGEMENT COMPONENT

INTRODUCTION

The Division of Recreation and Parks has implemented resource management programs for preserving for all time the representative examples of natural and cultural resources of statewide significance under its administration. This component of the unit plan describes the natural and cultural resources of the park and identifies the methods that will be used to manage them. The stated management measures in this plan are consistent with the Department's overall mission in ecosystem management. Cited references are contained in Addendum 2.

The Division's philosophy of resource management is natural systems management. Primary emphasis is on restoring and maintaining, to the degree practicable, the natural processes that shape the structure, function and species composition of Florida's diverse natural communities as they occurred in the original domain. Single species management may be implemented when the recovery or persistence of a species is problematic provided it is compatible with natural systems management.

The management goal of cultural resources is to preserve sites and objects that represent all of Florida's cultural periods as well as significant historic events or persons. This goal may entail active measures to stabilize, reconstruct or restore resources, or to rehabilitate them for appropriate public use.

Because park units are often components of larger ecosystems, their proper management is often affected by conditions and occurrences beyond park boundaries. Ecosystem management is implemented through a resource management evaluation program (to assess resource conditions, evaluate management activities and refine management actions), review of local comprehensive plans and review of permit applications for park/ecosystem impacts.

RESOURCE DESCRIPTION AND ASSESSMENT

Natural Resources

Topography

Big Lagoon State Park lies within the Coastal lowlands physiographic region that extends along Florida's entire Gulf Coastline. In recent geologic times, these lowlands were marine terraces (sea floors) during three or more successive high ocean level periods. This is a flat region, except where remnant dune ridges occur or where the surface has been modified by erosion or underground solution cavities. The unit's topography has been slightly modified by roads, parking lots and recreational facilities.

Geology

The area lies within the geographical division known as the West Florida Coast Strip, which extends from the mouth of the Ochlockonee River west to Mississippi. This geographic region is characterized by coastal islands and narrow peninsulas along the coast. Notable local geographic features include the long barrier peninsulas of Santa Rosa Island and Perdido Key, and Big Lagoon, which is a shallow extension of Pensacola Bay.

Soils

Five distinct soil types occur within the boundaries of the unit (see Soils Map). These soil types are Lakewood Sand, Leon Sand, Coastal Dune Land and Beach, Tidal Marsh, and Freshwater Swamp (Carlisle).

Nearly all of the park's recreational facility development has occurred on the Coastal Dune Land soil type. The area where Tidal Marsh Soil occurs is undeveloped except for two elevated boardwalks leading from parking areas to picnic shelters. The Lakewood Sand area is undeveloped except for the main park drive that crosses it. The areas where Fresh Water Swamp soil occurs are also undeveloped. These last two soil types occur in ancient coastal swales and estuarine backwaters from a past geologic era. They consist of a variety of dark, poorly drained organic rich soils that support a dense growth of water tolerant hardwood trees and shrubs. A description of the various soil types found in the park is included in Addendum 3.

Natural areas management, in addition to the monitoring of surface hydrology will help conserve soil resources while controlling soil erosion.

Minerals

There are no known minerals of commercial value within the park.

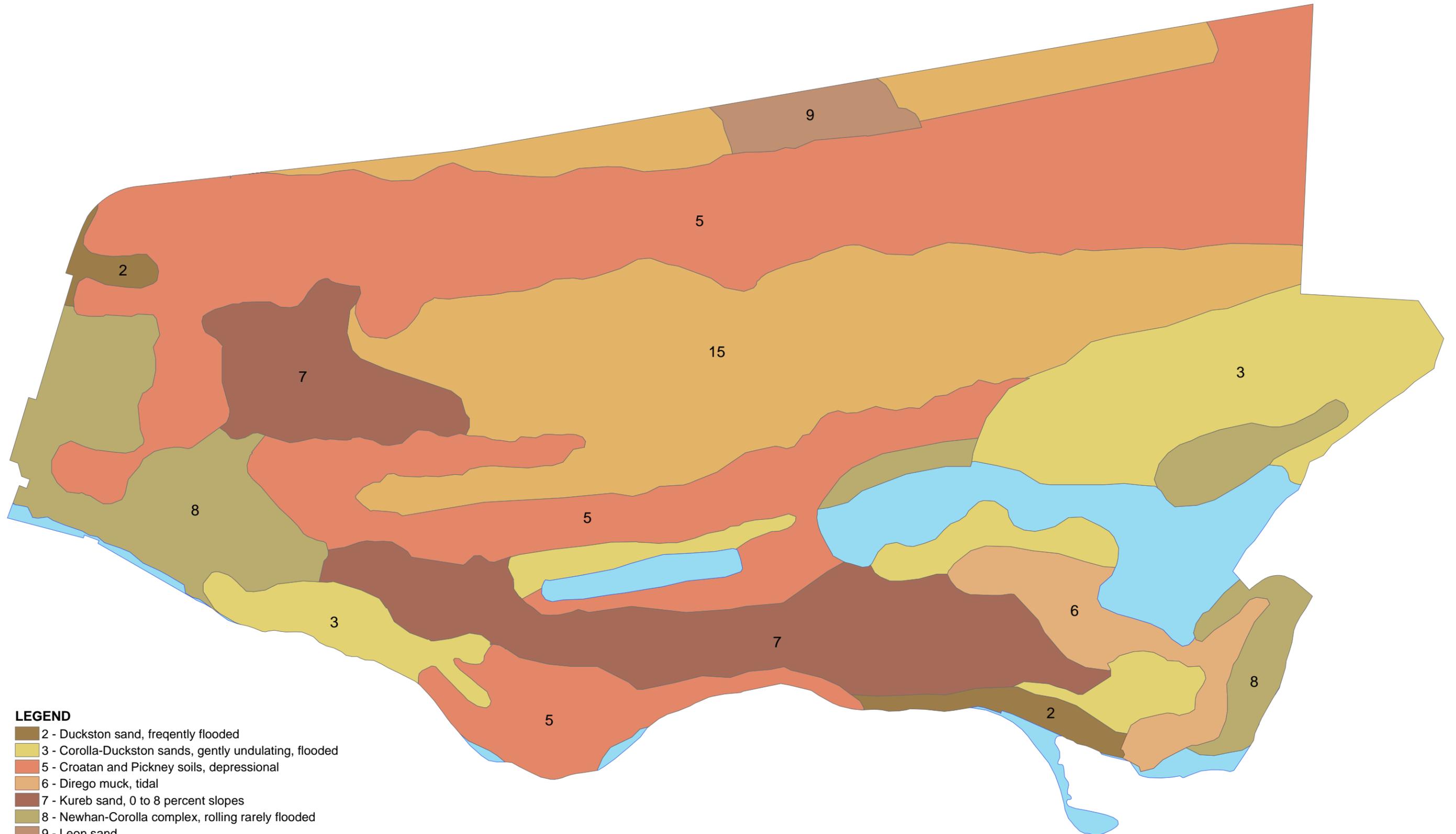
Hydrology

The typical hydrogeologic sequence in this region consists of predominantly sandy materials in the uppermost deposits. Underlying these upper sandy deposits are variably thick layers of generally clayey materials that function primarily as confining beds. Beneath this zone is the Floridan Aquifer, which is composed of several limestone formations (Barraclough).

Park water is acquired from the Escambia County municipal water supply. This water is drawn from the sand and gravel aquifer, which is the major source of groundwater in the extreme western portion of Florida. Local rainfall is the primary contributor to this aquifer. No known groundwater wells exist on the property. An investigation of the former out parcel should be conducted for confirmation.

Consideration should be given to initiating a Regional Offsite Mitigation Area (ROMA) through the DEP district office. A ROMA consists of an environmental creation, enhancement, and/or preservation that can provide a net environmental benefit. The ROMA must be approved by the FDEP and the memorandum of agreement (MOA) must meet the criteria of section 373.4135, Florida Statutes. A ROMA could provide mitigation banking for restoration needs within this unit.

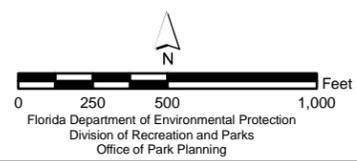
Two relatively small bodies of fresh water are found within the unit. Long Pond is a quarter mile long borrow pit located just south of the campground. This ruderal pond is about 150 feet wide along its entire length. The pond was created during construction of the segment of State Road 292 near the park. A smaller, unnamed, pond approximately two – three acres in size occurs in the northwest portion of the park. This smaller water body appears to be a natural wetland that has been altered at some point by spoil removal and long-term beaver impoundment. FNAI records list the occurrence of white-top and red pitcherplants within this area in the early 1980s. The BNCR Statewide Pitcherplant Assessment, conducted in 1999-2000 was unable to find any pitcherplants at this site. Beaver impoundments had gradually inundated wetland habitat around



LEGEND

- 2 - Duckston sand, frequently flooded
- 3 - Corolla-Duckston sands, gently undulating, flooded
- 5 - Croatan and Pickney soils, depressional
- 6 - Dirego muck, tidal
- 7 - Kureb sand, 0 to 8 percent slopes
- 8 - Newhan-Corolla complex, rolling rarely flooded
- 9 - Leon sand
- 15 - Resota sand, 0 to 5 percent slopes
- Water

**BIG LAGOON
STATE PARK**



**SOILS
MAP**

the small pond. By 1999, prolonged flooding had killed much of the titi overgrowth and presumably any remaining pitcherplants. Today this former open prairie-like habitat is a morass of fallen snags over largely bare muck soil.

The park also contains Grand Lagoon Lake, a 44-acre saltwater lake on the unit's east side. A shallow inlet connects the lake with the estuarine waters of Big Lagoon. The lower reaches of the lakeshore are dominated by *Juncus* marsh.

Several large ditches occur in the park with origins or outflows extending beyond park boundaries. The large east – west running ditch along the southern end of burn zone D appears to follow a former, poorly defined stream. Based on 1950s aerials in the Escambia County Soil Survey (1960), this small stream once flowed east into Big Lagoon. Presumably, the ditch was created to increase drainage of baygall/wet flatwoods in what is now the northeast portion of the park. Today this ditch flows into a man-made canal that parallels the park's eastern boundary. This canal appears to follow at least a segment of the small stream delineated on the 1950s aerial, before turning southwest to connect into Grand Lagoon Lake via a narrow stretch of *Juncus* marsh.

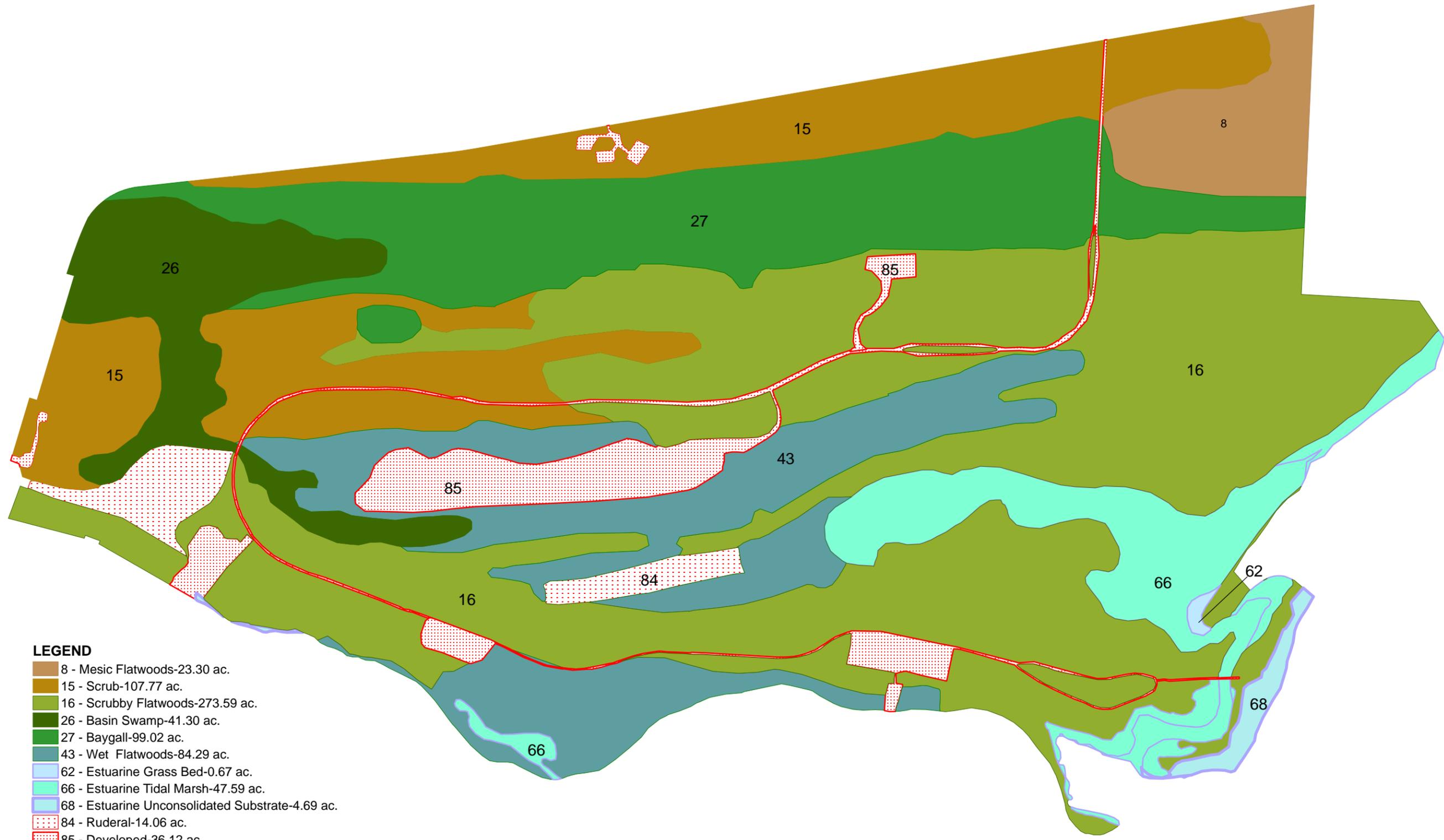
Based on the 1950s aerial and anecdotal reports from long-time inhabitants of the area, surface hydrology in the western portion of the park followed naturally occurring intermittent streams, ultimately draining into the far western end of Grand Lagoon Lake. The western end of the northern stretch of basin swamp had an intermittent stream connection running south from the unnamed pond, then east to Grand Lagoon Lake. Surface/near-surface water flowed and seeped towards Grand Lagoon Lake, particularly during and after heavy rains. Another segment of the large east – west ditch runs through the middle of the northern stretch of basin swamp/baygall. Presumably, this ditch, with numerous side ditches, was constructed to improve drainage of this large wetland area.

The western end of the basin swamp, in the northwestern portion of the park, has a drainage connection via a large box culvert that runs underneath State Road 292. Sawgrass and dahoon holly dominated swamp occurs just west of State Road 292, and drains into the park.

Natural Communities

The system of classifying natural communities employed in this plan was developed by the Florida Natural Areas Inventory (FNAI). The premise of this system is that physical factors, such as climate, geology, soil, hydrology and fire frequency generally determine the species composition of an area, and that areas which are similar with respect to these factors will tend to have natural communities with similar species compositions. Obvious differences in species composition can occur, despite similar physical conditions. In other instances, physical factors are substantially different, yet the species compositions are quite similar. For example, coastal strand and scrub--two communities with similar species compositions--generally have quite different climatic environments, and these necessitate different management programs.

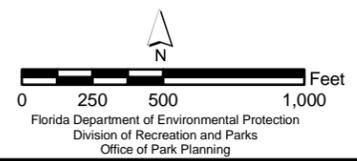
The park contains nine distinct natural communities (see Natural Communities Map) in addition to ruderal and developed areas. Park specific assessments of the existing natural communities are provided in the narrative below. A list of plants and animals occurring in the unit is contained in Addendum 4.



LEGEND

- 8 - Mesic Flatwoods-23.30 ac.
- 15 - Scrub-107.77 ac.
- 16 - Scrubby Flatwoods-273.59 ac.
- 26 - Basin Swamp-41.30 ac.
- 27 - Baygall-99.02 ac.
- 43 - Wet Flatwoods-84.29 ac.
- 62 - Estuarine Grass Bed-0.67 ac.
- 66 - Estuarine Tidal Marsh-47.59 ac.
- 68 - Estuarine Unconsolidated Substrate-4.69 ac.
- 84 - Ruderal-14.06 ac.
- 85 - Developed-36.12 ac.

**BIG LAGOON
STATE PARK**



**NATURAL COMMUNITIES
MAP**

Mesic flatwoods. This community is located in the northeast portion of the park. A small section of the mesic flatwoods was mechanically treated, in 2001 in order to reduce understory live fuel loads. This was a significant first step towards re-establishing a regular prescribed fire regime in this natural community.

The area delineated as mesic flatwoods encompasses the majority of burn zone D. Most of the area has an overstory of mature slash pines with very little natural regeneration due to heavy understory live fuel loads. Dense understory vegetation includes saw palmetto, gallberry, fetterbush, wax myrtle and titi. A relatively small area of flatwoods (3-4 acres) in the extreme northeast corner of the park has some very old longleaf pines. Some of the larger longleaf are well over 100 years old. Gradual reintroduction of fire along with mechanical fuels reduction will begin to restore a more natural open understory with a much lower live fuel height/profile. Other plants found within this longleaf area include conradina, gopher apple, dwarf huckleberry, sand live oak, runner oak and sweet bay.

Scrub. A band of sand pine scrub runs along nearly the entire northern stretch of the park. This northern band of scrub, immediately adjacent to State Road 297 Gulf Beach Highway, was mechanically treated in 2001 in effort to reduce hazardous understory fuel loads. This was a significant initial step towards re-establishing a fuels management program for this natural community.

This scrub community has an overstory of fairly even aged sand pine. The understory is dominated by a dense shrub layer of sand live oak. There is no appreciable grass or other herbaceous component to the understory. No wiregrass, broomsedge or other flatwoods grasses or forbs have been found here. Other plants such as conradina, gopher apple and jointweed occur between the dense clumps of “scrubby” oaks. This strip of sand pine scrub abruptly grades into a wide band of basin swamp and baygall as one moves south. The elevation difference between the scrub and adjacent wetland communities can be as much as 8-10 feet along an abrupt ecotone.

Other well-drained Scrub areas occur throughout the park, and in some cases include small pockets more typical of scrubby flatwoods. Larger well-defined sand pine and xeric oak scrub occurs in the western portion of the park. These areas are characterized by a largely patchy cover of stunted sand pine, sand live oak and myrtle oak.

Scrubby flatwoods. Large areas at the park are delineated as scrubby flatwoods. Portions of this map unit are more typical of a low, open-canopy sand pine scrub; however, these areas have been included into the larger scrubby flatwoods map unit. In general, the scrubby flatwoods are distinguished from scrub by at least some presence of overstory slash pines. These areas typically also have at least some flatwoods understory components such as gallberry and palmetto. Hurricane Ivan deposited some 32,000 cubic yards of man-made debris within this unit. Monitoring and evaluation of the re-contoured areas after debris removal should be conducted with the idea of re-vegetating selected areas.

Areas near the east beach and north of the amphitheater consist of widely scattered slash pines with a patchy understory of mostly palmetto, low “scrubby” oaks and scattered gallberry. These flatwoods areas merge into scrub, wet flatwoods and marsh associated with Grand Lagoon Lake.

Basin swamp. The wetland area in the northwest portion of the park is characteristic of an

overgrown shrub bog. This area has an extensive hydroperiod, in most years, and is best delineated as basin swamp. This area generally lacks a contiguous slash pine overstory, and is dominated by dense thickets of fetterbush (*Lyonia lucida*), gallberry, sweet pepper bush, titi and bay trees. A very small site located in the northwestern corner of this community was found to contain several understory wetland plants associated with pitcherplants. Bloodroot, bog buttons, spoonflower and milkworts were observed here during field visits in conjunction with the 2001 Pitcherplant RME. This seems the most probable site for the 1983 FNAI recorded occurrence of white-top and red pitcherplants, two species that were reported to occur in the northwest portion of the park. All other surveyed portions of this broad basin swamp offer no indication of former pitcherplant habitat.

The majority of this natural community occurs on tidal marsh soil type. Based on aerials from the 1950s, and anecdotal reports from residents who lived in the immediate area in the 1940s, this western area has been characterized as a low shrub bog for at least the last 50 years.

A large (east-west) ditch was constructed through the basin swamp and adjacent baygall natural community decades ago. The natural hydrology of these areas has been further impacted by long-term beaver activity. It is very likely that beaver impoundments increased after the ditches were installed.

Today, stormwater from wetlands west of the park drain into the western end of the basin swamp via a large box culvert underneath State Road 292. Drainage of this wetland area generally flows out the southern end of the unnamed pond. At that point, water is artificially shunted to the southwest and into the Intracoastal Waterway via a ditch. Based on the soil survey map, surface water originally followed natural drainageways east into Grand Lagoon Lake. These naturally occurring ephemeral streams followed the tidal marsh soil type delineated in the 1960 Escambia County Soil Survey.

Baygall. The contiguous hardwood dominated wetland area, across much of the northern stretch of park, is best described as baygall. A nearly closed midstory canopy of titi, sweet bay and swamp red bay covers the majority of this community that is situated within a broad low-lying ancient swale, located between much higher scrub ridges to the north and south. A scattered overstory of slash pines occurs over much of the area as well. Very few herbaceous plants are found beneath the dense overgrowth. Ferns are, very nearly, the only understory plants found growing in the dark peat-like soil.

Hydrological impacts of ditching and lack of fire are certainly factors that have influenced this community over much of the previous century. However, it is unclear whether the current hardwood dominated wetland of roughly 50 years succeeded from a once more open pineland, possibly wet flatwoods. Existing ditches allowed salt-water inundation to impact severely this community during Hurricane Ivan. The use of heavy equipment, aerial ignition and/or additional fuel breaks may be needed in order to lower fire intensities prior to initiating future burns.

Wet flatwoods. Wet flatwoods tend to follow former ephemeral streams occurring in areas surrounding the campground, and extending east towards Grand Lagoon Lake. The heavily overgrown flatwoods south of the Campground presents a major fuels management challenge. Average understory fuel height is well over 6-8 feet, much higher in some areas. The former streams were converted to ditches that make access into this area very difficult. In addition, the

mucky soil precludes the use of conventional heavy equipment used for mechanical fuels reduction. Hurricane Ivan and post-storm debris removal efforts have reduced fuel loading in some areas south and east of Long Pond and have greatly increased fuel loading adjacent to the campground. Consultation with division on reducing the fuel loading immediately adjacent to the campground should be a priority. Monitoring and evaluation of re-contoured areas should be conducted with the idea of re-vegetating selected areas.

Another band of wet flatwoods occurs along the unit's southern shoreline. This mapped area is mostly wet flatwoods, however, some linear ridges near the east and west beach use areas are much drier. This is generally a low-lying area with an overstory of slash pines and an understory comprised of various grasses, and shrubs. Common plants include gallberry, fetterbush, wax myrtle, grapevine, cordgrass, sawgrass, needle rush; saw palmetto, rusty lyonia and yaupon holly. Understory live fuel loads build up fast in this stretch of coastal flatwoods. Frequent fires are necessary in order to maintain low fuel loads, high plant diversity, scenic vistas and quality wildlife habitat.

Estuarine seagrass bed. Seagrass beds occur in the shallows of Big Lagoon, enclosed within the park boundary, east and south of the east beach use area. Vegetation within the beds is almost exclusively turtle grass, probably due to the influence of higher salinity water at the mouth of Pensacola Bay. The turtle grass is sparse and patchy, and has a low-cropped appearance. Some signs of prop scarring are evident. A few marine snails and scallop shells were observed here during site visits in October 2003. Fish species observed include redfish, pinfish, filefish and sheepshead.

Estuarine tidal marsh. The majority of this community is located along the southern shoreline of Grand Lagoon Lake and, sparingly, along the shoreline of Big Lagoon. Black needlerush and cord grasses are the dominant plant species found within the marsh. These areas are influenced by the regular ebb and flow of tidal waters, and provide a nutrient rich environment for a great many marine animals. Estuarine communities are considered the nurseries of the sea. Many marine fish species hatch out as fry and spend the early stages of life in tidal marsh areas where food and protection from open water predators is readily provided. The solitary tunicate, a tiny filter feeder, occurs in these waters, often obscured by sand and silt. Marine worms form u-shaped burrows in the muddy bottom and feed on nutrient rich sediments. Their sandy/silt-like deposits can be seen in the clear shallows at low tide. Other animals inhabiting the marsh include segmented worms, marsh snails, top snails, olive snails, hermit crabs, saltmarsh mud crabs, fiddler crabs, saltmarsh beachhoppers and barnacles.

