



BIG CYPRESS NATIONAL PRESERVE – ADDITION

FINAL GENERAL MANAGEMENT PLAN/WILDERNESS STUDY/
OFF-ROAD VEHICLE MANAGEMENT PLAN/ENVIRONMENTAL IMPACT STATEMENT

OCTOBER • 2010



United States Department of the Interior



NATIONAL PARK SERVICE
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, Florida 34141-1000

IN REPLY REFER TO:

October 2010

Dear Friends:

I am very pleased to announce the release of the *Final General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement* for the Addition. It is the culmination of a great deal of time, effort, energy, and input from members of the public; American Indian tribes; other federal, state, and local agencies; and the National Park Service. Please take some time to look it over.

The 147,000 acres of the Addition were added to the Preserve in 1988 but were not included in the planning process for the 1991 *General Management Plan*, which covered only the original Preserve. The planning effort for the Addition began in 1999, and a *Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement* was issued in July 2009.

The *Final General Management Plan* for the Addition includes a preferred alternative that is representative of the extensive civic engagement we all participated in over the past 10 years and follows the intent of the Preserve's enabling legislation. It provides for strong natural and cultural resource protection of this very special resource while at the same time providing for a diversity of recreational opportunities. The National Park Service values the public's interest in continuing to enjoy a meaningful connection with the Preserve, and we look forward to implementing this plan with your support and in the spirit of partnership.

The National Park Service will soon prepare and execute its "Record of Decision" (ROD) for this project, which will be published in the *Federal Register*.

On behalf of the entire National Park Service family, please accept our most sincere gratitude for your commitment and dedication to this process over the past 10 years. It is time now to come together in the work ahead to implement the plan!

Sincerely,

Pedro Ramos
Superintendent

Final
General Management Plan / Wilderness Study / Off-road Vehicle Management Plan /
Environmental Impact Statement
Big Cypress National Preserve Addition
Collier County, Florida

Big Cypress National Preserve was authorized by Congress on October 11, 1974 (Public Law 93-440), with 582,000 acres. That law was amended on April 29, 1988, when Congress passed Public Law 100-301, the Big Cypress National Preserve Addition Act or “Addition Act,” to expand the Preserve by 147,000 acres. This expansion area is referred to as the Addition.

The National Park Service (NPS) finalized a *General Management Plan* for the original Preserve in 1991. That plan contained no guidance for the Addition. The National Park Service began administration of the Addition in 1996. No comprehensive planning effort has been conducted for the Addition. A general management plan is needed to clearly define resource conditions and visitor experiences to be achieved in the Addition. The plan will provide a framework for NPS managers to use when making decisions about how to best protect Addition resources, identify appropriate areas for visitor access and facilities, and determine how the National Park Service will manage its operations.

This plan examines four alternatives for managing the Addition for the next 15 to 20 years. It also analyzes the impacts of implementing each of the alternatives. Alternative A (no action) describes the continuation of existing management and trends and serves as the basis for evaluating the other alternatives. The three action alternatives (Alternative B, the NPS Preferred Alternative, and Alternative F) present a spectrum of off-road vehicle opportunities, proposed wilderness, and visitor facilities.

A Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement was distributed to other agencies, interested organizations, and individuals for their review and comment. Changes and clarifications were made to the plan in response to comments received. Following distribution of the final plan and a 30-day no-action period, a “Record of Decision” may be signed by the Preserve superintendent and the NPS regional director documenting the NPS selection of an alternative for implementation.

For further information on this plan, contact Big Cypress National Preserve headquarters at 33100 Tamiami Trail East, Ochopee, FL 34141-1000, (239) 695-2000.

SUMMARY

INTRODUCTION

Big Cypress National Preserve was authorized by an act of Congress on October 11, 1974, (Public Law 93-440) with a boundary surrounding 582,000 acres. That act was amended on April 29, 1988, when Congress passed the Big Cypress National Preserve Addition Act (Public Law 100-301), hereafter referred to as the Addition Act, to expand the Preserve boundary by about 147,000 acres. The expansion area is referred to as the Addition.