Salt marsh plants, such as black needle rush, help anchor the soft silty bottom sediments, therefore serving to protect against shoreline erosion.

Hurricane Ivan deposited storm-generated debris that has not yet been removed. Items may include portions of docks, a large boat hull as well as other debris visible at or below the surface of Grand Lagoon Lake.

Estuarine unconsolidated substrate. The community exists as a narrow, relatively open strand of beach between the east beach shelters, the observation tower and Big Lagoon. This community is included in the USFWS Unit FL-1 Critical Habitat for Wintering Plovers. The sandy peninsula, intertidal and supratidal zones provide foraging and resting habitat for the

piping plover and other shorebirds. In summer, visitors enjoy sunbathing, surf fishing and wading offshore. Areas of entry should be delineated to control excessive trails. This area has been over-washed by several tropical storms in the past two years and contains some storm-generated debris.

Ruderal and developed areas. The ruderal areas include borrow sites and the spoil site near the boat ramp. Developed areas include roads, parking lots, pavilions, maintenance areas, the campground, a boat launch area, residence areas and a former home site.

Designated Species

Designated species are those that are listed by the Florida Natural Areas Inventory (FNAI), U.S. Fish and Wildlife Service (USFWS), Florida Fish and Wildlife Conservation Commission (FFWCC), and the Florida Department of Agriculture and Consumer Services (FDA) as endangered, threatened or of special concern. Addendum 6 contains a list of the designated species and their designated status for this park. Management measures will be addressed later in this plan.

Big Lagoon provides extensive habitat for State listed large-leaved jointweed. These durable plants have segmented stems and tiny white flowers that bloom in the early fall. These hardy plants grow in the semi-arid sands of scrub-like habitats. They require relative openings in canopy cover, and thrive after these areas have been disturbed by fires or mechanical fuel reduction treatments. Major concentrations of the plants occur in the large ruderal area west of the boat ramp, within scrub north of the campground, and throughout the northern strip of scrub along Gulf Beach Highway. Recent GPS surveys of major clusters estimate the total number of plants within the park at around 500-1000. Additional surveys are needed to assess population trends.

Godfrey's golden aster is endemic to the barrier islands and spits from Franklin County to Escambia County. This golden aster may be in bloom from October – January, but typically blooms in late October – November. The bright yellow flower heads of this low sprawling plant are easy to spot. The plant has a small basal rosette with dense woolly leaves. The branching stems tend to run along or at least close to the ground, and may have woolly leaves as well. FNAI records list a relatively small population of Godfrey's golden aster along the subtle ridgeline near the eastern beach use area. A current survey for the plants is needed.

Two species of pitcherplants occurred within the park as recently as the early 1980s. FNAI records from this time show small colonies of both white-top and red pitcherplants occurring in what appears to have been a low shrub dominated wetland in the western portion of the park. Another small colony of white-tops was also recorded in open wet flatwoods just south of the campground. No pitcherplants were found during field surveys in preparation for the 2001 Statewide Pitcherplant Resource Management Evaluation. It is believed that both species have been extirpated from the park.

Designated animal species that occur in or frequent the park include American alligator, brown pelican, least tern and black skimmer. FNAI occurrences of these and other tracked species need to be reported so that accurate lists are developed and maintained. A population assessment should be conducted for the Gulf Salt Marsh snake, the Ornate Diamondback terrapin and the Salt Marsh topminnow to determine the existence of these species and the communities they

utilize. This would supplement an ongoing partnership with the Northwest Florida chapter of The Nature Conservancy and Gulf Islands Seashore.

The eastern portion of the park surrounding the observation tower, including the peninsula and mudflats to either side of the tower has been designated by USFWS as Critical Habitat for Wintering Piping Plovers as of July 10, 2001. Ospreys occasionally nest successfully on the roof of the tower itself.

Two gopher tortoises have been reported within the park. Surveys and mapping should be conducted after prescribed fires. These particular animals may have been established by unauthorized releases. Consult with FWCC to evaluate park for a possible reintroduction.

A colony of Big Brown bats roosted in the original Amphitheater and efforts were made in the early 2000's to entice them to move into bat boxes due to operational concerns. The bats did not move into the boxes while they had a suitable roost available. However, they might occupy bat boxes since the building is gone. Big brown bats are almost strictly found in buildings in Florida, so providing roosts for them to replace this large structure should be a priority.

Special Natural Features

Grand Lagoon Lake is a picturesque estuarine backwater that provides quality habitat for fish and wading birds, among other species. Red fish, striped mullet, sand perch, Gulf black sea bass, spotted sea trout, bayou killifish, sheepshead, pinfish and southern stingray are just a few of the species of fish that are common in this estuarine extension of Big Lagoon. The saltmarsh topminnow, an FNAI tracked species, is also reported to occur here.

Cultural Resources

Evaluating the condition of cultural resources is accomplished using a three part evaluative scale, expressed as good, fair, poor. These terms describe the present state of affairs, rather than comparing what exists against the ideal, a newly constructed component. Good describes a condition of structural stability and physical wholeness, where no obvious deterioration other than normal occurs. Fair describes a condition in which there is a discernible decline in condition between inspections, and the wholeness or physical integrity is and continues to be threatened by factors other than normal wear. A fair judgment is cause for concern. Poor describe an unstable condition where there is palpable, accelerating decline, and physical integrity is being compromised quickly. A resource in poor condition suffers obvious declines in physical integrity from year to year. A poor condition suggests immediate action to reestablish physical stability.

There is one known prehistoric cultural resource within the park. Numerous historically significant cultural resources occur in the greater Pensacola area and significant cultural resources may exist in the park; however, very little is known about the role that the area, now occupied by the park, may have played in the region's history.

RESOURCE MANAGEMENT PROGRAM

Special Management Considerations

Timber Management Analysis

Chapters 253 and 259, Florida Statutes, require an assessment of the feasibility of managing timber in land management plans for parcels greater than 1,000 acres if the lead agency

determines that timber management is not in conflict with the primary management objectives of the land. The feasibility of harvesting timber at this park during the period covered by this plan was considered in context of the Division's statutory responsibilities, and an analysis of the park's resource needs and values. The long-term management goal for forest communities in the state park system is to maintain or re-establish old-growth characteristics to the degree practicable, with the exception of early successional communities such as sand pine scrub and coastal strand.

A timber management analysis was not conducted for this park. The total acreage for the unit is below the 1,000-acre threshold established by Florida Statutes. Timber management will be reevaluated during the next revision of this management plan.

Additional Considerations

Seagrass beds are present in the shallows of Big Lagoon. A stretch of sea grasses occurs just offshore of the eastern beach use area. These beds provide habitat for a variety of fish, mollusks, shorebirds and wading birds. Some prop scarring was evident during site visits in October 2003 and January 2004; however, the damage did not appear to be recent. The adjacent estuarine waters are under the management of the DEP, Office of Coastal and Aquatic Managed Areas (CAMA). If problems with prop scarring are noted, park staff should contact CAMA and request assistance with delineation/enforcement of these near shore areas as motor exclusion zones. Signage and corresponding enforcement will allow areas impacted by prop scars to recover. Work with CAMA in the preparation of permits which may be required to restore prop scars in the seagrass beds within jurisdictional waters of the park.

The estuarine unconsolidated substrate or "park shoreline," is a highly dynamic area subject to both erosion and accretion. Periodic ACOE maintenance dredging of the Intracoastal Waterway further influences currents and long shore drift that affect physical changes along the park's shoreline. Recent increases in commercial barge traffic and dredge operations occasionally impact this southern shore. It is recommended that additional plantings of emergent vegetation be placed west of the boat ramp. A long-term natural systems approach to managing this shoreline community is therefore impractical. The Division will cooperate and coordinate management measures/concerns for this stretch of narrow beach with the CAMA, DEP Bureau of Beach and Coastal Systems, and the Army Corps of Engineers (ACOE) as necessary.

Management Needs and Problems

Managing an effective prescribed fire program in an urban interface park is a significant challenge. Objectives of prescribed fire at this park include pro-active management of hazardous fuel loads, habitat enhancement/natural community restoration, and management for designated plant species. More detailed research and planning is needed in order to clarify and prioritize the specific long-term management objectives of prescribed burning (see Prescribed Burning under Management Measures for Natural Resources).

Surveys to update the occurrence and status of recorded rare plant and animal populations within the park need to be conducted.

Restoration measures outlined in the 2001 Statewide Pitcherplant Resource Management Evaluation of Big Lagoon State Park need to be followed in order to continue efforts towards eventual reintroduction of extirpated species.

Sand accumulation at the park boat ramp due to the dynamics of erosion and concurrent drift of shoreline and near shore sand is a problem that needs to be addressed by park, district and Bureau of Design and Recreational Services staff. Knowledge of coastal dynamics and engineering will be necessary as well in order to gain a consensus for possible solutions to this on-going problem.

Near shore signage along East Beach for seagrass beds needs to be re-established to prevent prop scars within the submerged sea grass beds. The previously placed buoys have been lost to recent storm events.

Invasion of exotic plant species into the park's designated natural areas remains a concern. Efforts to routinely survey and remove invasive exotic plants are a necessary management measure at this park.

The Florida-Alabama Transportation Planning Organization lists a project in the most recent Needs Assessment Report that could potentially effect the parks western and northern boundaries negatively. The plan includes widening from two to four lanes State Road 292 (Perdido Key Drive, including replacement of the Theo Baars bridge) Potential storm water impacts could adversely effect pitcher plant habitat and will likely require consultation during the planning process to avoid having state lands process increased storm water. This project has the potential for eliminating any buffer zone for the residence area near the bridge.

Management Objectives

The resources administered by the Division are divided into two principal categories: natural resources and cultural resources. The Division primary objective in natural resource management is to maintain and restore, to the extent possible, to the conditions that existed before the ecological disruptions caused by man. The objective for managing cultural resources is to protect these resources from human-related and natural threats. This will arrest deterioration and help preserve the cultural resources for future generations to enjoy.

1. Develop a detailed prescribed fire plan for the park.
2. Conduct surveys in effort to establish and/or update existing records of rare plant and animal occurrences within the park.
3. Conduct GPS survey of all drainage ditches occurring in the park, to determine current hydrological regimes, and the park's role in the management of local stormwater. This information will help guide targeted hydrological restoration in areas selected for pitcherplant reintroduction.
4. Continue to implement recommendations for pitcherplant habitat restoration as outlined in the 2001 Statewide Pitcherplant RME.
5. Consult BDRS and district biological staff in effort to begin seeking a long-term solution to sand accretion within the boat ramp and erosion to the west.
6. Follow management measures for exotic/non-indigenous species.
7. Restore the ruderal area west of the main residence area. Investigate and remove cement structures at this modern home site location, identify and remove off-site non-native plants, remove abandoned materials and properly remediate any groundwater wells, if necessary.
8. Evaluate hurricane demolition and debris removal impacts from the 2004-2005 seasons and determine need for native plants or other restoration measures.
9. Contact the appropriate department of the various State Universities in Florida to convey

- the need for an inventory of the park's flora.
10. Coordinate with CAMA, ACOE and Escambia County Marine Resources to restore sea grass buoys to near shore areas around East Beach to prevent prop scars in shallow waters.
 11. Coordinate with the DEP northwest regulatory office to establish a Regional Off-Site Mitigation Area (ROMA) in order to fund large-scale hydrological restoration projects at the park.

Management Measures for Natural Resources

Hydrology

Prior to state acquisition of the property, a large east-west running ditch was dug through the basin swamp wetland stretching across the northern portion of the park. This ditch, along with associated smaller ditches, has likely contributed to the drainage of the park's former pitcherplant habitats. Frequent prescribed burns are paramount if any progress is to be made in restoring the small pitcherplant wetlands. However, once an active prescribed fire program is underway, it may also be necessary to slow artificial drainage by installation of water control structures in the main ditch.

In order to gain a better understanding of current hydrology, park and district staff should GPS survey all of the ditches. In addition to the physical location of the ditches, other relevant data such as general width, depth, and direction of flow (if detectable) should be recorded as well. Park staff should also contact the municipal stormwater management section of Escambia County in effort to gain a better understanding of stormwater flow in and around the park.

Park and district staff should coordinate with the DEP Northwest District Office to determine if surface water monitoring is necessary at the park. If deemed so, monitoring efforts shall be coordinated through that office. The influence of stormwater run off on surface water quality within the park is a concern that should be discussed with the DEP district office.

Consideration should be given to initiating a Regional Offsite Mitigation Area (ROMA) through the DEP district office. A ROMA consists of an environmental creation, enhancement, and/or preservation that can provide a net environmental benefit. The ROMA must be approved by the FDEP and the memorandum of agreement (MOA) must meet the criteria of section 373.4135, Florida Statutes. A ROMA could provide mitigation banking for restoration needs within this unit.

Prescribed Burning

The objectives of prescribed burning are to create those conditions that are most natural for a particular community, and to maintain ecological diversity within the unit's natural communities. To meet these objectives, the park is partitioned into burn zones, and burn prescriptions are implemented for each zone. The park burn plan is updated annually to meet current conditions. All prescribed burns are conducted with authorization from the Department of Agriculture and Consumer Services, Division of Forestry (DOF). Wildfire suppression activities will be coordinated between the Division and the DOF.

A comprehensive prescribed fire plan is needed in order to identify and prioritize long-term management objectives and guide fire management decisions in this urban interface park. This plan should begin with thorough surveys of each existing burn zone, accurately identifying current natural community types, fuel loading, fuel composition/arrangement, accessibility and

necessary preparatory measures. Park Service land managers will then be better able to develop realistic and feasible expectations for prescribed fire within each burn zone and set priorities based on available resources accordingly. This plan should also include general burn zone descriptions, prior burn history, burn prescriptions (along with required holding/contingency planning), smoke screening, GIS generated burn zone maps, general monitoring protocol, and specific needs/problems associated with interface burns. This plan will essentially be an update of the Big Lagoon State Park Component of the District 1 Burn Plan. The District plan is reviewed annually. Park staff should work closely with district biological/prescribed fire staff to develop a detailed update addressing the essential elements mentioned above.

Designated Species Protection

The welfare of designated species is an important concern of the Division. In many cases, these species will benefit most from proper management of their natural communities. At times, however, additional management measures are needed because of the poor condition of some communities, or because of unusual circumstances that aggravate the particular problems of a species. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species.

Park and district staff should coordinate a survey for rare plants. Rare plant occurrences shall be recorded and mapped via GPS/GIS technology. Surveys for large-leaved jointweed should be conducted in October – early November when the plants are in bloom and easy to spot. Isolated plants should be marked as a GPS waypoint, while larger clusters should be mapped as a polygon with an annotation of estimated number within. Areas with major concentrations of large-leaved jointweed should be designated as protected areas at this park.

Park and district staff should coordinate a survey for rare fish species in waters under its jurisdiction in order to determine if management efforts are indicated.

Efforts to locate and map Godfrey's golden aster should occur in the early to mid fall (late September – October). FNAI occurrence records from 1996 describe about 20 plants along the subtle dunes near the east beach (northeast of the observation tower) Color photos of Godfrey's golden aster in bloom, as well as pressed herbarium specimens are available for viewing at the district office.

In regards to extirpated pitcherplants, the following recommendations are based on the 2001 Pitcherplant Resource Management Evaluation (This document is available at the park and district offices for review).

1. Efforts should be undertaken to restore a representative example of this park's original pitcherplant habitat. Reintroduction of the two extirpated pitcherplants or other species should be in accordance with the proposed guidelines of the 2001 Pitcherplant RME. The most promising area is the shrub-dominated wetland in the northwestern corner of the park.
2. Park and district staff has determined that beavers still occur within the park. Active measures should be taken to remove them. If beavers attempt to re-establish themselves within the park in the future, they should be removed promptly.
3. The beaver dams along the southern outlet of the unnamed pond should be breached, with enough destroyed to ensure that it can no longer impound water or be easily repaired by

- beavers. The same should be done with any other beaver dams.
4. It is recommended that pitcherplant habitats undergoing restoration be burned every 1-3 years or as soon as live fuel loads have recovered to a level that will carry fire.
 5. After the beaver dam(s) are removed, and the prescribed burning program is well underway, it might also be necessary to slow artificial drainage by installation of water control structures in the main ditch- and others. A study of the park's hydrology should be conducted to guide such restoration efforts.
 6. Conduct gopher tortoise burrow surveys and mapping in coordination with prescribed burning.

Efforts should be made to rehabilitate areas impacted by reconstruction and debris removal processes within floodplains and along inland dunes. It also may be necessary to re-establish artificial roosts for bats displaced by the destruction of park facilities.

The park's narrow strip of white sandy beach and tidally exposed sandy shoals are feeding/resting habitat for a variety of shorebirds, including FNAI tracked species. Park staff should coordinate any monitoring with district biological staff and the FWC.

Exotic Species Control

Exotic species are those plants or animals that are not native to Florida, but were introduced because of human-related activities. Exotics have fewer natural enemies and may have a higher survival rate than do native species, as well. They may also harbor diseases or parasites that significantly affect non-resistant native species. Consequently, it is the strategy of the Division to remove exotic species from native natural communities.

Chinese tallow remains a significant exotic plant threat at Big Lagoon. Significant efforts have been made to control Chinese tallow, including a contractual project for targeted areas in the western portion of the park, occurring in late summer/early fall 2004. Developed areas adjacent to the park are a constant source for exotics. Efforts to monitor and remove these invasive plants are ongoing and are likely to increase after recent storm events.

Park staff should monitor wetland areas at least annually for new tallow infestations, or re-growth from seed bank in prior removal sites. Occurrences should be GPS surveyed and tracked with GIS technology. Smaller manageable infestations should be treated by park staff and/or trained volunteers via targeted herbicide application or hand pulling of small seedlings.

Cogon grass has been identified around the box culvert flowing into the northwest portion of the park, along Gulf Beach Highway and along the main park drive north of the entrance station. Any identified areas of cogon grass infestation should be treated in the fall and consecutive spring with an appropriate broadcast herbicide.

The ruderal area adjacent to Gulf Beach Highway contains elements surrounding a former home site. Care should be taken to identify off-site planting and remove invasive exotics from this location.

Like exotic plants, exotic animals can also have detrimental effects on native species. Exotic animals that have the greatest impact on natural communities receive the highest priority for removal. Generally, these are animals with high fecundity and few natural controls, such as feral

hogs. Also included in this group are animals whose abundance is directly related to human populations, such as domestic cats and dogs. Non-indigenous, predatory animals shall be removed from the park. Feral cats and dogs should be removed by park staff and taken to the nearest municipal animal shelter. Other non-indigenous predators should be removed through the USDA partnership (USDA Non-indigenous Predator Control Partnership, coordinated through the USFWS). All exotic animal removals shall be reported to the district biological section via monthly exotic removal form.

Problem Species

Problem species are defined as native species whose habits create specific management problems or concerns. Occasionally, problem species are also a designated species, such as alligators. The Division will consult and coordinate with appropriate federal, state and local agencies for management of designated species that are considered a threat or problem.

The Florida Cottonmouth (*Agkistrodon piscivorus*) occurs in low-lying wet areas throughout the unit. This species could pose a threat if harassed. Proper education should minimize the chance of any harmful encounters with humans. It should be noted that this is an indigenous species, and therefore no efforts to remove or encourage their removal from the park should be made.

American alligators (*Alligator mississippiensis*) occasionally move from freshwater into saltwater areas. Should this happen, and an alligator take up residence in or near a designated swimming area, a threat assessment and corresponding measures will be followed according to division policy. Assistance with alligator threat assessments is available through the district office.

The Coyote (*Canis latrans*) is a relatively recent addition to Florida's list of large carnivores. Coyotes were recorded in the panhandle during the 1970's and are not historically native. This species is highly skilled and prey upon a variety of small mammals, insects, small snakes and birds. Their presence in piping plover critical habitat may necessitate targeted removal conducted according to division policy.

Beaver (*Castor canadensis*) occupy Long Pond, the natural basin swamp and some of the drainage ditches within the unit. This species contributes to the inundation of the portions of the park where reintroduction of extirpated pitcher plants is proposed. If beavers attempt to re-establish themselves within the park in the future, they should be removed in cooperation with FWCC staff.

Management Measures for Cultural Resources

The management of cultural resources is often complicated because these resources are irreplaceable and extremely vulnerable to disturbances. The advice of historical and archaeological experts is required in this effort. Approval from Department of State, Division of Historical Resources (DHR) must be obtained before taking any actions, such as development or site improvements that could affect or disturb the cultural resources on state lands (see DHR Cultural Management Statement).

Actions that require permits or approval from DHR include development, site excavations or surveys, disturbances of sites or structures, disturbances of the substrate, and any other actions that may affect the integrity of the cultural resources. These actions could damage evidence that

would someday be useful to researchers attempting to interpret the past.

There is one known cultural resource at the park. Should any additional sites be discovered in the future, they will be managed in a manner consistent with the policies of the DHR and the Division under the guidance of the Bureau of Natural and Cultural Resources.

Research Needs

Natural Resources

Any research or other activity that involves the collection of plant or animal species on park property requires a collecting permit from the Department of Environmental Protection. Additional permits from the Florida Fish and Wildlife Conservation Commission, the Department of Agriculture and Consumer Services, or the U.S. Fish and Wildlife Service may also be required.

Natural Resources

1. After pitcherplant habitat restoration measures are well underway, it might also be necessary to slow artificial drainage by installation of water control structures in the main ditch and others. If needed, a study of park hydrology should be conducted to guide such restoration efforts.
2. Data obtained from rare plant surveys will help identify population trends at this park. Refer to the Management Measures for Designated Species section.
3. Contact the appropriate department of the various State Universities in Florida to convey the need for an inventory of the park's flora.
4. Near shore waters should be surveyed to determine presence or absence of suspected designated species.

Cultural Resources

Efforts should be made through to seek funding for an archaeological survey of the park.

Resource Management Schedule

A priority schedule for conducting all management activities that is based on the purposes for which these lands were acquired, and to enhance the resource values, is contained in Addendum 6. Cost estimates for conducting priority management activities are based on the most cost effective methods and recommendations currently available (see Addendum 6).

Land Management Review

Section 259.036, Florida Statutes, established land management review teams to determine whether conservation, preservation, and recreation lands titled in the name of the Board of Trustees of the Internal Improvement Trust Fund (board) are being managed for the purposes for which they were acquired and in accordance with a land management plan adopted pursuant to s. 259.032, the board of trustees, acting through the Department of Environmental Protection (department). The managing agency shall consider the findings and recommendations of the land management review team in finalizing the required update of its management plan.

Big Lagoon State Park was subject to a land management review on February 17, 1999 (see Addendum 7). The review team made the following determinations:

1. The land is being managed for the purpose for which it was acquired.
2. The actual management practices, including public access, complied with the management plan for this site.

LAND USE COMPONENT

INTRODUCTION

Land use planning and park development decisions for the state park system are based on the dual responsibilities of the Division of Recreation and Parks. These responsibilities are to preserve representative examples of original natural Florida and its cultural resources, and to provide outdoor recreation opportunities for Florida's citizens and visitors.

The general planning and design process begins with an analysis of the natural and cultural resources of the unit, and then proceeds through the creation of a conceptual land use plan that culminates in the actual design and construction of park facilities. Input to the plan is provided by experts in environmental sciences, cultural resources, park operation and management, through public workshops, and environmental groups. With this approach, the Division objective is to provide quality development for resource-based recreation throughout the state with a high level of sensitivity to the natural and cultural resources at each park.

This component of the unit plan includes a brief inventory of the external conditions and the recreational potential of the unit. Existing uses, facilities, special conditions on use, and specific areas within the park that will be given special protection, are identified. The land use component then summarizes the current conceptual land use plan for the park, identifying the existing or proposed activities suited to the resource base of the park. Any new facilities needed to support the proposed activities are described and located in general terms.

EXTERNAL CONDITIONS

An assessment of the conditions that exist beyond the boundaries of the unit can identify any special development problems or opportunities that exist because of the unit's unique setting or environment. This also provides an opportunity to deal systematically with various planning issues such as location, regional demographics, adjacent land uses and the park's interaction with other facilities.

Big Lagoon State Park is located within Escambia County, about 12 miles southwest of downtown Pensacola in the westernmost part of the state. The populations of Escambia County and the adjacent Santa Rosa County have grown 25 percent since 1990, and are projected to grow an additional 26 percent by 2020 (BEBR, University of Florida, 2004). The median age of Escambia County is 36.0, which is slightly younger than the state average of 39.4 (BEBR, University of Florida, 2004). Nearly 450,000 Floridians reside within 50 miles of the park, which includes the cities of Pensacola, Gulf Breeze, Milton and Ft. Walton Beach (Census, 2000). The park is also in close proximity to residents of Gulf Shores and Mobile, Alabama. This area of Florida has a large military and retired military population due to the presence of the Pensacola Naval Air Station and other regional military bases.

Park attendance had been on a steady rise over the past ten years topping 173,000 visitors in FY 2003/2004, but dropped considerably following Hurricane Ivan. The park recorded 108,705 visitors in FY 2005/2006. Visitation is expected to return to pre-Ivan numbers as recreational facilities are rebuilt and opened to the public. By Division estimates, visitors during FY 2005/2006 contributed \$5.7 million in direct economic impact and the equivalent of 114 jobs to the local economy (Florida Department of Environmental Protection, 2006).

Existing Use of Adjacent Lands

To the north and east of Big Lagoon State Park, the adjacent land uses are mainly low- and medium-density residential. State Road 292, and its related commercial development, bounds the park to the west while the Big Lagoon waterbody serves as the park's southern boundary. The park is accessible by boat from Big Lagoon, and from the Intracoastal Waterway.

Within five miles of Big Lagoon State Park are two additional state parks that are also managed from the Big Lagoon administration office. Perdido Key State Park is a beach park on the Gulf of Mexico that offers swimming, sunning and other beach activities. Tarkiln Bayou Preserve State Park currently offers hiking and will provide other recreation opportunities as the park is developed. Blue Angel Recreation Area, located adjacent to Tarkiln Bayou Preserve, is available only to military personnel and retirees. It offers boating, swimming, picnicking, camping, biking, hiking, fishing, volleyball, miniature golf and disc golf. Other nearby, public lands include Blackwater River State Park, Blackwater River State Forest, Gulf Islands National Seashore, and the Lower Escambia River Water Management Area. In addition, Escambia County manages numerous county parks providing a variety of recreation facilities including boat ramps, a campground and an equestrian park. Escambia County has also recently designated a canoe/kayak trail routed from the Perdido River through Perdido Bay to Big Lagoon State Park and Gulf Islands National Seashore. In addition, the Office of Greenways and Trails is currently working to establish a sea kayaking trail around the entire state dubbed the Florida Circumnavigation Saltwater Paddling Trail. The official starting point of this trail is Big Lagoon State Park. A canoe/kayak launch and a primitive campsite for paddlers have been requested to support this endeavor.

Planned Use of Adjacent Lands

The Future Land Use Map for Escambia County identifies the areas surrounding the park as Residential, Commercial and MU-3. MU-3 is a mixed-use category that provides for a less intense mixture of residential, commercial and recreation uses. Residential category provides for residential neighborhoods in areas of the county with urban/suburban characteristics. The purpose of the Commercial category is to encourage and promote concentrations of commercial uses that have historically developed in response to market conditions and influences. (Escambia County, 2005)

Given the continued growth rate of this area of Florida, lands surrounding Big Lagoon State Park that are not acquired by state or local governments will eventually be developed for residential and commercial uses. Escambia County is expected to exceed 352,000 residents by the year 2020 (BEER, University of Florida, 2004). The coastal area is also increasing its tourist population, with new facilities and services for visitors being developed at a rapid rate. A high demand for resource-based recreation opportunities is expected due to the growth of resident and tourist population in the Pensacola region.

Some of the expected impacts of area development include declines in local, surface water quantity and quality; an increase in local traffic; the invasion of exotic species; an increase in point and non-point pollution sources within the park's watershed; and boundary encroachment issues. As the surrounding area continues to develop, road improvement projects can also be expected. The Florida-Alabama Transportation Planning Organization has already identified the need to widen State Road 292 and Bauer Road to four lanes.

PROPERTY ANALYSIS

Effective planning requires a thorough understanding of the unit's natural and cultural resources. This section describes the resource characteristics and existing uses of the property. The unit's recreation resource elements are examined to identify the opportunities and constraints they present for recreational development. Past and present uses are assessed for their effects on the property, compatibility with the site, and relation to the unit's classification.

Recreation Resource Elements

This section assesses the unit's recreation resource elements those physical qualities that, either singly or in certain combinations, supports the various resource-based recreation activities. Breaking down the property into such elements provides a means for measuring the property's capability to support individual recreation activities. This process also analyzes the existing spatial factors that either favor or limit the provision of each activity.

Land Area

Big Lagoon State Park contains approximately 684 upland acres and 48 submerged acres of natural landscapes. The park's general topography is relatively flat. The upland natural communities of this park include scrub, scrubby flatwoods and mesic flatwoods. The wetland communities include wet flatwoods, basin swamp, baygall and estuarine tidal marsh. The uplands are suitable for picnicking, camping, and hiking.

Water Area

Three lakes lie within the boundaries of Big Lagoon State Park. Grand Lagoon Lake, a saltmarsh lake on the southeast side; Long Pond, a flooded borrow pit located west of Grand Lagoon and south of the camping area; and another small man-made lake located near the southwestern boundary. Grand Lagoon Lake is relatively scenic in character, with extensive marsh vegetation and associated wildlife. A tidal creek connects this lagoon to Big Lagoon itself. Long Pond has a very regular shape, steeply sloping banks, and dark, tannin-stained water. Grand Lagoon Lake is attractive for paddling.

Shoreline

The primary recreational resources of the park are its shorelines. The combined shoreline length of the park amounts to approximately 3.5 miles (two miles on Big Lagoon, and the remainder on Grand Lagoon Lake and Long Pond). Approximately half of the park's shoreline is sandy beach. The beach use areas are separated by marsh or pine scrub vegetation. The beach itself is a narrow, flat sandy shelf that provides safe swimming conditions. Pines and scrub oaks located nearby provide shaded rest areas. On the western side, approximately 150 feet off the boating area, lies the Intracoastal Waterway channel. When peak recreational use coincides with heavy barge traffic, the threat of hazardous conditions exists.

Natural Scenery

The park's primary visual resources are the views of the Big Lagoon from the beach use areas, and the views of the tidal marsh from the East Beach Use Area. When viewed from the north shoreline, Grand Lagoon also has some scenic qualities. In general, views from the shoreline have been negatively affected by barge traffic on the Intracoastal Waterway, and development on Perdido Key and along State Road 292.

Significant Wildlife Habitat

Piping plover habitat is located in and around the East Beach Use Area. This area is signed to reduce human-induced stress on the birds.

Natural Features

The park's significant natural features include both hydrological and vegetative elements. The most important natural feature, Big Lagoon, is also the park's primary visual resource. The upland natural communities, especially scrub, are of utmost regional importance, since the park is one of the few remaining areas in the region where these communities remain.

Archaeological and Historical Features

The park has one recorded cultural site listed with the Florida Master Site File, ES 1049. This site is an artifact scatter/shell midden site that indicates at least a Woodland occupation of the area. It is possible that additional cultural resources may exist in the park and a phase 1 archaeological survey is recommended.

Assessment of Use

All legal boundaries, significant natural features, structures, facilities, roads and trails existing in the unit are delineated on the base map (see Base Map). Specific uses made of the unit are briefly described in the following sections.

Past Uses

Big Lagoon State Park was purchased from the U.S. Corp of Engineers in the late 1970s.

Recreational Uses

Big Lagoon State Park offers swimming, fishing, picnicking, camping, hiking, bicycle riding, canoeing, kayaking and nature study. Two beach use areas and a boat launching area are available along Big Lagoon. The Governor's Pavilion and the amphitheater are available to the public by reservation. Overnight accommodations include a 75-site camping area and a group camp.

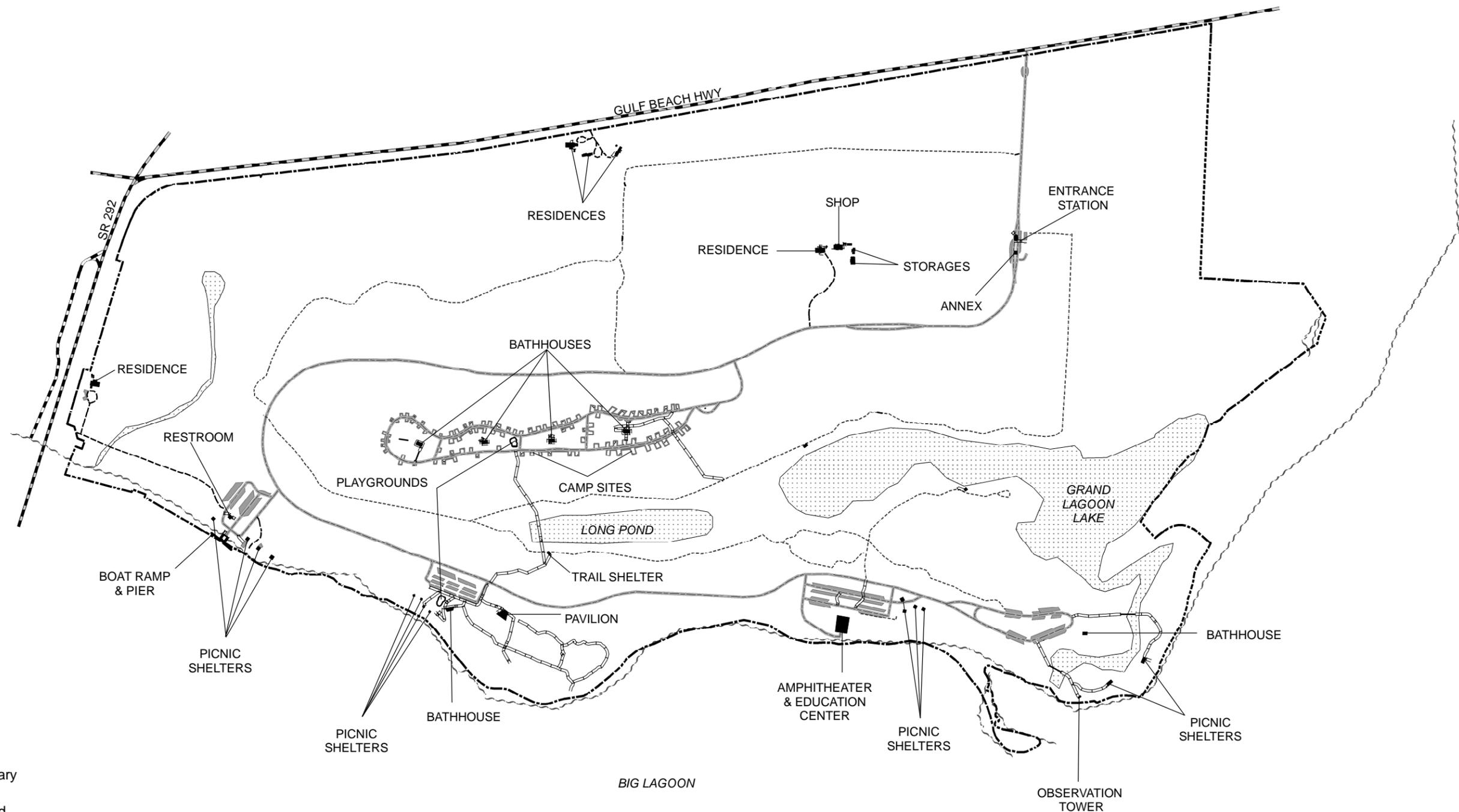
Other Uses

Within the park, Gulf Power Company has a powerline easement.

Protected Zones

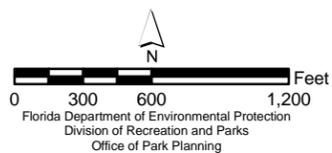
A protected zone is an area of high sensitivity or outstanding character from which most types of development are excluded as a protective measure. Generally, facilities requiring extensive land alteration or resulting in intensive resource use, such as parking lots, camping areas, shops or maintenance areas, are not permitted in protected zones. Facilities with minimal resource impacts, such as trails, interpretive signs and boardwalks are generally allowed. All decisions involving the use of protected zones are made on a case-by-case basis after careful site planning and analysis.

At Big Lagoon State Park, the basin swamp, baygall, estuarine tidal marsh, and scrub communities have been designated as protected zones as delineated on the Conceptual Land Use Plan.



LEGEND

- Park Boundary
- == State Road
- - - County Road
- Park Road Paved
- - - Park Road Unpaved
- Hiking Trail
- ~ Shore Lines
- Boardwalk
- Structures
- ▨ Marine Structures
- ▧ Camp Sites
- Parking Lots



Existing Facilities

Recreation facilities. Big Lagoon State Park was hit by five hurricanes and one tropical storm during the 2004 and 2005 hurricane seasons, leaving most of the recreation facilities damaged or destroyed. The majority of the use areas have been rebuilt by FEMA reimbursement funding and plans are in place to reconstruct the remaining facilities. The following list includes both the existing structures and the facilities that have been funded to be replaced.

East Beach Use Area

Large picnic shelters (2)	Restroom
Observation Tower	Parking (100 vehicles)
Boardwalk	

West Beach Use Area

Medium picnic shelters (4)	Restroom w/outside showers (1)
Playground	Parking (50 vehicles)
Governor's Pavilion	

Boating Area

Boat ramp (2 lanes)	Restroom
Medium picnic shelters (4)	Parking (40 vehicles w/trailers)

Amphitheater Area (to be rebuilt)

Amphitheater/Nature Center/Meeting Room	Restroom
Small picnic shelters (4)	Parking (100 vehicles)

Camping Area

Standard campsites w/ water (26)	Group Camp
Standard campsites w/electrical and water hook-ups (49)	Playgrounds (2)
	Bathhouses (4)
Trails (4 mi.)	Trail shelters (3)

Support Facilities

Park Entrance

Entrance station/Administrative office	Ranger residence (3)
Temporary office building	

Shop Area

3-bay equipment shelter	Equipment shed
Shop building	Flammable storage/paint shed

Roads

Park road (2.6 mi.)	Service roads (3 mi.)
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CONCEPTUAL LAND USE PLAN

The following narrative represents the current conceptual land use proposal for this park. As new information is provided regarding the environment of the park, cultural resources, recreational use, and as new land is acquired, the conceptual land use plan may be amended to address the new conditions (see Conceptual Land Use Plan). A detailed development plan for the park and a site plan for specific facilities will be developed based on this conceptual land use plan, as funding becomes available.

During the development of the unit management plan, the Division assesses potential impacts of proposed uses on the resources of the property. Uses that could result in unacceptable impacts are not included in the conceptual land use plan. Potential impacts are more thoroughly identified and assessed through the site planning process once funding is available for the development project. At that stage, design elements, such as sewage disposal and stormwater management, and design constraints, such as designated species or cultural site locations, are more thoroughly investigated. Advanced wastewater treatment or best available technology systems are applied for on-site sewage disposal. Stormwater management systems are designed to minimize impervious surfaces to the greatest extent feasible, and all facilities are designed and constructed using best management practices to avoid impacts and to mitigate those that cannot be avoided. Federal, state and local permit and regulatory requirements are met by the final design of the projects. This includes the design of all new park facilities consistent with the universal access requirements of the Americans with Disabilities Act (ADA). After new facilities are constructed, the park staff monitors conditions to ensure that impacts remain within acceptable levels.

Potential Uses and Proposed Facilities

The existing recreational activities provided at Big Lagoon State Park are appropriate, and should continue. In addition, new facilities such as a nature center and paddling amenities would enhance and expand the park's role and appeal as a nature-based recreation provider for the region. As with other units of the state park system, some improvements to existing facilities and infrastructure are also needed to fulfill its responsibilities to provide outdoor recreation, and protect and enhance the natural and cultural resources of the park. The following section discusses the proposed new use areas and the recommended enhancements to existing facilities.

Recreation Facilities

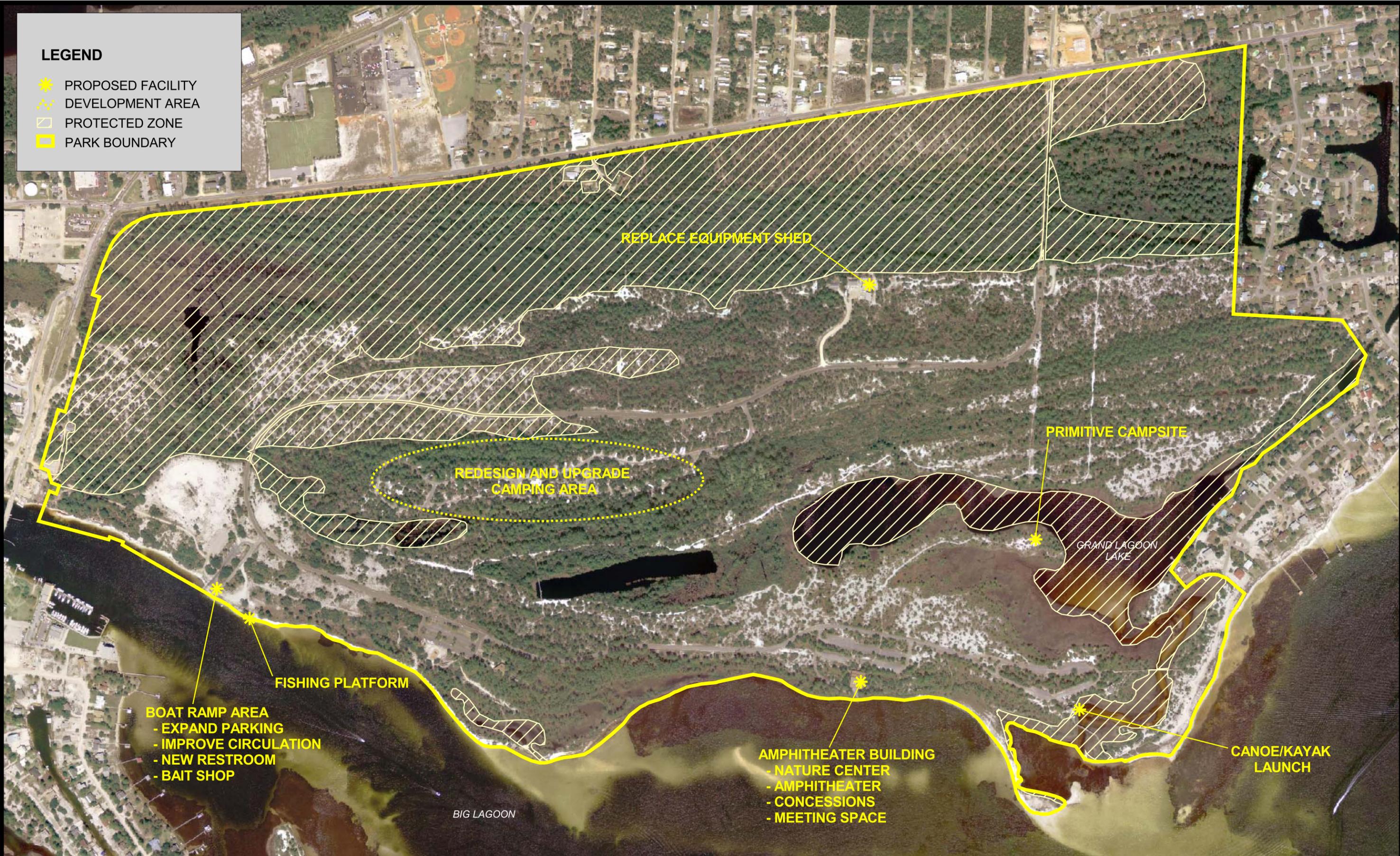
Amphitheater Building. As population pressure continues to bring large numbers of visitors to the park, the education of recreational users will become an issue of critical importance. Environmental stewardship issues, therefore, need to be brought to the attention of park's recreational users to balance recreation with protection and management of the park's natural and cultural resources. Toward this end, an environmental education and interpretation facility is recommended in the park.

Space for a nature center has been incorporated into the design of the new amphitheater building that will be constructed to replace the one destroyed by Hurricane Ivan. The new building will include a nature center, amphitheater capable of seating 300 people, concessions area, meeting room with warming kitchen, and restrooms. The park's citizen support organization has offered to fund the exhibits for the new nature center.

Interpretive stations at locations throughout the existing trail system are also proposed to inform the public regarding resource management activities occurring at this park, and incorporating the

LEGEND

-  PROPOSED FACILITY
-  DEVELOPMENT AREA
-  PROTECTED ZONE
-  PARK BOUNDARY



BIG LAGOON STATE PARK



CONCEPTUAL LAND USE PLAN

larger preservation, stewardship, and cultural resource management activities at the park.

Boat Ramp Area Improvements. The existing boat ramp area does not meet the current demand of the area. This plan proposes improving the boat ramp area to expand and enhance its use by park visitors. Recommendations include expanding boat trailer parking, improving circulation at the boat ramp and providing a new restroom. One possible scenario involves expanding the boat trailer parking westward into the existing septic system drainfield. This would require coordination with Escambia County to connect park facilities to the county's central sewer line. This plan also recommends adapting the existing restroom at the boat ramp into a concessionaire-operated bait shop.

Camping Area Improvements. The gradual increase in resource impacts to the camping area and its immediate surroundings, continued circulation problems, and the resulting safety issues require a comprehensive solution to the use and design of this very popular facility. This plan proposes a redesign of the camping area within the same footprint. Most of the campsites are too short and narrow to accommodate even the midsized RV's of today. In addition, many sites are not usable or safe to use during wet weather. Where possible, campsites should be expanded and raised and provided with upgraded water and electric hook-ups. The camping area bathhouses also need to be upgraded to become ADA compliant. In addition, a screened shelter should be added to the bathhouse within the group camp area to enhance group activities.

Canoe Launch. A designated canoe and kayak launch is recommended near the mouth of Grand Lagoon Lake. The preferred location is along the shoreline just north of the boardwalk bridge that leads to the observation tower and south of the parking lot. This area is ideal for providing paddlers with access to both Grand Lagoon Lake and Big Lagoon. This location currently contains a narrow path through the shoreline vegetation, indicating that paddlers already use this site as an informal launch. Rather than providing a structure, the most paddling-friendly launch is the natural shoreline, itself. In order to minimize the impact to shoreline vegetation, low-rail fencing should be used to funnel paddlers to the narrow break in the vegetation. Once established, this area should be monitored to determine if its use leads to any unacceptable impacts to the resident Piping plovers, in which case, a new location will be sought.

In recognition and support of the Florida Circumnavigation Saltwater Paddling Trail, an interpretive kiosk is also proposed for the launch area.

Primitive Campsite. A primitive campsite is also recommended to support both the Florida Circumnavigation Saltwater Paddling Trail and the designated Escambia County canoe/kayak trail. The proposed campsite is located on an area of uplands along the south central shoreline of Grand Lagoon Lake. This site is already accessible for management purposes via a service road.

Fishing Platform. A fishing platform is proposed for the shoreline of Big Lagoon to enhance this recreational use. The recommended location is just to the east of the current boat ramp, an area known to be popular with local fishermen.

Ecotourism Opportunities. Ecotourism is an experience that encourages awareness of our natural and cultural resource assets and balances access to conservation lands with non-consumptive uses of those resources. Ideally, ecotourism experiences will promote an understanding of environmental stewardship that benefits both local communities and the society

as a whole. Big Lagoon State Park, Tarkiln Bayou Preserve State Park and Perdido Key State Park should serve as prime destinations for ecotourism activities within the region because of the unique natural resources and abundant recreational opportunities found there. The proposed nature center/amphitheater building at Big Lagoon State Park should be targeted as a facility to support ecotourism efforts at the three area state parks. In addition, the close proximity of this property to other public lands should make it attractive for nature-based tourism businesses.

Greenway Linkage. Escambia County has identified the need to develop and implement a non-motorized, shared-use greenway trail network through the southwest sector of the county. Their greenway plan identifies Big Lagoon State Park and Tarkiln Bayou Preserve State Park as excellent trailheads due to the existing amenities that can support the trail system. The Division of Recreation and Parks supports trail connections to local greenways, however, it is the responsibility of the local governments to determine the routes of these proposed trails leading to the state parks. When Escambia County identifies a possible connection to Big Lagoon State Park and Tarkiln Bayou Preserve State Park, the Division will support their ideas upon considering the sensitivity of the natural and cultural resources of the property and concerns related to park operations. The Division will decide the most appropriate route for the trail within the state park and what additional facilities to provide. Successful implementation of this trail linkage will require Division coordination with the Escambia County Neighborhood & Environmental Services Department.

Support Facilities

Park Entrance. Following Hurricane Ivan, a temporary office building was installed behind the flood-damaged entrance station. The entrance station has since been repaired and the temporary office is now being used as an office for the park biologist. This plan recommends relocating the temporary office to the small administrative parking lot directly to the east of the entrance station.