The National Park Service (NPS) finalized a *General Management Plan* for the Preserve in 1991. That plan addressed only the original Preserve and contained no guidance for the Addition.

The National Park Service began administration of the Addition in 1996. The Addition has been closed to public recreational motorized use and hunting since that time; the only public uses that are currently allowed are hiking, camping, bicycling, fishing, and frogging. No comprehensive planning effort has been conducted for the Addition. A plan is needed to clearly define resource conditions and visitor experiences to be achieved in the Addition. The plan will provide a framework for NPS managers to use when making decisions about how to best protect Addition resources, identify appropriate areas for visitor access and facilities, and determine how the National Park Service will manage its operations in the Addition area.

This *Final General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* presents four alternatives, including the National Park Service's preferred alternative, for future management of the Addition. The alternatives, which are based on the Preserve's purpose, significance, and special mandates,

present different ways to manage resources and visitor use and improve facilities and infrastructure in the Addition. The four alternatives include the "no-action" alternative (alternative A), which describes the continuation of current management direction, and three "action" alternatives (alternative B, the preferred alternative, and alternative F).

Additional alternatives (alternatives C, D, and E) and actions were considered. However these alternatives and actions were dismissed from further detailed analysis. These dismissed alternatives and actions are presented, along with the rationale for dismissing them, in the "Alternatives, Including the Preferred Alternative" discussion in chapter 2.

ALTERNATIVE A: THE NO-ACTION ALTERNATIVE (CONTINUE CURRENT MANAGEMENT)

The no-action alternative describes a continuation of existing management and trends in the Addition and provides a baseline for comparison in evaluating the changes and impacts of the other alternatives. The National Park Service would continue to manage the Addition as it is currently being managed. The Addition would remain closed to public recreational motorized use and motorized hunting, and only minor new construction (other than the MM51 and MM63 access points) would be authorized to accommodate visitor access, primarily for hiking and biking. Existing operations and visitor facilities would remain in place. Natural ecological processes would be allowed to occur, and restoration programs would be initiated where necessary. No wilderness would be proposed for designation.

The key impacts of continuing existing management conditions and trends would

SUMMARY

include minor to moderate adverse localized impacts on surface water flow; moderate long-term adverse impacts on visitor use and experience; and minor to moderate impacts on NPS operations and management.

ALTERNATIVE B

The concept for management under alternative B would be to enable visitor participation in a wide variety of outdoor recreational experiences. It would nearly maximize motorized access, provide the least amount of proposed wilderness, and develop limited new hiking-only trails. The entire off-road vehicle (ORV) trail system would be implemented without the benefit of phased establishment and the assessment of monitoring results. New visitor and operations facilities along the I-75 corridor would also be provided.

The key impacts of implementing alternative B would include moderate, long-term, adverse, and mostly localized impacts on surface water flow; long-term, moderate, adverse and potentially Addition-wide impacts on exotic/nonnative plants; long-term, moderate, adverse and mostly localized impacts on (likely to adversely affect) the Florida panther; long-term, minor to moderate, adverse and mostly localized impacts on (likely to adversely affect) the red-cockaded woodpecker; long-term, minor to moderate, adverse and mostly localized impacts on major game species; long-term, moderate, beneficial and Addition-wide impacts on wilderness resources and values; long-term, moderate, and beneficial impacts on visitor use and experience; and long-term, moderate and beneficial and adverse impacts on NPS operations and management.

PREFERRED ALTERNATIVE

The preferred alternative would provide diverse frontcountry and backcountry recreational opportunities, enhance day use

and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. This alternative would provide substantial ORV access, provide a moderate amount of proposed wilderness, provide nonmotorized trail opportunities and new camping opportunities, and develop a partnership approach to visitor orientation. Implementation of the ORV trail system would be phased to ensure protection of sensitive species and the environment. Areas that were found to be eligible for wilderness designation but were not proposed as wilderness would be protected through management zoning that would maintain and protect natural values. New visitor and operations facilities along the I-75 corridor would also be provided.