Shop Area. A new 5-bay equipment shed for the shop area is recommended to replace an old shed that is in disrepair. A new flammable storage building is also needed.

Park Roads. Due to the regular use of heavy equipment during the clean-up efforts following the recent hurricanes, the park roads and parking lots have sustained significant damage. Repaving these areas is recommended.

Sewage. Currently, sewage in the park is disposed through septic tanks and drain-field systems. The City of Pensacola is in the process of designing and building a municipal sewage system. When this system becomes available, it is recommended that all park facilities be connected to it.

Facilities Development

Preliminary cost estimates for the following list of proposed facilities are provided in Addendum 6. These cost estimates are based on the most cost-effective construction standards available at this time. The preliminary estimates are provided to assist the Division in budgeting future park improvements, and may be revised as more information is collected through the planning and design processes.

Recreation Facilities

Amphitheater Building

Nature center (600sq.ft.)
Amphitheater (seats 300)
Concessions

Meeting room with warming kitchen
Restrooms

Boat Ramp Area Improvements

Redesign circulation
Expand the parking area

New restroom
Adapt the existing restroom into a bait shop

Camping Area Improvements

Expand and raise campsites
Upgrade electric/water hook-ups

Renovate bathhouses (4)
Add screened shelter

Canoe Launch

Primitive Campsite

Fishing Platform

Interpretive Kiosks (5)

Support Facilities

Park Entrance

Relocate temporary office building

Shop Area

5-bay equipment shed

Flammable storage building

Park Roads

Repave park road and parking lots

Sewage

Connect park facilities to city sewer

Existing Use and Optimum Carrying Capacity

Carrying capacity is an estimate of the number of users a recreation resource or facility can accommodate and still provide a high quality recreational experience and preserve the natural values of the site. The carrying capacity of a unit is determined by identifying the land and water requirements for each recreation activity at the unit, and then applying these requirements to the unit's land and water base. Next, guidelines are applied which estimate the physical capacity of the unit's natural communities to withstand recreational uses without significant degradation. This analysis identifies a range within which the carrying capacity most appropriate to the specific activity, the activity site and the unit's classification is selected (see Table 1).

The optimum carrying capacity for this park is a preliminary estimate of the number of users the unit could accommodate after the current conceptual development program has been implemented. When developed, the proposed new facilities would approximately increase the unit's carrying capacity as shown in Table 1.

Table 1--Existing Use And Optimum Carrying Capacity

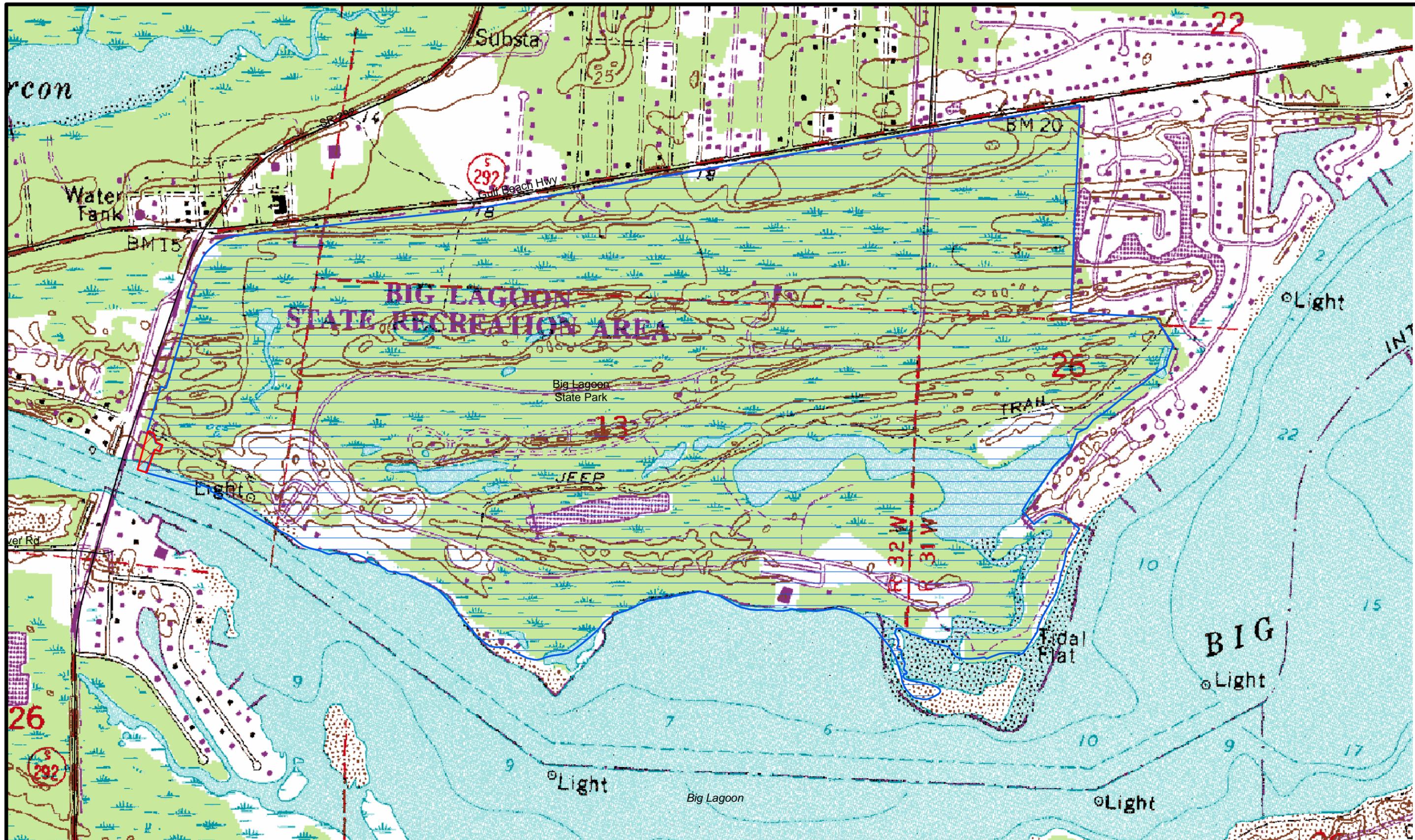
Activity/Facility	Existing Capacity		Proposed Additional Capacity		Estimated Optimum Capacity	
	One Time	Daily	One Time	Daily	One Time	Daily
Camping						
Standard	600	600			600	600
Group	60	60			60	60
Picnicking	250	500			250	500
Swimming/Picnicking	790	1,580			790	1,580
Boating	200	200	200	200	400	400
Hiking	40	160			40	160
Fishing	40	80	10	20	50	100
Canoe/Kayaking	10	20			10	20
Nature Center			30	120	30	120
Amphitheater	300	300			300	300
TOTAL	2,290	3,500	240	340	2,530	3,840

Note: "Picnicking" only refers to the Governor's Pavilion, while "Swimming/Picnicking" refers to all other picnic areas along the shoreline.

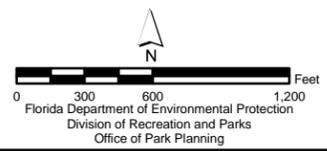
Optimum Boundary

As additional needs are identified through park use, development, research, and as adjacent land uses change on private properties, modification of the unit's optimum boundary may occur for the enhancement of natural and cultural resources, recreational values and management efficiency. At this time, no lands are considered surplus to the needs of the park. Identification of lands on the optimum boundary map is solely for planning purposes and not for regulatory purposes. A property's identification on the optimum boundary map is not for use by any party or other government body to reduce or restrict the lawful right of private landowners. Identification on the map does not empower or require any government entity to impose additional or more restrictive environmental land use or zoning regulations. Identification is not to be used as the basis for permit denial or the imposition of permit conditions. The optimum boundary map reflects lands identified for direct management by the Division as part of the park. These parcels may include public as well as privately owned lands that improve the continuity of existing park lands, provide additional natural and cultural resource protection, and/or allow for future expansion of recreational activities.

The Optimum Boundary Map identifies one parcel as optimum boundary for Big Lagoon State Park. This parcel will "square" the park boundary and protect the park's resources.



BIG LAGOON
STATE PARK



LEGEND
 Park Boundary
 Optimum Boundary

OPTIMUM BOUNDARY MAP

Addendum 1—Acquisition History and Advisory Group List and Report

Big Lagoon State Park—Acquisition History

Sequence of Acquisition

On January 27, 1977, the Board of Trustees of the Internal Improvement Trust Fund (Trustees) obtained title to a 514-acre parcel that later became Big Lagoon State Park. The property was purchased with funds from the Land and Water Conservation Fund (LWCF) program. Between 1977 and 1994, the Trustees acquired several individual parcels through purchases and leases and incorporated them into Big Lagoon State Park. The purchases were funded with LWCF, EEL and LATF funds. Presently the park comprises approximately 733 acres.

Title Interest

The Trustees hold fee simple title to Big Lagoon State Park.

Lease Agreement

On June 24, 1977, the Trustees transferred management authority of Big Lagoon State Park to the Department of Environmental Protection, Division of Recreation and Parks (Division) under lease No. 2977. This lease is for a period of ninety-nine (99) years and will expire on June 24, 2076. Big Lagoon State Park is designated single-use to provide resource-based public outdoor recreation and other related uses.

Outstanding Reservations

The lease from the Trustees stipulates that the property be utilized for public outdoor recreation and related purposes. Uses such as, water resource development projects, water supply projects, stormwater management projects, linear facilities and sustainable agriculture and forestry (other than those forest management activities specifically identified in this plan) are not consistent with this plan or the management purposes of the park. The following is a list of outstanding rights, reservations and encumbrances that apply to Big Lagoon State Park.

Big Lagoon State Park—Acquisition History

Instrument: Warranty Deed
Instrument Holder: Mitchell Anthony Touart Et Al
Beginning Date: July 24, 1969
Ending Date: the easement is perpetual unless other means of ingress and egress become available to the grantee.
Outstanding Rights, Uses, Etc.: The deed contains a non-exclusive easement of right-of-way for a private roadway for ingress and egress; the easement is perpetual unless other means of ingress and egress become available to the grantee.

Instrument: Easement
Instrument Holder: DNR (Now DEP)
Beginning Date: January 11, 1978
Ending Date: Coterminous with Lease No. 2977
Outstanding Rights, Uses, Etc.: The easement is for the purpose of constructing, installing, operating, and maintaining a single and/or three-phase distribution system for the transmission and distribution of electricity including necessary communication and other wires, cables, conduits, poles, etc.

**Big Lagoon State Park, Perdido Key State Park and Tarkiln Bayou Preserve State Park
Advisory Group Members**

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Big Lagoon State Park, Perdido Key State Park, Tarkiln Bayou Preserve State Park

Advisory Group Staff Report

The Advisory Group meeting to review the proposed land management plans for Big Lagoon State Park, Perdido Key State Park and Tarkiln Bayou Preserve State Park was held at Big Lagoon State Park on May 23, 2006 at 9am.

Chairman Mike Whitehead (Escambia County Commission) was represented by Robert Turpin. Tom LeDew (Florida Division of Forestry) was represented by Adam Parden. Shelley Alexander (Fort Pickens State Park Aquatic Preserve) was represented by Deborah Holland. Jerry Eubanks (Gulf Islands National Seashore) was represented by Nina Kelson. Chris Davis (Friends of Perdido Pitcher Plant Prairie) was represented by Jim Veal. Dr. John Himes (Florida Fish and Wildlife Conservation Commission), Sandra Sneckenberger (US Fish and Wildlife Service), David Wilks (Florida Department of Transportation), Mark Vance (West Florida Canoe and Kayak Club), and Sharon Maxwell (Northwest Florida Sierra Club) were not in attendance. All other appointed Advisory Group members were present as well as Chuck Brevik (US Navy). Attending staff were Danny Jones, Eric Kiefer, Lance Logan, Anne Harvey, Lew Scruggs and Brian Burket.

Mr. Burket began the meeting by explaining the purpose of the Advisory Group and reviewing the meeting agenda. He provided a brief overview of the Division's planning process and summarized public comments received during the previous evening's public workshop. He then asked each member of the advisory group to express his or her comments on the plans.

Summary of Advisory Group Comments

Nina Kelson (Gulf Islands National Seashore) had no comments.

Robert Turpin (Escambia County) expressed support for boating and paddling improvements proposed in plans. He stated there is a lack of public boating access to Perdido Bay and asked that consideration be given to constructing a boat ramp along the shoreline of Tarkiln Bayou Preserve. He also recommended canoe/kayak access to the Old River at Perdido Key State Park. He recommended a mechanism to collect horse manure along trails in Tarkiln Bayou Preserve on a regular basis. He identified a county need for a wide variety of recreation uses. He asked if the parks have noise control rules. Lance Logan replied no, other than quiet hours in the camping area at night. Mr. Turpin expressed support for road access to the shoreline at Tarkiln Bayou since it allows access to all citizens but suggested the plan include measures to ensure that it be done sensitively. He requested that the park staff talk to him about future beach renourishment efforts. He suggested the possibility of providing fishing piers or platforms where appropriate. He commended the staff for their good management of these parks.

Deborah Holland (Fort Pickens Aquatic Preserve) had no comments.

Al Hoffman (Friends of Big Lagoon/Perdido Key) complimented the plans and voiced his appreciation for the reconstruction of facilities lost during recent hurricanes.

Louise Miller (adjacent landowner) stated that the existing boat ramp at Big Lagoon needs improvements. Lance Logan replied that the staff is working on this issue. Ms. Miller asked about the expiration of the park leases and wondered if there was any threat of losing these state parks. Lew Scruggs responded that the leases will be renewed as their expiration dates near and there is absolutely no threat of losing these parks. Ms. Miller then asked about the missing cost

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estimate for the new amphitheater building. Brian Burket said the project is estimated at \$1.75 million and will be added to the plan. Ms. Miller asked about the number of seats in the proposed amphitheater. Mr. Logan stated the current design identifies seating for 295 individuals, which is a slight reduction from the previous capacity. Al Hoffman stated that the CSO provided input on the design of the building and requested that consideration be given to maximizing the number of seats. Ms. Miller then asked who decides what functions and events can be held at the parks. Mr. Logan replied that the decision is made at the park level and that once the restrooms are reopened, more functions and events will be approved.

Lauren Baggett (adjacent landowner) corrected a labeling error on the Reference Map. She recommended providing paddling access and a boat ramp on the Old River at Perdido Key. She requested that a safe pedestrian crossing be provided across SR 292 to access the dune crossovers. In addition, she voiced concern over the removal of certain predator species from Perdido Key State Park.

Maggie Gray (fishing representative) requested that the park improve their maintenance of the existing boat ramp. Lance Logan responded that this is being addressed. Ms. Gray asked where new boat ramp lanes would be located at Big Lagoon State Park. Lew Scruggs replied that if new lanes are necessary to improve boating access, they would be located near the existing boat ramp area and the exact site determined during the engineering and design phase.

Jack Croke (adjacent landowner) commented on the “preserve” classification for Tarkiln Bayou and expressed concern over the proposed road and parking near the Perdido Bay shoreline. He, instead, recommended that access be limited to those arriving by trail. He stated that wildlife appears to be disappearing from the Tarkiln Bayou area. He requested that this state park be preserved as natural as possible.

Richard Freisinger (Escambia Soil and Water Conservation District) cautioned that horse use could lead to erosion problems at Tarkiln Bayou Preserve. Anne Harvey replied that the staff is looking into providing low water crossings, routing trails around certain areas, and conducting a hydrological survey of the preserve to minimize impact from trail use.

Medora Mullins (equestrian representative) stated that she regularly rides her horses within Tarkiln Bayou Preserve and mentioned that there is a large, supportive and potentially active group of equestrians in the area. She then shared the following suggestions for enhancing the proposed equestrian use areas: omit installing a water trough but instead water faucets and plastic tubs; recommend 12'x12' paddocks with a roof instead of a corral; picketing poles and/or hitching posts in the shade; shaded trailer parking on a firm surface but not asphalt; campers should have access to dump station at Big Lagoon; allow fishing and horse swimming at borrow pits on Bauer and Sorrento Roads; keep all existing service roads east of Bauer Road open to horse use; and adding a waste collection facility in the equestrian use areas. She requested neighborhood gates off Havburg and Nighthawk Lanes. She then offered the help of local equestrian groups to assist in the development of trails and use areas as well as their monitoring and clean-up on a regular basis. She suggested that timber gained from thinning of the planted pine area could be used to construct paddocks. She confirmed that the width of the trails could support horse drawn carts. She requested that horse use be added to page 37 of the Tarkiln Bayou plan and made suggestions for the species list in Addendum 4.

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Vernon Compton (hiking representative) commended the staff on the development of plans with an appropriate balance of access and protection. Mr. Compton stated his support of the “preserve” designation for Tarkiln Bayou. He expressed appreciation for the focus on trails, both land and water, in the plans and supported separation of user groups where appropriate. He appreciated the discussion of external impacts in the plans and encouraged the Division to coordinate with FDOT to include bike/pedestrian improvements, stormwater enhancements and wildlife crossings in the design of their proposed road projects. He voiced support for the staff’s efforts to control beach access at Perdido Key. He discussed his concern for the survival of the beach mouse and support for the removal of exotic species. He suggested that the proposed nature trail at Perdido Key could be made into a loop trail if worked into the design of road improvements along Perdido Key Drive. He stated his support for the Division’s policy on ATV use in state parks. He acknowledged the high quality resources at Tarkiln Bayou Preserve and supported passive use along the bayou and the separation of the primitive camping area from the beach use area. As for timber management, he recommends keeping some of the slash pines to promote diversity in future restoration areas.

J.J. Bachant-Brown (Gulf Coastal Plain Ecosystem Partnership) commends all three plans for being ecologically attentive. She pointed out that prescribed burning is a big need and encouraged the staff to work with neighbors to promote fire wise communities. Anne Harvey responded that this effort is already underway. Ms. Bachant-Brown stated her support for conducting hydrological studies at Big Lagoon State Park and connecting park facilities to municipal sewer. She requested that the cost estimates addendum include research needs. She asked about erosion along the Old River shoreline at Perdido Key State Park. Anne Harvey replied that erosion is minimal. Ms. Bachant-Brown expressed her support for the Division’s efforts to control beach access at Perdido Key. For the Tarkiln Bayou management plan, she agreed with the “preserve” designation and the low level of development proposed. She also agreed that a boat ramp at Tarkiln Bayou Preserve is not feasible and suggested a partnership with the Navy to make their adjacent boat ramp available to the public. Chuck Brevik responded that the Navy is generally opposed to public use of Blue Angel Recreation Area and is opposed to a new ramp at the state park. Mark Gibson replied that a dialogue would need to be initiated between the Navy and the County to discuss this possibility.

Jim Veal (Friends of the Perdido Pitcher Plant Prairie) commended the partners for their efforts to help protect these lands. He requested that the plans contain specificity on the timing of prescribed fires. He proposed limiting access and development at Tarkiln Bayou Preserve. He recommended improving the existing trailhead and having visitors hike to the shoreline instead of developing a road. In response, Lew Scruggs discussed the Division’s role of providing recreation opportunities, the conceptual plans for the Tarkiln peninsula, and explained the reality of the carrying capacity listed in the plan. Mr. Veal supported primitive camping as long as there is sufficient buffer from the shoreline. He stated that boating to DuPont Point is a wonderful experience and does not recommend a boater access dock. He suggested that, if acquired, Bronson Field could support active recreation areas for the park. He suggested coordinating with FDOT to elevate Bauer Road to provide safe crossing for wildlife and recreation users. He criticized the construction of the new sidewalk at Tarkiln Bayou Preserve as not being done sensitively. He asked that consideration be given to changing the name of Tarkiln Bayou Preserve State Park to the Perdido Pitcher Plant Preserve State Park.

Annelise Reunert (Audubon Society) stated she was thrilled to hear support coming from so

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many different groups at this meeting and suggested that it could lead to ecotourism opportunities. She agreed with comments shared by GCPEP and the Friends of the Pitcher Plant Prairie. She observed that the number of pitcher plants have greatly increased in recent years thanks to proper management of the preserve. She asked about Escambia County's effort to develop new boat ramps. She identified the need for a safe crossing of SR 292 from the Chamber of Commerce to the beach dune crossover. She recommended pump-out stations for boats to help protect water quality at the swimming areas and encouraged boater education programs. She commended the state for their quick response to provide beach access following the recent hurricanes and criticized the county for the condition of their beach access areas.

Lance Logan (Park Manager) expressed his appreciation for the input and support from each advisory group member. He discussed the importance of prescribed fires and welcomed phone calls if anyone has questions.

Adam Parden (Florida Division of Forestry) stated that the plans were thorough and encouraged the promotion of fire wise developments. He said DOF would be providing input on the fire plan for these parks.

Chuck Brevik (U.S. Navy) commented that dialogue is ongoing between the Navy and DEP regarding the possibility of transferring a portion of Bronson Field through which an entrance road could be routed. He then stated the Navy would prefer that Tarkiln Bayou Preserve be kept as natural as possible.

Mark Gibson (U.S. Navy) expressed his support for changing the name of the preserve to Perdido Pitcher Plant Preserve State Park. He mentioned his Commanding Officer's support for the Tarkiln Bayou Preserve. He stated support for the prescribed fire program and exotic species removal efforts. He expressed support for live cage trapping of nuisance wildlife and stated that he does not support the use of leg traps and the trapping of red foxes. He commented that the proposed road would bring too many people to the Tarkiln peninsula and the Navy would require security fencing along the northern boundary. In response to earlier comments, he stated that the Navy does not want to open Blue Angel Recreation Area to the public. He requested that the proposed boundary line through Bronson Field, shown on the Conceptual Land Use Plan, be pushed slightly south. He commented that only the eastern ditch along the northern boundary of the Tarkiln peninsula is causing problems in the state park and, therefore, only recommended restoring this ditch and not the western ditch. He recommended that park development at Tarkiln Bayou Preserve be kept minimal and stated that the other two plans look good.

Dave Marnell (Perdido Key Beach Area Chamber of Commerce) asked why the number of seats at the amphitheater was reduced. Lance Logan replied that permitting required the footprint of the building to be reduced, thus the number of seats. Mr. Marnell suggested that the Chamber might be able to help speed up the permitting process. If Bronson Field is acquired, he suggested that the best use of this land would be to address civic needs, such as ball fields. He requested better maintenance of the existing boat ramp at Big Lagoon. Lance Logan responded that the park staff is working to improve the situation by removing sand more frequently. Mr. Marnell suggested that he could help notify the community about plans for prescribed fires. In response to an earlier comment, he stated that the county is working to improve three beach access areas on Perdido Key by July 1, 2006. He expressed his support for considering fishing piers at the parks, where possible. He then asked how exotic animals are trapped. Anne Harvey explained

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the agency guidelines.

Summary of Written Comments

Dr. Kathleen Cantwell (Defenders of Wildlife) provided a list of park-specific comments for each management plan. The following is a summarized version of her comments.

Big Lagoon State Park: Dr. Cantwell stated that the biggest threats to the park appear to be a lack of connectivity to other conservation lands and the alteration of its hydrology. She agreed that prescribed fire, the restoration program and plant/animal inventory are of paramount importance. She supported the reconstruction of the amphitheater/nature center after funding is secured for the plant/animal inventories and the burn program and staffing is obtained to adequately maintain and protect the park. She commented that the normal, historic hydrology should be restored as much as possible but should not include the removal of beavers from the basin swamp. She provided multiple reasons for not removing the beavers. She expressed concern that after expensive building and renovations are done, they will pose a problem for a vigorous burn program. She agreed that bat boxes should be installed before the new amphitheater is built. She encouraged the placement of signage along the sea grass beds as soon as possible as a means of protection. She recommended that the park contact FDOT early in their road improvement planning to coordinate park hydrology solutions. She requested that consideration be given to the niche coyotes fill in the ecosystem before a decision is made about their removal. She encouraged the park to take an active role in local land use planning and discuss potential impacts with their neighbors. She recommended the plan discuss how waste is managed at the park. She suggested that FEMA funds could be used to help with debris removal. She questioned the location of the new amphitheater building near the shoreline. She expressed strong support for paddling improvements and linkage of the park's wastewater to the municipal system. She recommended that the expansion of the boat ramp wait until the wastewater system be connected to municipal sewer.

Perdido Key State Park: Dr. Cantwell agreed with the main objectives of protecting listed species and educating the public, both visitors and neighbors, about their potential impacts. She strongly supported increased staffing to help monitor, educate and enforce these goals.

Tarkiln Bayou Preserve State Park: Dr. Cantwell disagreed with selective timber removal and referenced the foresters' Timber Management Analysis recommendation to use prescribed fire to manage this area. She expressed support for the other restoration plans, prescribed burn program, exotic removal, plant/animal inventories, monitoring of water quality, fencing boundaries and pursuing new acquisitions. She requested that park development wait until adequate staffing is provided. She agreed with using old jeep trails for hiking trails. She asked what happened to the gopher tortoises and suggested that this could be a good reintroduction site for healthy tortoises. She stated that the natural communities described are in good condition and just need a vigorous burn program. She strongly agreed that the park needs at least two full-time staff. She recommended finding

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alternative funding sources to help pursue acquisition of the optimum boundary. She agreed with the conceptual plans to restrict vehicular access to the northwest part of the park and agreed that this area should be the area of developed facilities and to keep facilities away from DuPont Point. However, she does not believe the carrying capacity is realistic without full-time staff support to protect the natural resources. She recommended that the park provide the best available composting toilets or state-of-the-art septic systems that can reduce up to $\frac{3}{4}$ of nitrogen.

Jimmie Jarratt (West Florida Canoe and Kayak Club) requested that “canoeing” be added to page 6, Recreation Goal 1-B of the Big Lagoon plan. He requested information about the proposed primitive campsite at Big Lagoon: facilities, number of people, and reservation process. He also asked if there are plans to provide a canoe launch directly into Tarkiln Bayou. He expressed thanks for all the “efforts in providing canoeing and kayaking access to these wonderful waterways.” In response to his questions, primitive campsites usually accommodate 6 to 8 visitors and typically include a stabilized tent area and a fire ring. In addition, there are no plans for providing a canoe launch into the bayou.

Staff Recommendations

The staff recommends approval of the proposed management plans for Big Lagoon State Park, Perdido Key State Park and Tarkiln Bayou Preserve State Park as presented with the following significant changes:

Prescribed Burns. It is harder every year to burn in these ever sprawling, urbanizing areas. The best we can do is to target a general time of year for planned burns. Park staff will continue to interpret prescribed burning to the adjacent public, and provide notification of our intentions to burn specific areas via the standard “Good Neighbor Letter.”

Timber Removal at Tarkiln Bayou Preserve State Park. Currently, the timber assessment is fairly non-committal as to whether or not we will cut trees in planted areas or not. This is a good thing, since the longer-term results of burning will largely determine whether timber harvest will be necessary. We agree that slash pines, along with longleaf, naturally occur on the property. Therefore, there is not a dire need to remove an off-site species of pine to pave the way for natural community restoration. The main rationale for pine thinning at Tarkiln Bayou Preserve State Park is to restore a more natural (low) pine overstory density in select areas of the preserve that used to be open wet prairies. No single species of pine would be targeted for total eradication from a given restoration zone, only unnaturally high density.

Removal of Beavers at Big Lagoon State Park. As recently as the late 1980s, the park contained two small wet prairies that were characterized by open (treeless) grassy areas with abundant white top and red pitcherplants. Both areas were inundated with standing water from beaver dams, and today are best described as overgrown, titi and bay swamps. The statewide pitcherplant resource management evaluation recommends that at least some small representative example of the former pitcherplant habitat be restored for white-top reintroduction. If beaver activity is still posing a flooding problem in the selected restoration site, then the park will coordinate with Florida Fish and Wildlife Conservation Commission to remove the animals from that immediate area and breach their dams. This should not be interpreted that the park will henceforth remove all beavers from all portions of the park.

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Protection of Seagrass Beds at Big Lagoon State Park. At one time, park staff coordinated with the Office of Coastal and Aquatic Managed Areas (CAMA) to place “no wake” buoys off the park’s eastern shoreline. Park staff will readdress this issue with CAMA and Escambia County’s Division of Marine Resources staff to determine if it is still feasible to place “no wake/seagrass” signs or buoys in the near shore waters off the east beach use area.

Cost Estimates Addendum. The Division is beginning to develop project scopes for hydrological restoration/enhancement work at Tarkiln Bayou Preserve State Park. Cost estimates for restoration and well as the staff hours involved in project research and coordination will be added to the cost addendum.

Regarding the Big Lagoon State Park hydrological research study, the plan describes a very general GIS survey intended to gain a more accurate picture of current surface hydrological regimes and a better understanding of the park’s roll in storm water handling for the immediate area. Such a survey would help guide future restoration. An estimate for this research is already provided in the cost addendum.

The cost estimate for the new amphitheater building was missing from the advisory group draft of the management plan. The cost is estimated at \$1.75 million and will be added to the addenda for Big Lagoon State Park.

Fishing Platform at Big Lagoon State Park. A fishing platform is proposed for the shoreline of Big Lagoon to enhance this recreational opportunity. The recommended location is just to the east of the current boat ramp, an area known to be popular with local fishermen.

Canoe/Kayak Access at Perdido Key State Park. A canoe and kayak launch will be included in the design of the proposed observation and fishing platform on the Old River. A few additional parking spaces will be provided on park property to support this use. Formal consultation with US Fish and Wildlife Service, Florida Fish and Wildlife Conservation Commission, and Escambia County will be required before the parking or ADA trail project could proceed.

Equestrian Use Areas at Tarkiln Bayou Preserve State Park. Many of the facility recommendations shared about the proposed equestrian use areas will be incorporated into the management plan for Tarkiln Bayou Preserve State Park. In addition, park staff will seek additional input from equestrian groups in the future when funding becomes available to develop these use areas.

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Addendum 2—References Cited

Big Lagoon State Park—References Cited

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Big Lagoon State Park—References Cited

Addendum 3—Soil Descriptions

Big Lagoon State Park—Soils Descriptions

Five soil types occur in Big Lagoon State Park. These soil types are: Leon sand, Lakewood sand (level phase), Tidal marsh, Coastal dune land and beach, and Fresh water swamp. These five soil types are described below.

Leon sand: Soils of the Leon series developed from thick beds of unconsolidated sands under the influence of a high water table. These soils have a hardpan layer at depths of less than 30 inches. They are associated with the Plummer, Rutlege, and Klej soils. Leon soils are better drained than Plummer soils and have a considerably lighter colored surface soil than the Rutlege soils. They differ from the Klej soils in having an organic-matter stained pan and in lacking yellow coloring above the pan. The Leon soils are acid throughout the profile. They are low in natural fertility and are not used to produce cultivated crops.

Lakewood Series: Soils of the Lakewood series developed from thick beds of loose sand materials. These soils have light gray surface soil that contains small amounts of organic matter, which give it a salt and pepper appearance. They are associated with soils of the Leon and Lakeland series. They do not have the dark organic matter stained pan present in the Leon soils and are better drained. Between the surface soil and the brownish-yellow sub-layers which begin at 14 to 20 inches, they have a layer of white sand that is not present in the Lakeland soils. Lakewood soils are acid throughout the profile. They are extremely low in natural fertility and contain little organic matter. These soils are excessively drained.

Lakewood sand, level phase: (0 to 2 percent slopes) - This light-colored upland soil occurs only in the southwestern part of the county as long, narrow strips parallel to and adjacent to the coastline. The native vegetation consists of scrub live oak, turkey oak, pricklypear cactus, a few scattered pines, and a sparse growth of grasses. The surface soil varies from light gray to light brownish gray in color and from 4 to 6 inches in thickness. The lower sublayers vary from brownish yellow to reddish yellow in color and in most places are within 14 to 20 inches of the surface.

Tidal Marsh: Tidal marsh consists of areas along the coast that are often covered by salt water or brackish water at high tide. It lies adjacent to bays and lagoons in the southwestern part of the county. These flat or nearly level areas are associated with Coastal dune land and beach; they are only a few feet above sea level. Included with this land are a few tidal flats that are almost barren because they are so salty.

Coastal Dune Land and Beach: This land type is sand deposited by wave action along the coast. Some of it was reworked by winds that drifted it back some distance from the shore and formed a range of low sand dunes. It occurs as long narrow strips along bays, lagoon, and the Gulf of Mexico. Santa Rosa Island and similar larger areas contain many small depressions and ponded areas where water covers the surface many months of the year. In contrast to the white sands that occur throughout the entire profile of the more typical areas, these depressions accumulate a very thin layer of organic matter. Many areas are barren. Those not washed by waves have a sparse growth of plants that are tolerant of salt. A scattering of pine and scrub oak grows along inner dunes.

Fresh Water Swamp: Fresh water swamp consists of naturally wooded areas, all or most of which are covered with water or are saturated throughout the year. The areas contain a

Big Lagoon State Park—Soils Descriptions

mixture of soils and soil materials that vary in color, texture, composition, and thickness of layers. The soil material consists of stratified deposits recently washed from adjacent uplands and so intricately mixed that separation is not feasible. In some places the surface materials resemble those of Rutlege and Plummer sand. In many places organic matter of a varying thickness accumulates in the surface soil. A few areas of organic soils that resemble Pamlico muck have been included with this land type. The largest and most typical areas of fresh water swamp are in the southwestern part of the county (Carlisle).

Addendum 4—Plant And Animal List

Big Lagoon State Park—Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
FUNGI		
Octopus stinkhorn	<i>Cathrus columnatus</i>	
Dyemaker's false puffball	<i>Pisolithus tinctoris</i>	
PLANTS		
Southern red maple	<i>Acer rubrum</i>	
Red Buckeye	<i>Aesculus pavia</i>	
Mimosa *	<i>Albizia julibrissin</i>	
Pepper-vine	<i>Ampelopsis arborea</i>	
Bushy beardgrass	<i>Andropogon glomeratus</i>	
Broomsedge	<i>Andropogon virginicus var. virginicus</i>	
Wiregrass	<i>Aristida stricta var. beyrichiana</i>	
Red Chokeberry	<i>Aronia arbutifolia</i>	
Longleaved milkweed	<i>Asclepias longifolia</i>	
Annual saltmarsh aster	<i>Aster subulatus</i>	
White-topped aster	<i>Aster tenuifolius</i>	
Salt bush	<i>Baccharis halimifolia</i>	
White bacopa, White hyssop	<i>Bacopa monnieri</i>	
Yellow buttons	<i>Balduina angustifolia</i>	
Saltwort	<i>Batis maritima</i>	
Sea oxeye	<i>Borrichia frutescens</i>	
Curtiss' sand grass	<i>Calamovilfa curtissii</i>	
Vanilla plant	<i>Carphephorus odoratissimus</i>	
Pignut hickory	<i>Carya glabra</i>	
Partridge-pea	<i>Cassia fasciculata</i>	
Wild sensitive plant	<i>Cassia nictitans</i>	
Spurred butterfly-pea	<i>Centrosema virginianum</i>	
Buttonbush	<i>Cephalanthus occidentalis</i>	
Dune Rosemary	<i>Ceratiola ericoides</i>	
Sand dune spurge	<i>Chamaesyce ammannioides</i>	
Lamb's-quarters	<i>Chenopodium album</i>	
Godfrey's goldenaster	<i>Chrysopsis godfreyi</i>	14
Jamaica swamp sawgrass	<i>Cladium jamaicense</i>	
Coastal sweet Pepperbush	<i>Clethra alnifolia</i>	
Black titi	<i>Cliftonia monophylla</i>	
Tread-softly	<i>Cnidoscopus stimulosus</i>	
Large dayflower	<i>Commelina erecta</i>	
Wild rosemary	<i>Conradina canescens</i>	
Ti plant *	<i>Cordyline terminalis</i>	
Coreopsis	<i>Coreopsis falcata</i>	
Smooth rattlebox	<i>Crotalaria pallida</i>	
Small rattlebox	<i>Crotalaria rotundifolia</i>	
Tropic croton	<i>Croton glandulosus</i>	
Beach Tea	<i>Croton punctatus</i>	
Love vine	<i>Cuscuta pentagona</i>	

Big Lagoon State Park—Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Manyspike flat sedge	<i>Cyperus retrorsus</i>	
Titi	<i>Cyrilla racemiflora</i>	
Cypress witchgrass	<i>Dichantheium dichotomum</i>	
Starrush	<i>Dichromena colorata</i>	
Poor joe	<i>Diodia teres</i>	
Common persimmon	<i>Diospyros virginiana</i>	
Pink sundew	<i>Drosera capillaris</i>	
Southern fleabane	<i>Erigeron quercifolius</i>	
Falsefennel	<i>Eupatorium leptophyllum</i>	
Slender goldenrod	<i>Euthamia minor</i>	
Creeping morning-glory	<i>Evolvulus sericeus</i>	
Carolina fimbry	<i>Fimbristylis caroliniana</i>	
Gardenia *	<i>Gardenia jasminoides</i>	
Twining milkpea	<i>Galactia volubilis</i>	
English ivy *	<i>Hedera helix</i>	
Diamond-flower	<i>Hedyotis nigricans</i>	
Rosemary frostweed	<i>Helianthemum corymbosum</i>	
Camphorweed	<i>Heterotheca subaxillaris</i>	
Roundpod St. John's-wort	<i>Hypericum cistifolium</i>	
St. Peter's-wort	<i>Hypericum crux-andreae</i>	
Pineweeds	<i>Hypericum gentianoides</i>	
Dahoon	<i>Ilex cassine</i>	
Gallberry	<i>Ilex glabra</i>	
Yaupon	<i>Ilex vomitoria</i>	
Hairy indigo *	<i>Indigofera hirsuta</i>	
Cogongrass *	<i>Imperata cylindrica</i>	
Beach morning-glory	<i>Ipomoea imperati</i>	
Railroad vine	<i>Ipomoea pes-caprae</i>	
Saltmarsh morning-glory	<i>Ipomoea sagittata</i>	
Marsh Elder	<i>Iva frutescens</i>	
Seacoast marshelder	<i>Iva imbricata</i>	
Needle rush	<i>Juncus roemerianus</i>	
Southern red cedar	<i>Juniperus siliciola</i>	
Wicky	<i>Kalmia hirsuta</i>	
Virginia saltmarsh mallow	<i>Kosteletzkya virginica</i>	
Lantana *	<i>Lantana camara</i>	
Pepper-grass	<i>Lepidium virginicum</i>	
Bearded sprangle top	<i>Leptochloa fascicularis</i>	
Swamp doghobble	<i>Leucothoe racemosa</i>	
Shortleaf gayfeather	<i>Liatris tenuifolia var. quadriflora</i>	
Gopher apple	<i>Licania michauxii</i>	
Easter lily *	<i>Lilium longiflorum</i>	
Sweetgum	<i>Liquidamber styraciflua</i>	
Border grass *	<i>Liriope muscari</i>	
Japanese honeysuckle *	<i>Lonicera japonica</i>	
Fetterbush	<i>Lyonia lucida</i>	
Southern magnolia	<i>Magnolia grandiflora</i>	

* Non-native Species

Big Lagoon State Park—Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Sweet bay	<i>Magnolia virginiana</i>	
White sweet clover *	<i>Melilotus albus</i>	
Wax myrtle	<i>Myrica cerifera</i>	
White water lily	<i>Nymphaea odorata</i>	
Swamp black gum	<i>Nyssa sylvatica</i> var. <i>biflora</i>	
Seaside evening-primrose	<i>Oenothera humifusa</i>	
Prickly pear	<i>Opuntia humifusa</i>	
Wild olive	<i>Osmanthus americanus</i>	
Cinnamon fern	<i>Osmunda cinnamomea</i>	
Beachgrass	<i>Panicum amarum</i>	
Fall panicgrass	<i>Panicum dichotomiflorum</i>	
Switch grass	<i>Panicum virgatum</i>	
Mudbank crowngrass	<i>Paspalum dissectum</i>	
Vasey grass	<i>Paspalum urvillei</i>	
Red bay	<i>Persea borbonia</i>	
Swamp bay	<i>Persea palustris</i>	
American pokeweed	<i>Phytolacca rigida</i>	
Sand pine	<i>Pinus clausa</i>	
Florida slash pine	<i>Pinus elliottii</i>	
Longleaf pine	<i>Pinus palustris</i>	
Sweetscent	<i>Pluchea odorata</i>	
Showy milkwort	<i>Polygala grandiflora</i>	
Large-leaved jointweed	<i>Polygonella macrophylla</i>	14
Black cherry	<i>Prunus serotina</i>	
Bracken fern	<i>Pteridium aquilinum</i>	
Blackroot	<i>Pterocaulon pycnostachyum</i>	
Mock bishop's weed	<i>Ptilimnium capillaceum</i>	
Chapman's oak	<i>Quercus chapmanii</i>	
Scrub live oak	<i>Quercus geminata</i>	
Turkey oak	<i>Quercus laevis</i>	
Laurel oak	<i>Quercus laurifolia</i>	
Dwarf live oak	<i>Quercus margarette</i>	
Myrtle oak	<i>Quercus myrtifolia</i>	
Water oak	<i>Quercus nigra</i>	
Live oak	<i>Quercus virginiana</i>	
West Indian meadowbeauty	<i>Rhexia cubensis</i>	
Winged sumac	<i>Rhus copallinum</i>	
Sand blackberry	<i>Rubus cuneifolius</i>	
Southern dewberry	<i>Rubus trivialis</i>	
Hastate-leaved dock	<i>Rumex hastatulus</i>	
White sabatia	<i>Sabatia brevifolia</i>	
Lanceleaf arrowhead	<i>Sagittaria lancifolia</i>	
Sagotia	<i>Sagotia triflora</i>	
Carolina willow	<i>Salix caroliniana</i>	
Chinese tallow *	<i>Sapium sebiferum</i>	
White-top pitcher plant	<i>Sarracenia leucophylla</i> (extirpated)	25
Sweet or red pitcher plant	<i>Sarracenia rubra</i> (extirpated)	25

* Non-native Species

Big Lagoon State Park—Plants

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for designated species)
Saw palmetto	<i>Serenoa repens</i>	
Bladderpod	<i>Sesbania vesicaria</i>	
Shoreline seapurslane	<i>Sesuvium portulacastrum</i>	
Knotroot foxtail	<i>Setaria geniculata</i>	
Heartleaf sida	<i>Sida cordifolia</i>	
Earleaf greenbrier	<i>Smilax auriculata</i>	
Saw greenbrier	<i>Smilax bona-nox</i>	
Cat greenbrier	<i>Smilax glauca</i>	
Bamboovine	<i>Smilax laurifolia</i>	
Sarsaparilla vine	<i>Smilax pumila</i>	
Common nightshade	<i>Solanum americanum</i>	
Black nightshade	<i>Solanum nigrescens</i>	
Seaside goldenrod	<i>Solidago sempervirens</i>	
Saltmarsh cordgrass	<i>Spartina alterniflora</i>	
Marshhay cordgrass	<i>Spartina patens</i>	
Gulf cordgrass	<i>Spartina spartinae</i>	
Smutgrass *	<i>Sporobolus indicus</i>	
Virginia dropseed	<i>Sporobolus virginicus</i>	
Florida betony	<i>Sachys floridana</i>	
St. Augustine grass	<i>Stenotaphrum secundatum</i>	
Queen's delight	<i>Stillingia sylvatica var. tenuis</i>	
Spanish-moss	<i>Tillandsia usneoides</i>	
Eastern poison ivy	<i>Toxicodendron radicans</i>	
Common cattail	<i>Typha latifolia</i>	
Sea oats	<i>Uniola paniculata</i>	
Little floating bladderwort	<i>Utricularia radiata</i>	
Sparkleberry	<i>Vaccinium arboreum</i>	
Small-leaf highbush blueberry	<i>Vaccinium cf. elliotii</i>	
Brazilian vervain *	<i>Verbena brasiliensis</i>	
Frostweed	<i>Verbesina virginica</i>	
Ironweed	<i>Vernonia blodgettii</i>	
Summer grape	<i>Vitis aestivalis</i>	
Chinese wisteria *	<i>Wisteria sinensis</i>	
Adam's needle	<i>Yucca filamentosa</i>	
Spanish bayonet	<i>Yucca aloifolia</i>	
Hercules' club	<i>Zanthoxylum clava-herculis</i>	

Big Lagoon State Park—Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
ODONATA		
Great blue skimmer	<i>Libellula vibrans</i>	
LEPIDOPTERA		
Gulf fritillary	<i>Agraulis vanillae</i>	
Monarch	<i>Danus plexippus</i>	
Cecropia moth	<i>Hyalophora cecropia</i>	
Viceroy	<i>Limentis archippus</i>	
Palemedes swallowtail	<i>Papilio palamedes</i>	
Long-tailed skipper	<i>Urbanus proteus</i>	
Southern dogface	<i>Zerene cesonia</i>	
AMPHIBIANS		
Florida cricket frog	<i>Acris gryllus dorsalis</i>	8,41
Oak toad	<i>Bufo quercicus</i>	8,14
Southern toad	<i>Bufo terrestris</i>	8,14,41
Squirrel treefrog	<i>Hyla squirella</i>	8,41
Green treefrog	<i>Hyla cinerea</i>	8,41
Southern spring peeper	<i>Hyla crucifer</i>	41
Southern chorus frog	<i>Pseudacris nigrita</i>	41
Pig frog	<i>Rana grylio</i>	81
Southern leopard frog	<i>Rana sphenoccephala</i>	14,81
REPTILES		
Florida cottonmouth	<i>Agkistrodon piscivorus conanti</i>	25,41,63,81
American alligator	<i>Alligator mississippiensis</i>	81
Green anole	<i>Anolis carolinensis carolinensis</i>	8,14,25,41,81,82
Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>	14
Southern black racer	<i>Coluber constrictor priapus</i>	8,14
Eastern diamondback rattlesnake	<i>Crotalus adamanteus</i>	8,14
Corn snake	<i>Elaphe guttata guttata</i>	8,14
Five-lined skink	<i>Eumeces fasciatus</i>	8,14
Southeastern Five-lined skink	<i>Eumeces inexpectatus</i>	8,14
Broad-headed skink	<i>Eumeces laticeps</i>	8,14
Eastern mud snake	<i>Farancia abacura abacura</i>	
Gopher tortoise	<i>Gopherus polyphemus</i>	8,14
Tropical house gecko *	<i>Hemidactylus mabouia</i>	59
Eastern hognose snake	<i>Heterodon platyrhinos</i>	8,14
Ornate diamondback terrapin	<i>Malaclemys terrapin</i>	81
Eastern coachwhip	<i>Masticophis flagellum</i>	8,41
Eastern coral snake	<i>Micrurus fulvius</i>	8,41
Banded water snake	<i>Nerodia fasciata fasciata</i>	81
Gulf salt marsh snake	<i>Nerodia clarkii clarkii</i>	63

* Non-native Species

Big Lagoon State Park—Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
Brown water snake	<i>Nerodia taxispilota</i>	81
Eastern slender glass lizard	<i>Ophisaurus attenuatus longicaudus</i>	8,14,41
Eastern glass lizard	<i>Ophisaurus ventralis</i>	8,14,41
Texas horned lizard *	<i>Phrynosoma cornutum</i>	8,14
Southern Fence Lizard	<i>Sceloporus undulatus</i>	8,14
Dusky pygmy rattlesnake	<i>Sistrurus miliarius</i>	8,14
Gulf coast box turtle	<i>Terrapene carolina</i>	25,81

BIRDS

Common loon	<i>Gavia immer</i>	
Horned grebe	<i>Podiceps auritus</i>	63,81
Pied-billed grebe	<i>Podilymbus podiceps</i>	63,81
American white pelican	<i>Pelecanus erythrorhynchos</i>	63,81
Eastern brown pelican	<i>Pelecanus occidentalis carolinensis</i>	63,81
Northern gannet	<i>Morus bassanus</i>	
Double-crested cormorant	<i>Phalacrocorax auritus</i>	63,81
Anhinga	<i>Anhinga anhinga</i>	63,81
Magnificent frigatebird	<i>Fregata magnificens</i>	OF
Great blue heron	<i>Ardea herodias</i>	63,81
Green heron	<i>Butorides virescens</i>	81
Cattle egret	<i>Bubulcus ibis</i>	81
Little blue heron	<i>Egretta caerulea</i>	63,81
Great Egret	<i>Casmerodius albus</i>	63,81
American bittern	<i>Botaurus lentiginosus</i>	63
Mallard	<i>Anas platyrhynchos</i>	81
Wood duck	<i>Aix sponsa</i>	81
Redhead	<i>Aythya americana</i>	81
Ring-necked duck	<i>Aythya collaris</i>	81
Lesser scaup	<i>Aythya affinis</i>	81
Bufflehead	<i>Bucephala albeola</i>	63,81
Common merganser	<i>Mergus merganser</i>	63,81
Red-breasted merganser	<i>Mergus serrator</i>	63,81
Hooded merganser	<i>Lophodytes cucullatus</i>	
Turkey vulture	<i>Cathartes aura</i>	OF
Black vulture	<i>Coragyps atratus</i>	OF
Sharp-shinned hawk	<i>Accipiter striatus</i>	OF
Cooper's hawk	<i>Accipiter cooperii</i>	OF
Red-tailed hawk	<i>Buteo jamaicensis</i>	OF
Red-shouldered hawk	<i>Buteo lineatus</i>	OF
Southeastern American kestrel	<i>Falco sparvius paulus</i>	OF
Merlin	<i>Falco columbarius</i>	8,14
Osprey	<i>Pandion haliaetus</i>	63
Bald eagle	<i>Haliaeetus leucocephalus</i>	OF
Great horned owl	<i>Bubo virginianus</i>	8,14
Northern bobwhite	<i>Colinus virginianus</i>	8,41
King rail	<i>Rallus elegans</i>	63