The key impacts of implementing the preferred alternative would include moderate, long-term, adverse, and mostly localized impacts on surface water flow; long-term, moderate, adverse and potentially Addition-wide impacts on exotic/nonnative plants; long-term, moderate, adverse and mostly localized impacts on (likely to adversely affect) the Florida panther; long-term, minor to moderate, adverse and mostly localized impacts on (likely to adversely affect) the red-cockaded woodpecker; long-term, minor to moderate, adverse and mostly localized impacts on major game species; long-term, moderate, beneficial and Addition-wide impacts on wilderness resources and values; long-term, moderate, and beneficial effects on visitor use and experience; and long-term, moderate, and beneficial and adverse impacts on NPS operations and management.

ALTERNATIVE F

Alternative F would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of

wilderness, no ORV use, and minimal new facilities for visitor contact along I-75.

The key impacts of implementing the alternative F would include minor, beneficial, long-term, and mostly localized impacts on surface water flow; long-term, minor, adverse, and mostly localized impacts on (not likely to adversely affect) the Florida panther; long-term, major, beneficial, and Addition-wide impacts on wilderness resources and values; long-term, minor, beneficial impacts on visitor use and experience; and long-term, moderate and beneficial and adverse impacts on NPS operations and management.

THE NEXT STEPS

This *Final General Management Plan / Wilderness Study / Off-road Vehicle*

Management Plan / Environmental Impact Statement includes comment letters from governmental agencies, any substantive comments on the draft document, and NPS responses to those comments. The final plan also includes changes and clarifications made to the document in response to comments received. Following distribution of the final plan and a 30-day no-action period, a “Record of Decision” may be signed by the Preserve superintendent and the NPS southeast regional director and published in the *Federal Register*. The “Record of Decision” documents the NPS selection of an alternative for implementation. With the signed “Record of Decision,” the plan can then be implemented, depending on funding and staffing. However, a “Record of Decision” does not guarantee funds and staff for implementing the approved plan.

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A GUIDE TO THIS DOCUMENT

This integrated *Final General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* is organized in accordance with the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act, the National Park Service's *Management Policies 2006*, and Director's Order #12 on "Conservation Planning, Environmental Impact Analysis, and Decision Making".

Chapter 1: Introduction sets the framework for the entire document. It describes why the document is being prepared and what needs it must address. Chapter 1 gives guidance for the alternatives that are being considered, which is based on the Addition's legislation, its purpose, the significance of its resources, special mandates and administrative commitments, guiding principles for management, and other planning efforts in the area. The chapter also details the planning opportunities and issues that were raised during public scoping (see inset box below) meetings and initial planning team efforts; the alternatives in the next chapter address these issues and concerns to varying degrees. This chapter concludes with a statement of the scope of the environmental impact analysis — specifically what impact topics were or were not analyzed in detail.

*The primary goal of **scoping** is to identify issues and determine the range of alternatives to be addressed. During scoping, the NPS staff provides an overview of the proposed project, including purpose and need and alternatives. The public is asked to submit preliminary comments, concerns, and suggestions relating to these goals.*

Chapter 2: Alternatives, Including the Preferred Alternative, begins by describing the management zones that would be used to manage the Addition in the future. Alternative A, the no-action alternative (continuation of current management and trends in the Addi-

tion) is described, followed by alternative B, the preferred alternative, and then alternative F. Information on user capacity, adaptive management, ORV administration and management, and wilderness is then presented, which applies to all of the action alternatives. Mitigative measures proposed to minimize or eliminate the impacts of some proposed actions are described just before the discussion of future studies and/or implementation plans that will be needed. The determination of the environmentally preferred alternative is followed by summary tables of the alternative actions and the environmental consequences (based on information in chapter 4) of implementing those alternative actions. The chapter concludes with a discussion of alternatives or actions that were considered but dismissed from detailed evaluation.

Chapter 3: The Affected Environment describes those areas and resources that would be affected by implementing actions in the various alternatives — cultural resources, natural resources, visitor use and experience, the socioeconomic environment, and NPS operations and facilities.

Chapter 4: Environmental Consequences analyzes the impacts of implementing the alternatives on topics described in chapter 3. Methods that were used for assessing the impacts in terms of the intensity, type, and duration of impacts are outlined at the beginning of the chapter.