* Non-native Species

Big Lagoon State Park—Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
Clapper rail	<i>Rallus longirostris</i>	63
Purple gallinule	<i>Porphyryla martinica</i>	81
Common moorhen	<i>Gallinula chloropus</i>	81
American coot	<i>Fulica americana</i>	81
Semipalmated plover	<i>Charadrius semipalmatus</i>	63,81
Killdeer	<i>Charadrius vociferus</i>	63,81
Black-bellied plover	<i>Pluvialis squatarola</i>	63,81
American woodcock	<i>Scolopax minor</i>	8,41
Common snipe	<i>Gallinago gallinago</i>	8,41,63
Sanderling	<i>CCalidris alba</i>	
Spotted sandpiper	<i>Actitis macularia</i>	63
Solitary sandpiper	<i>Tringa solitaria</i>	63
Ruddy turnstone	<i>Arenaria interpres</i>	
Willet	<i>Catoptrophorus semipalmatus</i>	63
Dunlin	<i>Calidris alpina</i>	63
Herring gull	<i>Larus argentatus</i>	63,81
Ring-billed gull	<i>Larus delawarensis</i>	63,81
Laughing gull	<i>Larus atricilla</i>	63,81
Bonaparte's gull	<i>Larus philadelphia</i>	63
Least tern	<i>Sterna antillarum</i>	63
Caspian tern	<i>Sterna caspia</i>	63
Forsters' tern	<i>Sterna forsteri</i>	
Common tern	<i>Sterna hirundo</i>	63
Royal tern	<i>Sterna maxima</i>	63
Sandwich tern	<i>Sterna sandvicensis</i>	63
Black tern	<i>Chlidonias niger</i>	63
Black skimmer	<i>Rynchops niger</i>	63
White-crowned pigeon	<i>Columba leucocephala</i>	81,82
Mourning dove	<i>Zenaida macroura</i>	8,41, 81, 82
Common ground-dove	<i>Columbina passerina</i>	8,41, 81, 82
Yellow-billed cuckoo	<i>Coccyzus americanus</i>	8,41,63
Eastern screech-owl	<i>Otus asio</i>	8,41
Chuck-will's-widow	<i>Caprimulgus carolinensis</i>	8,14,41
Common nighthawk	<i>Chordeiles minor</i>	8,41
Chimney swift	<i>Chaetura pelagica</i>	OF
Ruby-throated hummingbird	<i>Archilochus colubris</i>	OF
Belted kingfisher	<i>Ceryle alcyon</i>	63
Northern flicker	<i>Colaptes auratus</i>	8
Pileated woodpecker	<i>Dryocopus pileatus</i>	8,41
Red-bellied woodpecker	<i>Melanerpes carolinus</i>	8,41
Hairy woodpecker	<i>Picoides vilosus</i>	8,14
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	8,41
Eastern kingbird	<i>Tyrannus tyrannus</i>	OF
Great crested flycatcher	<i>Myiarchus crinitus</i>	8,41
Eastern phoebe	<i>Sayornis phoebe</i>	8,41
Tree swallow	<i>Tachycineta bicolor</i>	OF
Purple martin	<i>Progne subis</i>	OF

* Non-native Species

Big Lagoon State Park—Animals

Common Name	<i>Scientific Name</i>	Primary Habitat Codes (for all species)
Blue jay	<i>Cyanocitta cristata</i>	8,14,41,81
Fish crow	<i>Corvus ossifragus</i>	63
Carolina chickadee	<i>Poecile carolinensis</i>	8,14
Tufted titmouse	<i>Parus bicolor</i>	8,41
Brown-headed nuthatch	<i>Sitta pusilla</i>	8
House wren	<i>Troglodytes aedon</i>	
Carolina wren	<i>Thryothorus ludovicianus</i>	8
Marsh wren	<i>Cistothorus palustris</i>	63
Eastern bluebird	<i>Sialia sialis</i>	
Northern mockingbird	<i>Mimus polyglottos</i>	All
Gray catbird	<i>Dumetella carolinensis</i>	81
Brown thrasher	<i>Toxostoma rufum</i>	81
American robin	<i>Turdus migratorius</i>	8,41,81
Wood thrush	<i>Hylocichla mustelina</i>	8
Blue-gray gnatcatcher	<i>Polioptila caerulea</i>	8,41
Golden-crowned kinglet	<i>Regulus satrapa</i>	8,41
Ruby-crowned kinglet	<i>Regulus calendula</i>	8,41
Cedar waxwing	<i>Bombycilla cedrorum</i>	OF
Loggerhead shrike	<i>Lanius ludovicianus</i>	8,41
White-eyed vireo	<i>Vireo griseus</i>	8,41
Red-eyed vireo	<i>Vireo olivaceus</i>	8,41
Black and white warbler	<i>Mniotilta varia</i>	8
Prothonotary warbler	<i>Protonotaria citrea</i>	8,41
Northern parula	<i>Parula americana</i>	8,41
Yellow-rumped warbler	<i>Dendroica coronata</i>	14,41
Pine warbler	<i>Dendroica pinus</i>	8
Palm warbler	<i>Dendroica palmarum</i>	41
Common yellowthroat	<i>Geothlypis trichas</i>	8,41
Hooded warbler	<i>Wilsonia citrina</i>	8,41
Eastern meadowlark	<i>Sturnella magna</i>	8,14,41,81
European starling	<i>Sturnus vulgaris</i>	59
Red-winged blackbird	<i>Agelaius phoeniceus</i>	63
Boat-tailed grackle	<i>Quiscalus major</i>	63, 81
Common grackle	<i>Quiscalus quiscula</i>	63, 81
Brown-headed cowbird *	<i>Molothrus ater</i>	81
Northern cardinal	<i>Cardinalis cardinalis</i>	8,41
Indigo bunting	<i>Passerina cyanea</i>	81
Eastern towhee	<i>Pipilo erythrophthalmus</i>	8,41
House sparrow *	<i>Passer domesticus</i>	59
Savannah sparrow	<i>Passerculus sandwichensis</i>	8, 81
Field sparrow	<i>Spizella pusilla</i>	8, 81
White-throated sparrow	<i>Zonotrichia albicollis</i>	8,41,81
Swamp sparrow	<i>Melospiza georgiana</i>	81
American goldfinch	<i>Carduelis tristis</i>	8,41

Big Lagoon State Park—Animals

Common Name	Scientific Name	Primary Habitat Codes (for all species)
MAMMALS		
Big brown bat	<i>Eptesicus fuscus</i>	
Beaver	<i>Castor canadensis</i>	25,81
Virginia opossum	<i>Didelphis virginiana</i>	25,41,81
Eastern mole	<i>Scalopus aquaticus</i>	8,81
Marsh rabbit	<i>Sylvilagus palustris</i>	25,41,63
Gray squirrel	<i>Sciurus carolinensis</i>	8, 81, 82
Cotton mouse	<i>Peromyscus gossypinus</i>	8,14
Hispid cotton rat	<i>Sigmodon hispidus</i>	8
Gray fox	<i>Urocyon cinereoargenteus</i>	8,41
Raccoon	<i>Procyon lotor</i>	8,25,41,81
Striped skunk	<i>Mephitis mephitis</i>	8,41
White-tailed deer	<i>Odocoileus virginianus</i>	8,14,41

Habitat Codes

Terrestrial

1. Beach Dune
2. Bluff
3. Coastal Berm
4. Coastal Rock Barren
5. Coastal Strand
6. Dry Prairie
7. Maritime Hammock
8. Mesic Flatwoods
9. Mesic Hammock
10. Coastal Grasslands
11. Pine Rockland
12. Prairie Hammock
13. Rockland Hammock
14. Sandhill
15. Scrub
16. Scrubby Flatwoods
17. Shell Mound
18. Sinkhole
19. Slope Forest
20. Upland Glade
21. Upland Hardwood Forest
22. Upland Mixed Forest
23. Upland Pine Forest
24. Xeric Hammock

Palustrine

25. Basin Marsh
26. Basin Swamp
27. Baygall
28. Bog
29. Bottomland Forest
30. Coastal Interdunal Swale
31. Depression Marsh
32. Dome
33. Floodplain Forest
34. Floodplain Marsh
35. Floodplain Swamp
36. Freshwater Tidal Swamp
37. Hydric Hammock
38. Marl Prairie
39. Seepage Slope
40. Slough
41. Strand Swamp
42. Swale
43. Wet Flatwoods
44. Wet Prairie

Lacustrine

45. Clastic Upland Lake
46. Coastal Dune Lake
47. Coastal Rockland Lake
48. Flatwood/Prairie Lake
49. Marsh Lake
50. River Floodplain Lake
51. Sandhill Upland Lake
52. Sinkhole Lake
53. Swamp Lake

Riverine

54. Alluvial Stream
55. Blackwater Stream
56. Seepage Stream
57. Spring-Run Stream

Estuarine

58. Estuarine Algal Bed
59. Estuarine Composite Substrate
60. Estuarine Consolidated Substrate
61. Estuarine Coral Reef
62. Estuarine Grass Bed
63. Estuarine Mollusk Reef
64. Estuarine Octocoral Bed
65. Estuarine Sponge Bed
66. Estuarine Tidal Marsh
67. Estuarine Tidal Swamp
68. Estuarine Unconsolidated Substrate
69. Estuarine Worm Reef

Marine

70. Marine Algal Bed
71. Marine Composite Substrate
72. Marine Consolidated Substrate
73. Marine Coral Reef
74. Marine Grass Bed
75. Marine Mollusk Reef
76. Marine Octocoral Bed
77. Marine Sponge Bed
78. Marine Tidal Marsh
79. Marine Tidal Swamp
80. Marine Unconsolidated Substrate
81. Marine Worm Reef

Subterranean

82. Aquatic Cave
83. Terrestrial Cave

Miscellaneous

84. Ruderal
85. Developed

MTC Many Types of Communities

OF Over Flying

Habitat Codes

Addendum 5—Designated Species List

Rank Explanations For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

The Nature Conservancy and the Natural Heritage Program Network (of which FNAI is a part) define an element as any exemplary or rare component of the natural environment, such as a species, natural community, bird rookery, spring, sinkhole, cave, or other ecological feature. An element occurrence (EO) is a single extant habitat that sustains or otherwise contributes to the survival of a population or a distinct, self-sustaining example of a particular element.

Using a ranking system developed by The Nature Conservancy and the Natural Heritage Program Network, the Florida Natural Areas Inventory assigns two ranks to each element. The global rank is based on an element's worldwide status; the state rank is based on the status of the element in Florida. Element ranks are based on many factors, the most important ones being estimated number of Element occurrences, estimated abundance (number of individuals for species; area for natural communities), range, estimated adequately protected EOs, relative threat of destruction, and ecological fragility.

Federal and State status information is from the U.S. Fish and Wildlife Service; and the Florida Game and Freshwater Fish Commission (animals), and the Florida Department of Agriculture and Consumer Services (plants), respectively.

FNAI GLOBAL RANK DEFINITIONS

- G1 = Critically imperiled globally because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- G2 = Imperiled globally because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- G3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- G4 = apparently secure globally (may be rare in parts of range)
- G5 = demonstrably secure globally
- GH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- GX = believed to be extinct throughout range
- GXC = extirpated from the wild but still known from captivity or cultivation
- G#? = tentative rank (e.g., G2?)
- G#G# = range of rank; insufficient data to assign specific global rank (e.g., G2G3)
- G#T# = rank of a taxonomic subgroup such as a subspecies or variety; the G portion of the rank refers to the entire species and the T portion refers to the specific subgroup; numbers have same definition as above (e.g., G3T1)
- G#Q = rank of questionable species - ranked as species but questionable whether it is species or subspecies; numbers have same definition as above (e.g., G2Q)
- G#T#Q = same as above, but validity as subspecies or variety is questioned.
- GU = due to lack of information, no rank or range can be assigned (e.g., GUT2).
- G? = not yet ranked (temporary)
- S1 = Critically imperiled in Florida because of extreme rarity (5 or fewer occurrences or less than 1000 individuals) or because of extreme vulnerability to extinction due to some natural or man-made factor.
- S2 = Imperiled in Florida because of rarity (6 to 20 occurrences or less than 3000 individuals) or because of vulnerability to extinction due to some natural or man-made factor.
- S3 = Either very rare and local throughout its range (21-100 occurrences or less than 10,000 individuals) or found locally in a restricted range or vulnerable to extinction of other factors.
- S4 = apparently secure in Florida (may be rare in parts of range)
- S5 = demonstrably secure in Florida
- SH = of historical occurrence throughout its range, may be rediscovered (e.g., ivory-billed woodpecker)
- SX = believed to be extinct throughout range
- SA = accidental in Florida, i.e., not part of the established biota
- SE = an exotic species established in Florida may be native elsewhere in North America
- SN = regularly occurring, but widely and unreliably distributed; sites for conservation hard to determine
- SU = due to lack of information, no rank or range can be assigned (e.g., SUT2).
- S? = not yet ranked (temporary)
- N = Not currently listed, nor currently being considered for listing, by state or federal agencies.

Rank Explanations For FNAI Global Rank, FNAI State Rank, Federal Status, And State Status

LEGAL STATUS

FEDERAL (Listed by the U. S. Fish and Wildlife Service - USFWS)

- LE = Listed as Endangered Species in the List of Endangered and Threatened Wildlife and Plants under the provisions of the Endangered Species Act. Defined as any species that is in danger of extinction throughout all or a significant portion of its range.
- PE = Proposed for addition to the List of Endangered and Threatened Wildlife and Plants as Endangered Species.
- LT = Listed as Threatened Species. Defined as any species that is likely to become an endangered species within the near future throughout all or a significant portion of its range.
- PT = Proposed for listing as Threatened Species.
- C = Candidate Species for addition to the list of Endangered and Threatened Wildlife and Plants. Defined as those species for which the USFWS currently has on file sufficient information on biological vulnerability and threats to support proposing to list the species as endangered or threatened.
- E(S/A) = Endangered due to similarity of appearance.
- T(S/A) = Threatened due to similarity of appearance.

STATE

Animals (Listed by the Florida Fish and Wildlife Conservation Commission - FFWCC)

- LE = Listed as Endangered Species by the FFWCC. Defined as a species, subspecies, or isolated population which is so rare or depleted in number or so restricted in range of habitat due to any man-made or natural factors that it is in immediate danger of extinction or extirpation from the state, or which may attain such a status within the immediate future.
- LT = Listed as Threatened Species by the FFWCC. Defined as a species, subspecies, or isolated population which is acutely vulnerable to environmental alteration, declining in number at a rapid rate, or whose range or habitat is decreasing in area at a rapid rate and as a consequence is destined or very likely to become an endangered species within the foreseeable future.
- LS = Listed as Species of Special Concern by the FFWCC. Defined as a population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming a threatened species.

Plants (Listed by the Florida Department of Agriculture and Consumer Services - FDACS)

- LE = Listed as Endangered Plants in the Preservation of Native Flora of Florida Act. Defined as species of plants native to the state that are in imminent danger of extinction within the state, the survival of which is unlikely if the causes of a decline in the number of plants continue, and includes all species determined to be endangered or threatened pursuant to the Federal Endangered Species Act of 1973, as amended.
- LT = Listed as Threatened Plants in the Preservation of Native Flora of Florida Act. Defined as species native to the state that are in rapid decline in the number of plants within the state, but which have not so decreased in such number as to cause them to be endangered.

Big Lagoon State Park Designated Species—Plants

Common Name/ Scientific Name	FDACS	<u>Designated Species Status</u> USFWS	FNAI
Godfrey's golden aster <i>Chrysopsis godfreyi</i>	LE		S2,G2
Large-leaved jointweed <i>Polygonella macrophylla</i>	LT		S3,G3
White-top pitcher plant <i>Sarracenia leucophylla</i>	LE		S3,G3
Sweet pitcher plant <i>Sarracenia rubra</i>	LT		S2,G3

Big Lagoon State Park Designated Species—Plants

Common Name/ <i>Scientific Name</i>	FDACS	<u>Designated Species Status</u> USFWS	FNAI
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Big Lagoon State Park Designated Species—Animals

Common Name/ Scientific Name	Designated Species Status		FNAI
	FFWCC	USFWS	
FISH			
Saltmarsh topminnow <i>Fundulus jenkinsi</i>	LS	C	S2,G2
REPTILES			
American alligator <i>Alligator mississippiensis</i>	LS	LT(S/A)	S4,G5
Gopher tortoise <i>Gopherus polyphemus</i>	LS		S3,G3
Diamondback terrapin <i>Malaclemys terrapin</i>			S4,G4
Gulf salt marsh snake <i>Nerodia clarkii clarkii</i>			S3?,G4T3
BIRDS			
Eastern brown pelican <i>Pelecanus occidentalis</i>	LS		S3,G4
Little blue heron <i>Egretta caerulea</i>	LS		S4,G5
Great egret <i>Ardea alba</i>			S4,G5
Southeastern American kestrel <i>Falco sparverius paulus</i>	LT		S3,G5T4
Bald Eagle <i>Haliaeetus leucocephalus</i>	LT		S3, G4
Least tern <i>Sterna antillarum</i>	LT		S3,G4
Royal tern <i>Sterna maxima</i>			S3,G5
Sandwich tern <i>Sterna sandvicensis</i>			S2,G5
Caspian tern <i>Sterna caspia</i>			S2,G5
Black skimmer <i>Rynchops niger</i>	LS		S3,G5
Florida clapper rail <i>Rallus longirostris scottii</i>			S3?,G5T3?
MAMMALS			
Big brown bat <i>Eptesicus fuscus</i>			S3,G5

Big Lagoon State Park Designated Species—Animals

Common Name/ <i>Scientific Name</i>	FFWCC	<u>Designated Species Status</u> USFWS	FNAI
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Addendum 6—Priority Schedule And Cost Estimates

Big Lagoon State Park—Priority Schedule And Cost Estimate

Estimates are developed for the funding and staff resources needed to implement the management plan based on goals, objectives and priority management activities. Funding priorities for all state park management and development activities are reviewed each year as part of the Division's legislative budget process. The Division prepares an annual legislative budget request based on the priorities established for the entire state park system. The Division also aggressively pursues a wide range of other funds and staffing resources, such as grants, volunteers, and partnerships with agencies, local governments and the private sector for supplementing normal legislative appropriations to address unmet needs. The ability of the Division to implement the specific goals, objectives and priority actions identified in this plan will be determined by the availability of funding resources for these purposes.

RESOURCE MANAGEMENT

1. Prescribed fire management plan. District and park staff field/office hours. Estimated Cost: \$2,000
2. Prescribed fire management costs based on prioritized recommendations of the park burn plan. Estimate includes staff hours and equipment purchase/maintenance (Includes planning, burn unit prep., interagency coordination, execution of burns, monitoring and public relations) Estimated Yearly Cost: \$5,000
3. Implementation of Pitcherplant RME recommendations. Estimate includes contracted vegetation reduction and in-kind services and staff hours. Estimated Initial Cost: \$10,000
4. GPS mapping survey of all drainage ditches. Estimate based on park and district staff hours. Estimated Cost: \$1,500
5. Hydrological study to determine storm water impacts and hydrological changes to drainages. Estimate based on agency and park staff hours along with contractual services. Estimated Cost: \$55,000
6. Comprehensive plant survey of the park. Estimate based on contractual services Estimated Cost: \$10,000
7. GPS mapping survey of large-leaved jointweed and Godfrey's golden aster. Estimate based on staff hours. Estimated Cost: \$2,500
8. Routine monitoring of rare plant populations. Estimate based on staff hours and materials. Estimated Yearly Cost: \$1,500
9. GPS mapping survey of all gopher tortoise burrows. Estimate based on staff hours and materials. Estimated Cost: \$1,000
10. Non-indigenous predator control program. Estimate based on DRP contribution to USDA/USFWS predator control program. (District 1 has ~10 coastal parks, \$10,000 contribution / 10 = ~\$1,000) Estimated Yearly Cost: \$1,000
11. Phase 1 Archaeological Survey. Estimated Cost: \$20,000
12. Exotic Plant Removal Program. Estimate based on staff hours needed for yearly surveys, mapping, herbicide/equipment purchase & upkeep, and all removal efforts. Estimated Cost of Contractual Tallow Removal: \$28,000. Estimated Reoccurring Yearly Cost: \$3,000
13. Periodic surface water monitoring (If deemed appropriate by DEP) Estimated Yearly Cost Range to DEP: \$2,500-\$4000
14. Periodic monitoring and protection of marine grass beds (If deemed necessary by CAMA) Estimated Yearly Cost: \$2,500

*** Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.**

Big Lagoon State Park—Priority Schedule And Cost Estimate

- 15. Seasonal shorebird monitoring and posting (If recommended by the FWC) Estimated Yearly Cost: \$1,500
- 16. Replace eastern boundary fenceline. Estimated Cost: \$6,000
- 17. Comprehensive near shore survey of the park waters. Estimate based on contractual services. Estimated Cost: \$3,500
- 18. Survey and remove hurricane debris mainly in park waters and remaining upland sites. Estimated Cost for Contractual Services: \$210,000

Development Area or Facilities	Cost
Amphitheater Building	\$1,750,000.00
Boat Ramp Area	610,000.00
Camping Area.....	370,000.00
Canoe/Kayak Facilities.....	12,800.00
Interpretive Signs	2,000.00
Support Facilities.....	493,000.00
Total with contingency	\$3,819,760.00

* Categories of the uniform cost accounting system not reflected in this addendum, have no schedule or cost associated with them.

Addendum 7—Additional Information

FNAI Descriptions

DHR Cultural Management Statement

1999 Land Management Review Report and Response

Descriptions Of Natural Communities Developed By FNAI

This summary presents the hierarchical classification and brief descriptions of 82 Natural Communities developed by Florida Natural Areas Inventory and identified as collectively constituting the original, natural biological associations of Florida.

A Natural Community is defined as a distinct and recurring assemblage of populations of plants, animals, fungi and microorganisms naturally associated with each other and their physical environment. For more complete descriptions, see Guide to the Natural Communities of Florida, available from Florida Department of Natural Resources.

The levels of the hierarchy are:

Natural Community Category - defined by hydrology and vegetation.

Natural Community Groups - defined by landform, substrate, and vegetation.

Natural Community Type - defined by landform and substrate; soil moisture condition; climate; fire; and characteristic vegetation.

TERRESTRIAL COMMUNITIES

XERIC UPLANDS
COASTAL UPLANDS
MESIC UPLANDS
ROCKLANDS
MESIC FLATLANDS

PALUSTRINE COMMUNITIES

WET FLATLANDS
SEEPAGE WETLANDS
FLOODPLAIN WETLANDS
BASIN WETLANDS

LACUSTRINE COMMUNITIES

RIVERINE COMMUNITIES

SUBTERRANEAN COMMUNITIES

MARINE/ESTUARINE COMMUNITIES

Definitions of Terms Used in Natural Community Descriptions

TERRESTRIAL - Upland habitats dominated by plants which are not adapted to anaerobic soil conditions imposed by saturation or inundation for more than 10% of the growing season.

XERIC UPLANDS - very dry, deep, well-drained hills of sand with xeric-adapted vegetation.

Sandhill - upland with deep sand substrate; xeric; temperate; frequent fire (2-5 years); longleaf pine and/or turkey oak with wiregrass understory.

Scrub - old dune with deep fine sand substrate; xeric; temperate or subtropical; occasional or rare fire (20 - 80 years); sand pine and/or scrub oaks and/or rosemary and lichens.

Xeric Hammock - upland with deep sand substrate; xeric-mesic; temperate or subtropical; rare or no fire; live oak and/or sand live oak and/or laurel oak and/or other oaks, sparkleberry, saw palmetto.

COASTAL UPLANDS - substrate and vegetation influenced primarily by such coastal (maritime) processes as erosion, deposition, salt spray, and storms.

Beach Dune - active coastal dune with sand substrate; xeric; temperate or subtropical; occasional or rare fire; sea oats and/or mixed salt-spray tolerant grasses and herbs.

Coastal Berm - old bar or storm debris with sand/shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; buttonwood, mangroves, and/or mixed halophytic herbs and/or shrubs and trees.

Coastal Grassland - coastal flatland with sand substrate; xeric-mesic; subtropical or temperate;

Descriptions Of Natural Communities Developed By FNAI

occasional fire; grasses, herbs, and shrubs with or without slash pine and/or cabbage palm.

Coastal Rock Barren - flatland with exposed limestone substrate; xeric; subtropical; no fire; algae, mixed halophytic herbs and grasses, and/or cacti and stunted shrubs and trees.

Coastal Strand - stabilized coastal dune with sand substrate; xeric; subtropical or temperate; occasional or rare fire; dense saw palmetto and/or seagrape and/or mixed stunted shrubs, yucca, and cacti.

Maritime Hammock - stabilized coastal dune with sand substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods and/or live oak.

Shell Mound - Indian midden with shell substrate; xeric-mesic; subtropical or temperate; rare or no fire; mixed hardwoods.

MESIC UPLANDS - dry to moist hills of sand with varying amounts of clay, silt or organic material; diverse mixture of broadleaved and needleleaved temperate woody species.

Bluff - steep slope with rock, sand, and/or clay substrate; hydric-xeric; temperate; sparse grasses, herbs and shrubs.

Slope Forest - steep slope on bluff or in sheltered ravine; sand/clay substrate; mesic-hydric; temperate; rare or no fire; magnolia, beech, spruce pine, Shumard oak, Florida maple, mixed hardwoods.

Upland Glade - upland with calcareous rock and/or clay substrate; hydric-xeric; temperate; sparse mixed grasses and herbs with occasional stunted trees and shrubs, e.g., eastern red cedar.

Upland Hardwood Forest - upland with sand/clay and/or calcareous substrate; mesic; temperate; rare or no fire; spruce pine, magnolia, beech, pignut hickory, white oak, and mixed hardwoods.

Upland Mixed Forest - upland with sand/clay substrate; mesic; temperate; rare or no fire; loblolly pine and/or shortleaf pine and/or laurel oak and/or magnolia and spruce pine and/or mixed hardwoods.

Upland Pine Forest - upland with sand/clay substrate; mesic-xeric; temperate; frequent or occasional fire; longleaf pine and/or loblolly pine and/or shortleaf pine, southern red oak, wiregrass.

ROCKLANDS - low, generally flat limestone outcrops with tropical vegetation; or limestone exposed through karst activities with tropical or temperate vegetation.

Pine Rockland - flatland with exposed limestone substrate; mesic-xeric; subtropical; frequent fire; south Florida slash pine, palms and/or hardwoods, and mixed grasses and herbs.

Rockland Hammock - flatland with limestone substrate; mesic; subtropical; rare or no fire; mixed tropical hardwoods, often with live oak.

Sinkhole - karst feature with steep limestone walls; mesic-hydric; subtropical or temperate; no fire; ferns, herbs, shrubs, and hardwoods.

MESIC FLATLANDS - flat, moderately well-drained sandy substrates with admixture of organic material, often with a hard pan.

Dry Prairie - flatland with sand substrate; mesic-xeric; subtropical or temperate; annual or frequent fire; wiregrass, saw palmetto, and mixed grasses and herbs.

Mesic Flatwoods - flatland with sand substrate; mesic; subtropical or temperate; frequent fire; slash pine and/or longleaf pine with saw palmetto, gallberry and/or wiregrass or cutthroat grass understory.

Prairie Hammock - flatland with sand/organic soil over marl or limestone substrate; mesic; subtropical; occasional or rare fire; live oak and/or cabbage palm.

Descriptions Of Natural Communities Developed By FNAI

Scrubby Flatwoods - flatland with sand substrate; xeric-mesic; subtropical or temperate; occasional fire; longleaf pine or slash pine with scrub oaks and wiregrass understory.

PALUSTRINE - Wetlands dominated by plants adapted to anaerobic substrate conditions imposed by substrate saturation or inundation during 10% or more of the growing season. Includes non-tidal wetlands; tidal wetlands with ocean derived salinities less than 0.5 ppt and dominance by salt-intolerant species; small (less than 8 ha), shallow (less than 2 m deep at low water) water bodies without wave-formed or bedrock shoreline; and inland brackish or saline wetlands.

WET FLATLANDS - flat, poorly drained sand, marl or limestone substrates.

Hydric Hammock - lowland with sand/clay/organic soil, often over limestone; mesic-hydric; subtropical or temperate; rare or no fire; water oak, cabbage palm, red cedar, red maple, bays, hackberry, hornbeam, blackgum, needle palm, and mixed hardwoods.

Marl Prairie - flatland with marl over limestone substrate; seasonally inundated; tropical; frequent to no fire; sawgrass, spikerush, and/or mixed grasses, sometimes with dwarf cypress.

Wet Flatwoods - flatland with sand substrate; seasonally inundated; subtropical or temperate; frequent fire; vegetation characterized by slash pine or pond pine and/or cabbage palm with mixed grasses and herbs.

Wet Prairie - flatland with sand substrate; seasonally inundated; subtropical or temperate; annual or frequent fire; maidencane, beakrush, spikerush, wiregrass, pitcher plants, St. John's wort, mixed herbs.

SEEPAGE WETLANDS - sloped or flat sands or peat with high moisture levels maintained by downslope seepage; wetland and mesic woody and/or herbaceous vegetation.

Baygall - wetland with peat substrate at base of slope; maintained by downslope seepage, usually saturated and occasionally inundated; subtropical or temperate; rare or no fire; bays and/or dahoon holly and/or red maple and/or mixed hardwoods.

Seepage Slope - wetland on or at base of slope with organic/sand substrate; maintained by downslope seepage, usually saturated but rarely inundated; subtropical or temperate; frequent or occasional fire; sphagnum moss, mixed grasses and herbs or mixed hydrophytic shrubs.

FLOODPLAIN WETLANDS - flat, alluvial sand or peat substrates associated with flowing water courses and subjected to flooding but not permanent inundation; wetland or mesic woody and herbaceous vegetation.

Bottomland Forest - flatland with sand/clay/organic substrate; occasionally inundated; temperate; rare or no fire; water oak, red maple, beech, magnolia, tuliptree, sweetgum, bays, cabbage palm, and mixed hardwoods.

Floodplain Forest - floodplain with alluvial substrate of sand, silt, clay or organic soil; seasonally inundated; temperate; rare or no fire; diamondleaf oak, overcup oak, water oak, swamp chestnut oak, blue palmetto, cane, and mixed hardwoods.

Floodplain Marsh - floodplain with organic/sand/alluvial substrate; seasonally inundated; subtropical; frequent or occasional fire; maidencane, pickerelweed, sagittaria spp., buttonbush, and mixed emergents.

Floodplain Swamp - floodplain with organic/alluvial substrate; usually inundated; subtropical or temperate; rare or no fire; vegetation characterized by cypress, tupelo, black gum, and/or pop ash.

Freshwater Tidal Swamp - river mouth wetland, organic soil with extensive root mat; inundated with freshwater in response to tidal cycles; rare or no fire; cypress, bays, cabbage palm, gums and/or cedars.

Descriptions Of Natural Communities Developed By FNAI

Slough - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; pop ash and/or pond apple or water lily.

Strand Swamp - broad, shallow channel with peat over mineral substrate; seasonally inundated, flowing water; subtropical; occasional or rare fire; cypress and/or willow.

Swale - broad, shallow channel with sand/peat substrate; seasonally inundated, flowing water; subtropical or temperate; frequent or occasional fire; sawgrass, maidencane, pickerelweed, and/or mixed emergents.

BASIN WETLANDS - shallow, closed basin with outlet usually only in time of high water; peat or sand substrate, usually inundated; wetland woody and/or herbaceous vegetation.

Basin Marsh - large basin with peat substrate; seasonally inundated; temperate or subtropical; frequent fire; sawgrass and/or cattail and/or buttonbush and/or mixed emergents.

Basin Swamp - large basin with peat substrate; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; vegetation characterized by cypress, blackgum, bays and/or mixed hardwoods.

Bog - wetland on deep peat substrate; moisture held by sphagnum mosses, soil usually saturated, occasionally inundated; subtropical or temperate; rare fire; sphagnum moss and titi and/or bays and/or dahoon holly, and/or mixed hydrophytic shrubs.

Coastal Interdunal Swale - long narrow depression wetlands in sand/peat-sand substrate; seasonally inundated, fresh to brackish, still water; temperate; rare fire; graminoids and mixed wetland forbs.

Depression Marsh - small rounded depression in sand substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; frequent or occasional fire; maidencane, fire flag, pickerelweed, and mixed emergents, may be in concentric bands.

Dome Swamp - rounded depression in sand/limestone substrate with peat accumulating toward center; seasonally inundated, still water; subtropical or temperate; occasional or rare fire; cypress, blackgum, or bays, often tallest in center.

LACUSTRINE - Non-flowing wetlands of natural depressions lacking persistent emergent vegetation except around the perimeter.

Clastic Upland Lake - generally irregular basin in clay uplands; predominantly with inflows, frequently without surface outflow; clay or organic substrate; colored, acidic, soft water with low mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Coastal Dune Lake - basin or lagoon influenced by recent coastal processes; predominantly sand substrate with some organic matter; salinity variable among and within lakes, and subject to saltwater intrusion and storm surges; slightly acidic, hard water with high mineral content (sodium, chloride).

Coastal Rockland Lake - shallow basin influence by recent coastal processes; predominantly barren oolitic or Miami limestone substrate; salinity variable among and within lakes, and subject to saltwater intrusion, storm surges and evaporation (because of shallowness); slightly alkaline, hard water with high mineral content (sodium, chloride).

Flatwoods/Prairie Lake - generally shallow basin in flatlands with high water table; frequently with a broad littoral zone; still water or flow-through; sand or peat substrate; variable water chemistry, but characteristically colored to clear, acidic to slightly alkaline, soft to moderately hard water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

Marsh lake - generally shallow, open water area within wide expanses of freshwater marsh; still water

Descriptions Of Natural Communities Developed By FNAI

or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

River Floodplain Lake - meander scar, backwater, or larger flow-through body within major river floodplains; sand, alluvial or organic substrate; colored, alkaline or slightly acidic, hard or moderately hard water with high mineral content (sulfate, sodium, chloride, calcium, magnesium); mesotrophic to eutrophic.

Sandhill Upland Lake - generally rounded solution depression in deep sandy uplands or sandy uplands shallowly underlain by limestone; predominantly without surface inflows/outflows; typically sand substrate with organic accumulations toward middle; clear, acidic moderately soft water with varying mineral content; ultra-oligotrophic to mesotrophic.

Sinkhole Lake - typically deep, funnel-shaped depression in limestone base; occurs in most physiographic regions; predominantly without surface inflows/outflows, but frequently with connection to the aquifer; clear, alkaline, hard water with high mineral content (calcium, bicarbonate, magnesium).

Swamp Lake - generally shallow, open water area within basin swamps; still water or flow-through; peat, sand or clay substrate; occurs in most physiographic regions; variable water chemistry, but characteristically highly colored, acidic, soft water with moderate mineral content (sodium, chloride, sulfate); oligo-mesotrophic to eutrophic.

RIVERINE - Natural, flowing waters from their source to the downstream limits of tidal influence and bounded by channel banks.

Alluvial Stream - lower perennial or intermittent/seasonal watercourse characterized by turbid water with suspended silt, clay, sand and small gravel; generally with a distinct, sediment-derived (alluvial) floodplain and a sandy, elevated natural levee just inland from the bank.

Blackwater Stream - perennial or intermittent/seasonal watercourse characterized by tea-colored water with a high content of particulate and dissolved organic matter derived from drainage through swamps and marshes; generally lacking an alluvial floodplain.

Seepage Stream - upper perennial or intermittent/seasonal watercourse characterized by clear to lightly colored water derived from shallow groundwater seepage.

Spring-run Stream - perennial watercourse with deep aquifer headwaters and characterized by clear water, circumneutral pH and, frequently, a solid limestone bottom.

SUBTERRANEAN - Twilight, middle and deep zones of natural chambers overlain by the earth's crust and characterized by climatic stability and assemblages of troglonec, troglophilic, and troglobitic organisms.

Aquatic Cave - cavernicolous area permanently or periodically submerged; often characterized by troglobitic crustaceans and salamanders; includes high energy systems which receive large quantities of organic detritus and low energy systems.

Terrestrial Cave - cavernicolous area lacking standing water; often characterized by bats, such as *Myotis* spp., and other terrestrial vertebrates and invertebrates; includes interstitial areas above standing water such as fissures in the ceiling of caves.

MARINE/ESTUARINE (The distinction between the Marine and Estuarine Natural Communities is often subtle, and the natural communities types found under these two community categories have the same

Descriptions Of Natural Communities Developed By FNAI

descriptions. For these reasons they have been grouped together.) - Subtidal, intertidal and supratidal zones of the sea, landward to the point at which seawater becomes significantly diluted with freshwater inflow from the land.

Consolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of nonliving compacted or coherent and relatively hard, naturally formed mass of mineral matter (e.g., coquina limerock and relic reefs); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Unconsolidated Substrate - expansive subtidal, intertidal and supratidal area composed primarily of loose mineral matter (e.g., coralgall, gravel, marl, mud, sand and shell); octocorals, sponges, stony corals, nondrift macrophytic algae, blue-green mat-forming algae and seagrasses sparse, if present.

Octocoral Bed - expansive subtidal area occupied primarily by living sessile organisms of the Class Anthozoa, Subclass Octocorallia (e.g., soft corals, horny corals, sea fans, sea whips, and sea pens); sponges, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Sponge Bed - expansive subtidal area occupied primarily by living sessile organisms of the Phylum Porifera (e.g., sheepswool sponge, Florida loggerhead sponge and branching candle sponge); octocorals, stony corals, nondrift macrophytic algae and seagrasses sparse, if present.

Coral Reef - expansive subtidal area with elevational gradient or relief and occupied primarily by living sessile organisms of the Class Hydrozoa (e.g., fire corals and hydrocorals) and Class Anthozoa, Subclass Scleractinia (e.g., stony corals and black corals); includes deepwater bank reefs, fringing barrier reefs, outer bank reefs and patch reefs, some of which may contain distinct zones of assorted macrophytes, octocorals, & sponges.

Mollusk Reef - substantial subtidal or intertidal area with relief from concentrations of sessile organisms of the Phylum Mollusca, Class Bivalvia (e.g., molluscs, oysters, & worm shells); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Worm Reef - substantial subtidal or intertidal area with relief from concentrations of sessile, tubicolous organisms of the Phylum Annelida, Class Polychaeta (e.g., chaetopterids and sabellarids); octocorals, sponges, stony corals, macrophytic algae and seagrasses sparse, if present.

Algal Bed - expansive subtidal, intertidal or supratidal area, occupied primarily by attached thallophytic or mat-forming prokaryotic algae (e.g., halimeda, blue-green algae); octocorals, sponges, stony corals and seagrasses sparse, if present.

Grass Bed - expansive subtidal or intertidal area, occupied primarily by rooted vascular macrophytes, (e.g., shoal grass, halophila, widgeon grass, manatee grass and turtle grass); may include various epiphytes and epifauna; octocorals, sponges, stony corals, and attached macrophytic algae sparse, if present.

Composite Substrate - expansive subtidal, intertidal, or supratidal area, occupied primarily by Natural Community elements from more than one Natural Community category (e.g., Grass Bed and Algal Bed species; Octocoral and Algal Bed species); includes both patchy and evenly distributed occurrences.

Tidal Marsh - expansive intertidal or supratidal area occupied primarily by rooted, emergent vascular macrophytes (e.g., cord grass, needlerush, saw grass, saltwort, saltgrass and glasswort); may include various epiphytes and epifauna.

Tidal Swamp - expansive intertidal and supratidal area occupied primarily by woody vascular macrophytes (e.g., black mangrove, buttonwood, red mangrove, and white mangrove); may include various epiphytes and epifauna.

DEFINITIONS OF TERMS Terrestrial and Palustrine Natural Communities

Physiography

Upland - high area in region with significant topographic relief; generally undulating

Lowland - low area in region with or without significant topographic relief; generally flat to gently sloping

Flatland - generally level area in region without significant topographic relief; flat to gently sloping

Basin - large, relatively level lowland with slopes confined to the perimeter or isolated interior locations

Depression - small depression with sloping sides, deepest in center and progressively shallower towards the perimeter

Floodplain - lowland adjacent to a stream; topography influenced by recent fluvial processes

Bottomland - lowland not on active floodplain; sand/clay/organic substrate

Hydrology

occasionally inundated - surface water present only after heavy rains and/or during flood stages

seasonally inundated - surface water present during wet season and flood periods

usually inundated - surface water present except during droughts

Climatic Affinity of the Flora

tropical - community generally occurs in practically frost-free areas

subtropical - community generally occurs in areas that experience occasional frost, but where freezing temperatures are not frequent enough to cause true winter dormancy

temperate - community generally occurs in areas that freeze often enough that vegetation goes into winter dormancy

Fire

annual fire - burns about every 1-2 years

frequent fire - burns about every 3-7 years

occasional fire - burns about every 8-25 years

rare fire - burns about every 26-100 years

no fire - community develops only when site goes more than 100 years without burning

LATIN NAMES OF PLANTS MENTIONED IN NATURAL COMMUNITY DESCRIPTIONS

anise - *Illicium floridanum*
bays:
swamp bay - *Persea palustris*
gordonia - *Gordonia lasianthus*
sweetbay - *Magnolia virginiana*
beakrush - *Rhynchospora* spp.
beech - *Fagus grandifolia*
blackgum - *Nyssa biflora*
blue palmetto - *Sabal minor*
bluestem - *Andropogon* spp.
buttonbush - *Cephalanthus occidentalis*
cabbage palm - *Sabal palmetto*
cacti - *Opuntia* and *Harrisia* spp.,
predominantly *stricta* and *pentagonus*
cane - *Arundinaria gigantea* or *A. tecta*
cattail - *Typha* spp.
cedars:
red cedar - *Juniperus silicicola*
white cedar - *Chamaecyparis thyoides* or
C. henryi
cladonia - *Cladonia* spp.
cypress - *Taxodium distichum*
dahoon holly - *Ilex cassine*
diamondleaf oak - *Quercus laurifolia*
fire flag - *Thalia geniculata*
Florida maple - *Acer barbatum*
gallberry - *Ilex glabra*
gums:
tupelo - *Nyssa aquatica*
blackgum - *Nyssa biflora*
Ogeechee gum - *Nyssa ogeche*
hackberry - *Celtis laevigata*
hornbeam - *Carpinus caroliniana*
laurel oak - *Quercus hemisphaerica*
live oak - *Quercus virginiana*
loblolly pine - *Pinus taeda*
longleaf pine - *Pinus palustris*
magnolia - *Magnolia grandiflora*
maidencane - *Panicum hemitomon*
needle palm - *Rhapidophyllum hystrix*
overcup oak - *Quercus lyrata*
pickerel weed - *Pontederia cordata* or *P. lanceolata*
pignut hickory - *Carya glabra*
pop ash - *Fraxinus caroliniana*
pond apple - *Annona glabra*
pond pine - *Pinus serotina*
pyramid magnolia - *Magnolia pyramidata*
railroad vine - *Ipomoea pes-caprae*
red cedar - *Juniperus silicicola*
red maple - *Acer rubrum*
red oak - *Quercus falcata*
rosemary - *Ceratiola ericoides*
sagittaria - *Sagittaria lancifolia*
sand pine - *Pinus clausa*
saw palmetto - *Serenoa repens*
sawgrass - *Cladium jamaicensis*
scrub oaks - *Quercus geminata*, *Q. chapmanii*, *Q. myrtifolia*, *Q. inopina*
sea oats - *Uniola paniculata*
seagrape - *Coccoloba uvifera*
shortleaf pine - *Pinus echinata*
Shumard oak - *Quercus shumardii*
slash pine - *Pinus elliotii*
sphagnum moss - *Sphagnum* spp.
spikerush - *Eleocharis* spp.
spruce pine - *Pinus glabra*
St. John's wort - *Hypericum* spp.
swamp chestnut oak - *Quercus prinus*
sweetgum - *Liquidambar styraciflua*
titi - *Cyrilla racemiflora*, and *Cliftonia monophylla*
tuliptree - *Liriodendron tulipifera*
tupelo - *Nyssa aquatica*
turkey oak - *Quercus laevis*
water oak - *Quercus nigra*
waterlily - *Nymphaea odorata*
white cedar - *Chamaecyparis thyoides*
white oak - *Quercus alba*
willow - *Salix caroliniana*
yucca - *Yucca aloifolia*

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A. GENERAL DISCUSSION

Archaeological and historic sites are defined collectively in 267.021(3), F.S., as "historic properties" or "historic resources." They have several essential characteristics that must be recognized in a management program.

First of all, they are a finite and non-renewable resource. Once destroyed, presently existing resources, including buildings, other structures, shipwreck remains, archaeological sites and other objects of antiquity, cannot be renewed or revived. Today, sites in the State of Florida are being destroyed by all kinds of land development, inappropriate land management practices, erosion, looting, and to a minor extent even by well-intentioned professional scientific research (e.g., archaeological excavation). Measures must be taken to ensure that some of these resources will be preserved for future study and appreciation.

Secondly, sites are unique because individually they represent the tangible remains of events that occurred at a specific time and place.

Thirdly, while sites uniquely reflect localized events, these events and the origin of particular sites are related to conditions and events in other times and places. Sites can be understood properly only in relation to their natural surroundings and the activities of inhabitants of other sites. Managers must be aware of this "systemic" character of historic and archaeological sites. Also, it should be recognized that archaeological sites are time capsules for more than cultural history; they preserve traces of past biotic communities, climate, and other elements of the environment that may be of interest to other scientific disciplines.

Finally, the significance of sites, particularly archaeological ones, derives not only from the individual artifacts within them, but equally from the spatial arrangement of those artifacts in both horizontal and vertical planes. When archaeologists excavate, they recover, not merely objects, but also a record of the positions of these objects in relation to one another and their containing matrix (e.g., soil strata). Much information is sacrificed if the so-called "context" of archaeological objects is destroyed or not recovered, and this is what archaeologists are most concerned about when a site is threatened with destruction or damage. The artifacts themselves can be recovered even after a site is heavily disturbed, but the context -- the vertical and horizontal relationships -- cannot. Historic structures also contain a wealth of cultural (socio-economic) data that can be lost if historically sensitive maintenance, restoration or rehabilitation procedures are not implemented, or if they are demolished or extensively altered without appropriate documentation. Lastly, it should not be forgotten that historic structures often have associated potentially significant historic archaeological features that must be considered in land management decisions.

B. STATUTORY AUTHORITY

Chapter 253, Florida Statutes ("State Lands") directs the preparation of "single-use" or "multiple-use" land management plans for all state-owned lands and state-owned sovereignty submerged lands. In this document, 253.034(4), F.S., specifically requires that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites, as well as other fragile resources..."

Chapter 267, Florida Statutes is the primary historic preservation authority of the state. The importance of protecting and interpreting archaeological and historic sites is recognized in 267.061(1)(a), F.S.:The rich and unique heritage of historic properties in this state, representing more than 10,000 years of human presence, is an important legacy to be valued and conserved for present and future generations. The destruction of these nonrenewable historic resources will engender a significant loss to the state's

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quality of life, economy, and cultural environment. It is therefore declared to be state policy to:

1. Provide leadership in the preservation of the state's historic resources; [and]
2. Administer state-owned or state-controlled historic resources in a spirit of stewardship and trusteeship;...

Responsibilities of the Division of Historical Resources in the Department of State pursuant to 267.061(3), F.S., include the following:

1. Cooperate with federal and state agencies, local Governments, and private organizations and individuals to direct and conduct a comprehensive statewide survey of historic resources and to maintain an inventory of such responses.
2. Develop a comprehensive statewide historic preservation plan.
3. Identify and nominate eligible properties to the National Register of Historic Places and otherwise administer applications for listing properties in the National Register of Historic Places.
4. Cooperate with federal and state agencies, local governments, and organizations and individuals to ensure that historic resources are taken into consideration at all levels of planning and development.
5. Advise and assist, as appropriate, federal and state agencies and local governments in carrying out their historic preservation responsibilities and programs.
6. Carry out on behalf of the state the programs of the National Historic Preservation Act of 1966, as amended, and to establish, maintain, and administer a state historic preservation program meeting the requirements of an approved program and fulfilling the responsibilities of state historic preservation programs as provided in subsection 101(b) of that act.
7. Take such other actions necessary or appropriate to locate, acquire, protect, preserve, operate, interpret, and promote the location, acquisition, protection, preservation, operation, and interpretation of historic resources to foster an appreciation of Florida history and culture. Prior to the acquisition, preservation, interpretation, or operation of a historic property by a state agency, the Division shall be provided a reasonable opportunity to review and comment on the proposed undertaking and shall determine that there exists historic authenticity and a feasible means of providing for the preservation, interpretation and operation of such property.
8. Establish professional standards for the preservation, exclusive of acquisition, of historic resources in state ownership or control.
9. Establish guidelines for state agency responsibilities under subsection (2).

Responsibilities of other state agencies of the executive branch, pursuant to 267.061(2), F.S., include:

1. Each state agency of the executive branch having direct or indirect jurisdiction over a proposed state or state-assisted undertaking shall, in accordance with state policy and prior to the approval of expenditure of any state funds on the undertaking, consider the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the National Register of Historic Places. Each such agency shall afford the division a reasonable opportunity to comment with regard to such an undertaking.
2. Each state agency of the executive branch shall initiate measures in consultation with the division to assure that where, as a result of state action or assistance carried out by such agency, a historic property is to be demolished or substantially altered in a way that adversely affects the character, form, integrity, or other qualities that contribute to [the] historical, architectural, or archaeological value of the property, timely steps are taken to determine that no feasible and prudent alternative to the proposed demolition or alteration exists, and, where no such alternative is determined to exist, to assure that timely steps are taken either to avoid or mitigate the adverse effects, or to undertake an appropriate archaeological salvage excavation or other recovery action to document the property as it existed prior to demolition or alteration.
3. In consultation with the division [of Historical Resources], each state agency of the executive branch shall establish a program to locate, inventory, and evaluate all historic properties under the agency's

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ownership or control that appear to qualify for the National Register. Each such agency shall exercise caution to assure that any such historic property is not inadvertently transferred, sold, demolished, substantially altered, or allowed to deteriorate significantly.

4. Each state agency of the executive branch shall assume responsibility for the preservation of historic resources that are owned or controlled by such agency. Prior to acquiring, constructing, or leasing buildings for the purpose of carrying out agency responsibilities, the agency shall use, to the maximum extent feasible, historic properties available to the agency. Each agency shall undertake, consistent with preservation of such properties, the mission of the agency, and the professional standards established pursuant to paragraph (3)(k), any preservation actions necessary to carry out the intent of this paragraph.
5. Each state agency of the executive branch, in seeking to acquire additional space through new construction or lease, shall give preference to the acquisition or use of historic properties when such acquisition or use is determined to be feasible and prudent compared with available alternatives. The acquisition or use of historic properties is considered feasible and prudent if the cost of purchase or lease, the cost of rehabilitation, remodeling, or altering the building to meet compliance standards and the agency's needs, and the projected costs of maintaining the building and providing utilities and other services is less than or equal to the same costs for available alternatives. The agency shall request the division to assist in determining if the acquisition or use of a historic property is feasible and prudent. Within 60 days after making a determination that additional space is needed, the agency shall request the division to assist in identifying buildings within the appropriate geographic area that are historic properties suitable for acquisition or lease by the agency, whether or not such properties are in need of repair, alteration, or addition.
6. Consistent with the agency's mission and authority, all state agencies of the executive branch shall carry out agency programs and projects, including those under which any state assistance is provided, in a manner which is generally sensitive to the preservation of historic properties and shall give consideration to programs and projects which will further the purposes of this section.

Section 267.12 authorizes the Division to establish procedures for the granting of research permits for archaeological and historic site survey or excavation on state-owned or controlled lands, while Section 267.13 establishes penalties for the conduct of such work without first obtaining written permission from the Division of Historical Resources. The Rules of the Department of State, Division of Historical Resources, for research permits for archaeological sites of significance are contained in Chapter 1A-32, F.A.C.

Another Florida Statute affecting land management decisions is Chapter 872, F.S. Section 872.02, F.S., pertains to marked grave sites, regardless of age. Many state-owned properties contain old family and other cemeteries with tombstones, crypts, etc. Section 872.05, F.S., pertains to unmarked human burial sites, including prehistoric and historic Indian burial sites. Unauthorized disturbance of both marked and unmarked human burial site is a felony.

C. MANAGEMENT POLICY

The choice of a management policy for archaeological and historic sites within state-owned or controlled land obviously depends upon a detailed evaluation of the characteristics and conditions of the individual sites and groups of sites within those tracts. This includes an interpretation of the significance (or potential significance) of these sites, in terms of social and political factors, as well as environmental factors. Furthermore, for historic structures architectural significance must be considered, as well as any associated historic landscapes.

Sites on privately owned lands are especially vulnerable to destruction, since often times the economic incentives for preservation are low compared to other uses of the land areas involved. Hence, sites in public ownership have a magnified importance, since they are the ones with the best chance of survival over the long run. This is particularly true of sites that are state-owned or controlled, where the basis of

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management is to provide for land uses that are minimally destructive of resource values.

It should be noted that while many archaeological and historical sites are already recorded within state--owned or controlled--lands, the majority of the uplands areas and nearly all of the inundated areas have not been surveyed to locate and assess the significance of such resources. The known sites are, thus, only an incomplete sample of the actual resources - i.e., the number, density, distribution, age, character and condition of archaeological and historic sites - on these tracts. Unfortunately, the lack of specific knowledge of the actual resources prevents formulation of any sort of detailed management or use plan involving decisions about the relative historic value of individual sites. For this reason, a generalized policy of conservation is recommended until the resources have been better addressed.

The generalized management policy recommended by the Division of Historical Resources includes the following:

1. State land managers shall coordinate all planned activities involving known archaeological or historic sites or potential site areas closely with the Division of Historical Resources in order to prevent any kind of disturbance to significant archaeological or historic sites that may exist on the tract. Under 267.061(1)(b), F.S., the Division of Historical Resources is vested with title to archaeological and historic resources abandoned on state lands and is responsible for administration and protection of such resources. The Division will cooperate with the land manager in the management of these resources. Furthermore, provisions of 267.061(2) and 267.13, F.S., combined with those in 267.061(3) and 253.034(4), F.S., require that other managing (or permitting) agencies coordinate their plans with the Division of Historical Resources at a sufficiently early stage to preclude inadvertent damage or destruction to known or potentially occurring, presently unknown archaeological and historic sites. The provisions pertaining to human burial sites must also be followed by state land managers when such remains are known or suspected to be present (see 872.02 and 872.05, F.S., and 1A-44, F.A.C.)
2. Since the actual resources are so poorly known, the potential impact of the managing agency's activities on historic archaeological sites may not be immediately apparent. Special field survey for such sites may be required to identify the potential endangerment as a result of particular management or permitting activities. The Division may perform surveys, as its resources permit, to aid the planning of other state agencies in their management activities, but outside archaeological consultants may have to be retained by the managing agency. This would be especially necessary in the cases of activities contemplating ground disturbance over large areas and unexpected occurrences. It should be noted, however, that in most instances Division staff's knowledge of known and expected site distribution is such that actual field surveys may not be necessary, and the project may be reviewed by submitting a project location map (preferably a 7.5 minute U.S.G.S. Quadrangle map or portion thereof) and project descriptive data, including detailed construction plans. To avoid delays, Division staff should be contacted to discuss specific project documentation review needs.
3. In the case of known significant sites, which may be affected by proposed project activities, the managing agency will generally be expected to alter proposed management or development plans, as necessary, or else make special provisions to minimize or mitigate damage to such sites.
4. If in the course of management activities, or as a result of development or the permitting of dredge activities (see 403.918(2)(6)a, F.S.), it is determined that valuable historic or archaeological sites will be damaged or destroyed, the Division reserves the right, pursuant to 267.061(1)(b), F.S., to require salvage measures to mitigate the destructive impact of such activities to such sites. Such salvage measures would be accomplished before the Division would grant permission for destruction of the affected site areas. The funding needed to implement salvage measures would be the responsibility of the managing agency planning the site destructive activity. Mitigation of historic structures at a minimum involves the preparation of measured drawings and documentary photographs. Mitigation of archaeological resources involves the excavation, analysis and reporting of the project findings and must be planned to occur sufficiently in advance to avoid project construction delays. If these

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services are to be contracted by the state agency, the selected consultant will need to obtain an Archaeological Research Permit from the Division of Historical Resources, Bureau of Archaeological Research (see 267.12, F.S. and Rules 1A-32 and 1A-46 F.A.C.).

5. For the near future, excavation of non-endangered (i.e., sites not being lost to erosion or development) archaeological site is discouraged. There are many endangered sites in Florida (on both private and public lands) in need of excavation because of the threat of development or other factors. Those within state-owned or controlled lands should be left undisturbed for the present - with particular attention devoted to preventing site looting by "treasure hunters". On the other hand, the archaeological and historic survey of these tracts is encouraged in order to build an inventory of the resources present, and to assess their scientific research potential and historic or architectural significance.
6. The cooperation of land managers in reporting sites to the Division that their field personnel may discover is encouraged. The Division will help inform field personnel from other resource managing agencies about the characteristics and appearance of sites. The Division has initiated a cultural resource management training program to help accomplish this. Upon request the Division will also provide to other agencies archaeological and historical summaries of the known and potentially occurring resources so that information may be incorporated into management plans and public awareness programs (See Management Implementation).
7. Any discovery of instances of looting or unauthorized destruction of sites must be reported to the agent for the Board of Trustees of the Internal Improvement Trust Fund and the Division so that appropriate action may be initiated. When human burial sites are involved, the provisions of 872.02 and 872.05, F. S. and Rule 1A-44, F.A.C., as applicable, must also be followed. Any state agent with law enforcement authority observing individuals or groups clearly and incontrovertibly vandalizing, looting or destroying archaeological or historic sites within state-owned or controlled lands without demonstrable permission from the Division will make arrests and detain those individuals or groups under the provisions of 267.13, 901.15, and 901.21, F.S., and related statutory authority pertaining to such illegal activities on state-owned or controlled lands. County Sheriffs' officers are urged to assist in efforts to stop and/or prevent site looting and destruction.

In addition to the above management policy for archaeological and historic sites on state-owned land, special attention shall be given to those properties listed in the National Register of Historic Places and other significant buildings. The Division recommends that the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (Revised 1990) be followed for such sites.

The following general standards apply to all treatments undertaken on historically significant properties.

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. The historic character of a property shall be retained and preserved. The removal of historic materials or alterations of features and spaces that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a historic property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.
7. Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall

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not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.

8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired. (see Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings [Revised 1990]).

The Division of Historical Resources staff are available for technical assistance for any of the above listed topics. It is encouraged that such assistance be sought as early as possible in the project planning.

D. MANAGEMENT IMPLEMENTATION

As noted earlier, 253.034(4), F.S., states that "all management plans, whether for single-use or multiple-use properties, shall specifically describe how the managing agency plans to identify, locate, protect and preserve, or otherwise use fragile non-renewable resources, such as archaeological and historic sites..." The following guidelines should help to fulfill that requirement.

1. All land managing agencies should contact the Division and send U.S.G.S. 7.5 minute quadrangle maps outlining the boundaries of their various properties.
2. The Division will in turn identify site locations on those maps and provide descriptions for known archaeological and historical sites to the managing agency.
3. Further, the Division may also identify on the maps areas of high archaeological and historic site location probability within the subject tract. These are only probability zones, and sites may be found outside of these areas. Therefore, actual ground inspections of project areas may still be necessary.
4. The Division will send archaeological field recording forms and historic structure field recording forms to representatives of the agency to facilitate the recording of information on such resources.
5. Land managers will update information on recorded sites and properties.
6. Land managers will supply the Division with new information as it becomes available on previously unrecorded sites that their staff locate. The following details the kind of information the Division wishes to obtain for any new sites or structures that the land managers may report:

A. Historic Sites

- (1) Type of structure (dwelling, church, factory, etc.).
- (2) Known or estimated age or construction date for each structure and addition.
- (3) Location of building (identify location on a map of the property, and building placement, i.e., detached, row, etc.).
- (4) General Characteristics: (include photographs if possible) overall shape of plan (rectangle, "L" "T" "H" "U", etc.); number of stories; number of vertical divisions of bays; construction materials (brick, frame, stone, etc.); wall finish (kind of bond, coursing, shingle, etc.); roof shape.
- (5) Specific features including location, number and appearance of:
 - (a) Important decorative elements;
 - (b) Interior features contributing to the character of the building;
 - (c) Number, type, and location of outbuildings, as well as date(s) of construction;

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- (d) Notation if property has been moved;
- (e) Notation of known alterations to building.

B. Archaeological Sites

- (1) Site location (written narrative and mapped location).
 - (2) Cultural affiliation and period.
 - (3) Site type (midden, burial mound, artifact scatter, building rubble, etc.).
 - (4) Threats to site (deterioration, vandalism, etc.).
 - (5) Site size (acreage, square meters, etc.).
 - (6) Artifacts observed on ground surface (pottery, bone, glass, etc.).
 - (7) Description of surrounding environment.
7. No land disturbing activities should be undertaken in areas of known archaeological or historic sites or areas of high site probability without prior review by the Division early in the project planning.
 8. Ground disturbing activities may proceed elsewhere but land managers should stop disturbance in the immediate vicinity of artifact finds and notifies the Division if previously unknown archaeological or historic remains are uncovered. The provisions of Chapter 872, F.S., must be followed when human remains are encountered.
 9. Excavation and collection of archaeological and historic sites on state lands without a permit from the Division are a violation of state law and shall be reported to a law enforcement officer. The use of metal detectors to search for historic artifacts shall be prohibited on state lands except when authorized in a 1A-32, F.A.C., research permit from the Division.
 10. Interpretation and visitation which will increase public understanding and enjoyment of archaeological and historic sites without site destruction or vandalism is strongly encouraged.
 11. Development of interpretive programs including trails, signage, kiosks, and exhibits is encouraged and should be coordinated with the Division.
 12. Artifacts found or collected on state lands are by law the property of the Division. Land managers shall contact the Division whenever such material is found so that arrangements may be made for recording and conservation. This material, if taken to Tallahassee, can be returned for public display on a long term loan.

E. ADMINISTERING AGENCY

Questions relating to the treatment of archaeological and historic resources on state lands may be directed to:

Compliance Review Section
Bureau of Historic Preservation
Division of Historical Resources
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Contact Person

Susan M. Harp
Historic Preservation Planner
Telephone (850) 245-6333
Suncom 205-6333
FAX (850) 245-6437

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**Land Management Review of Big Lagoon State Recreation Area
Escambia County (Lease No. 2977):
February 17, 1999**

Prepared by Division of State Lands Staff

Robert Clark, Program Administrator
William Howell, OMC Manager
Amy Knight, Environmental Specialist

for
the Perdido Key State Recreation Area Review Team

Land Manager:	<u>Division of Recreation and Parks</u>
Area:	<u>700 acres</u>
County:	<u>Escambia</u>
Mngt. Plan Approved:	<u>05/29/97</u>
Mngt. Plan Update Due:	<u>05/29/02</u>

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Management Review Team Members

Agency Represented	Team member appointed	Team member in attendance
DEP/DRP	Mr. John Bente	Mr. John Bente
DEP Northwest District	Mr. Randall Payne	Mr. Randall Payne
DACS/DOF	Mr. Bill Korn	Mr. Bill Korn
GFC	Mr. Earling Hunter	none
Soil and Water Conservation	Ms. Jacqueline Freisinger	Ms. Jacqueline
County Commission	Mr. LaVerne Matheson	Mr. LaVerne Matheson
Conservation Organization	Ms. Tiana Burton (Sierra Club)	Ms. Tiana Burton
Private Land Manager	Mr. Chris Davis	Mr. Chris Davis

Process for Implementing Regional Management Review Teams

Legislative Intent and Guidance:

Chapter 259.036, F. S. was enacted in 1997 to determine whether conservation, preservation, and recreation lands owned by the state Board of Trustees of the Internal Improvement Trust Fund (Board) are being managed properly. It directs the Department of Environmental Protection (DEP) to establish land management review teams to evaluate the extent to which the existing management plan provides sufficient protection to threatened or endangered species, unique or important natural or physical features, geological or hydrological functions, and archaeological features. The teams also evaluate the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices, including public access, are in compliance with the adopted management plan. If a land management plan has not been adopted, the review shall consider the extent to which the land is being managed for the purposes for which it was acquired and the degree to which actual management practices are in compliance with the management policy statement and management prospectus for that property. If the land management review team determines that reviewed lands are not being managed for the purposes for which they were acquired or in compliance with the adopted land management plan, management policy statement, or management prospectus, DEP shall provide the review findings to the Board, and the managing agency must report to the Board its reasons for managing the lands as it has. A report of the review findings are given to the managing agency under review, the Land Acquisition and Management Advisory Council (LAMAC), and to the Division of State Lands. Also, DEP shall report the annual review findings of its land management review teams to the Board no later than the second board meeting in October of each year.

Review Site

The management review of Big Lagoon State Recreation Area considered approximately 700 acres in Escambia County that are managed by DEP/Division of Recreation and Parks. The team evaluated the extent to which current management actions are sufficient, whether the land is being managed for the purpose for which it was acquired, and whether actual management practices, including public access, are in compliance with the management plan. The Division of State Lands approved the management plan on May 29, 1997 and the management plan update is due in May 2002.

Review Team Analysis

The management review checklist was analyzed as follows: The checklist consisted of two parts: a plan review section that answered whether or not the management plan sufficiently addressed protection/restoration/ management needs for a series of items; and a field review section that scored to what extent sufficient management actions were being taken for a series of items. For each item in each section the scores for all team members were averaged. Some items received high scores (≥ 2.5) in the field review, which indicates that exceptional management actions are being taken. These items are

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identified in the checklist results as "Exceptional" and are indicated with a plus (+) in the corresponding checklist. Items for which the average score was low (≤ 0.5 for plan review; ≤ 1.5 for field review) are identified as "Inadequate" in the checklist results, and indicated with a minus (-) in the corresponding checklist.

Review Team Findings

Checklist results

Exceptional management actions

I.A.5	Seagrass beds	Management/protection of the sea grass bed community is excellent.
III.B.3	Restoration: prop scars	The restoration of seagrass beds damaged by prop scars is exceptional.
III.H.1.c	Adjacent property concerns: Neighborhood boats	The potential increase in boat use due to the growth of local residential areas is being addressed effectively by the manager.
III.H.2	Inholdings and additions	The managing agency has done an outstanding job of acquiring significant additions to the property.
III.I.1.a	Waste disposal	Waste disposal facilities are excellent.
III.I.1.b	Sanitary facilities	Public sanitary facilities are excellent.
III.I.2.a	Public access: roads	Public access via roads is excellent.
III.I.2.b	Public access: trails	Trails for public access are outstanding.
III.I.2.c	Public access: parking	Public parking facilities are excellent.
IV.	Education/public outreach	Efforts toward public education and outreach are exceptional.
IV.	Education/Public outreach	Efforts toward public education and outreach are outstanding.

Inadequate items: Plan review

I.A.5	Seagrass beds	Protection/management of seagrass beds should be addressed in the plan update.
I.A.6	Estuarine unconsolidated substrate	Protection/management of the estuarine unconsolidated substrate community should be addressed in the plan update.
I.B.1.b	Listed shorebirds: Monitoring	Monitoring of listed shorebirds should be addressed in the plan update.
I.B.3	Osprey: Protection	Protection of nesting osprey should be addressed in the plan update.

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I.B.3.a	Osprey: Inventory	The inventory of nesting osprey should be addressed in the plan update.
I.B.3.b	Osprey: Monitoring plan update.	Monitoring of nesting osprey should be addressed in the plan update.
I.C.2.b	Cruise's golden aster: addressed in the plan update.	Monitoring of Cruise's golden aster should be Monitoring
I.B.3	Large-leaved jointweed: Protection	Protection of large-leaved jointweed should be addressed in the plan update.
I.B.3.a	Large-leaved jointweed: Inventory	The inventory of large-leaved jointweed should be addressed in the plan update.
I.B.3.b	Large-leaved jointweed: Monitoring	Monitoring of large-leaved jointweed should be addressed in the plan update.
III.B.3 should be	Restoration: prop scars addressed in the plan update.	The restoration of seagrass beds damaged by prop scars
III.E.5.a	Surface water quality addressed in the plan update.	The monitoring of surface water quality should be
III.H.1.a the plan update.	Adj. Property concerns: Residential burn restrictions	The management problems/concerns caused by the residential burn restrictions should be addressed in
III.H.1.b	Adj. Property concerns: Storm water runoff addressed in the plan	The management problems/concerns caused by the storm water runoff from adjacent property should be update.
III.H.1.c	Adjacent property concerns: Neighborhood boats	The management problems/concerns caused by the potential increase in boat use due to the growth of local residential areas should be addressed in the plan update.

Inadequate items: Field review

I.C.1	Pitcher plants: protection	Additional steps should be taken to locate and preserve pitcher plants on the site.
II.A	Cultural resources: survey	A survey of cultural resources on the property should be conducted.
III.I.3.b	Equipment	Additional equipment is needed for resource management.
III.I.4	Staff	Additional seasonal staff are needed for all aspects of property management.
III.I.5.	Funding	Additional funding is needed property management.

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The management plan must include responses to the checklist items that were found to be inadequate.

Is the land being managed for the purpose for which it was acquired?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. All team members agreed that Big Lagoon State Recreation Area is being managed for the purpose for which it was acquired.

Are actual management practices, including public access, in compliance with the management plan?

After completing the checklist, team members were asked to answer “yes” or “no” to this question. All team members agreed that actual management practices, including public access, were in compliance with the management plan for this site.

Memorandum

Florida Department of Environmental Protection

April 16, 1999

TO: Mr. Robert Clark, Program Administrator
Division of State Lands

FROM: Dana C. Bryan, Chief, Bureau of Natural
& Cultural Resources
Albert Gregory, Chief, Office of Park Planning
Division of Recreation and Parks

SUBJECT: Response to Land Management Review (LMR);
Big Lagoon State Recreation Area

The Land Management Review dated March 15, 1999, determined that the management of the Big Lagoon State Recreation Area meets the two tests prescribed by law. The review team concluded that the land is being managed for the purposes for which it was acquired and in accordance with the land management plan.

The following comments are provided by field staff and our offices in response to specific concerns and, where appropriate, recommendations that were included in the LMR. We have identified land management plan revisions and field management actions we plan to take to address the review team's concerns.

Checklist Results - Plan Review:

I.A.5. - Sea grass beds: Agree.
I.A.6. - Estuarine unconsolidated sediments: Agree.
I.B.1.b. - Listed shorebirds, Monitoring: Agree.

The three items above will be addressed in the next updated plan.

I.B.3. - Osprey: Disagree. *
I.B.3.a. - Osprey, Inventory: Disagree. *
I.B.3.b. - Osprey, Monitoring: Disagree. *

*Ospreys are currently tracked by FNAI in this part of the state. Ospreys should be deleted from the designated species list in the plan and do not need to be inventoried or monitored by the park.

I.C.2.b. - Cruise's golden aster, Monitoring: Agree.
I.C.3. - Large-leaved jointweed: Agree.
I.C.3.a. - Large-leaved jointweed, Inventory: Agree.
I.C.3.b. - Large-leaved jointweed, Monitoring: Agree.
III.b.3. - Prop scars in sea grass beds: Agree.
III.E.5.a. - Surface water monitoring, Quality: Agree.
III.H.1.a. - Residential burn restrictions: Agree.
III.H.1.b. - Stormwater runoff: Agree.
III.H.1.c. - Increased local boat use: Agree.

Memorandum, Big Lagoon LMR
April 16, 1999
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The nine items above will be addressed in the next updated plan.

Checklist Results - Field Review:

I.C.1. - Pitcher plants: Agree. We will survey the park for pitcher plants. If any significant pitcher plant populations are found in the park, we will apply appropriate management measures to protect and maintain them as available staff and funding permit.

2.A. - Cultural resource, Survey: Agree. The park will request a cultural resources survey from DHR.

III.I.3.b. - Equipment: Agree. The park acquires new and used equipment as needed relative to other DRP priorities and budgetary limitations

III.I.4. - Staff: Agree. Additional funds will be pursued. Funding is always contingent on DRP and DEP budget resources and priorities and also on legislative action.

III.I.5. - Funding: Agree. Additional funds will be pursued. Funding is always contingent on DRP and DEP budget resources and priorities and also on legislative action.

Recommendations to the managing agency:

1) Consistent source of funding to repair and maintain the facilities: Agree. See comment above under III.I.5.

2) Biological/resource management staff: Agree. See comments above under III.I.4.

Thank you for the opportunity to comment on the LMR.

DCB/AG/mb

cc: Ed Higgins, Chief, Parks District 1