Chapter 5: Consultation and Coordination describes the history of public and agency coordination during the planning effort and any future compliance requirements; it also lists agencies and organizations who will be receiving copies of the document.

Appendixes, Selected References, a list of **Preparers and Consultants**, and the **Index** are found at the end of the document.

CHAPTER 1



INTRODUCTION

BACKGROUND AND BRIEF DESCRIPTION OF THE ADDITION

Why We Do General Management Planning

The National Parks and Recreation Act of 1978 requires each unit of the National Park Service (NPS) to have a general management plan (GMP), and NPS *Management Policies 2006* states “[t]he Park Service will maintain a general management plan for each unit of the national park system” (2.3.1 General Management Planning). But what is the value, or usefulness, of general management planning?

The purpose of a general management plan is to ensure that a national park system unit has a clearly defined direction for resource preservation and visitor use to best achieve the National Park Service’s mandate to preserve resources unimpaired for the enjoyment of future generations. In addition, general management planning makes the National Park Service more effective, collaborative, and accountable by

- providing a balance between continuity and adaptability in decision making — Defining the desired conditions to be achieved and maintained in a park unit provides a touchstone that allows NPS managers and staff to constantly adapt their actions to changing situations while staying focused on what is most important about the park unit.
- analyzing the park unit in relation to its surrounding ecosystem, cultural setting, and community — This helps NPS managers and staff understand how the park unit can interrelate with neighbors and others in ways that are ecologically, socially, and economically sustainable. Decisions made within such a larger context are more likely to be successful over time.
- affording everyone who has a stake in decisions affecting a park unit an opportunity to be involved in the planning process and to understand the decisions that are made — National park system units are often the focus of intense public interest. Public involvement throughout the planning process provides focused opportunities for NPS managers and staff to interact with the public and learn about public concerns, expectations, and values. Public involvement also provides opportunities for NPS managers and staff to share information about the park unit’s purpose and significance, as well as opportunities and constraints for the management of park unit lands.

The ultimate outcome of general management planning for national park system units is an agreement among the National Park Service, its partners, and the public on why each area is managed as part of the national park system, what resource conditions and visitor experience should exist there, and how those conditions can best be achieved and maintained over time.

BACKGROUND

This *Final General Management Plan / Environmental Impact Statement* presents and analyzes four alternative future directions for the management and use of the Big Cypress National Preserve Addition —hereafter referred to as the Addition. The potential

environmental impacts of all alternatives are also identified and assessed.

General management plans are intended to be long-term documents that establish and articulate a management philosophy and framework for decision-making and problem solving in the parks. This *General*

Management Plan will provide guidance for the Addition for the next 15 to 20 years.

Actions directed by general management plans or in subsequent implementation plans are accomplished over time. Budget, requirements for additional data or regulatory compliance, and competing national park system priorities could determine the timing of many actions. Major or especially costly actions could be implemented 10 or more years into the future.

BRIEF DESCRIPTION OF THE ADDITION

The Addition, located in Collier County, Florida, was established in 1988 (PL 100-301; see appendix A) as part of Big Cypress National Preserve. The Addition is about 147,000 acres and consists of two separate areas — the Northeast Addition and the Western Addition (see Map 1: Region/Vicinity). Most of the lands, about 128,000 acres in the Northeast Addition, are northeast of the original Preserve boundary. The Western Addition is an approximately 1-mile strip of land (approximately 19,000 acres) between State Road 29 (hereafter referred to as SR 29) and the western boundary of the original Preserve. When unspecified, the “Addition” refers to lands in both areas. The Addition includes private lands (inholdings), some of which are exempt from NPS acquisition.

The Addition is part of the Big Cypress Swamp, which covers more than 2,400 square miles of southern Florida. First-time visitors to the area see a flat, wet, primitive land. The area was named Big Cypress because of its extent, not because of the size of its trees, and visitors can travel for miles through an expanse of open prairies dotted with cypress trees, distant pinelands, and tree islands broken at intervals by dark, forested swamps. Wildlife is abundant; great blue herons, kingfishers, and alligators line the roadside canals and give

visitors an exciting visual focus. On the whole, first impressions are likely to be of an inhospitable land, with no firm ground beyond the highway shoulders.

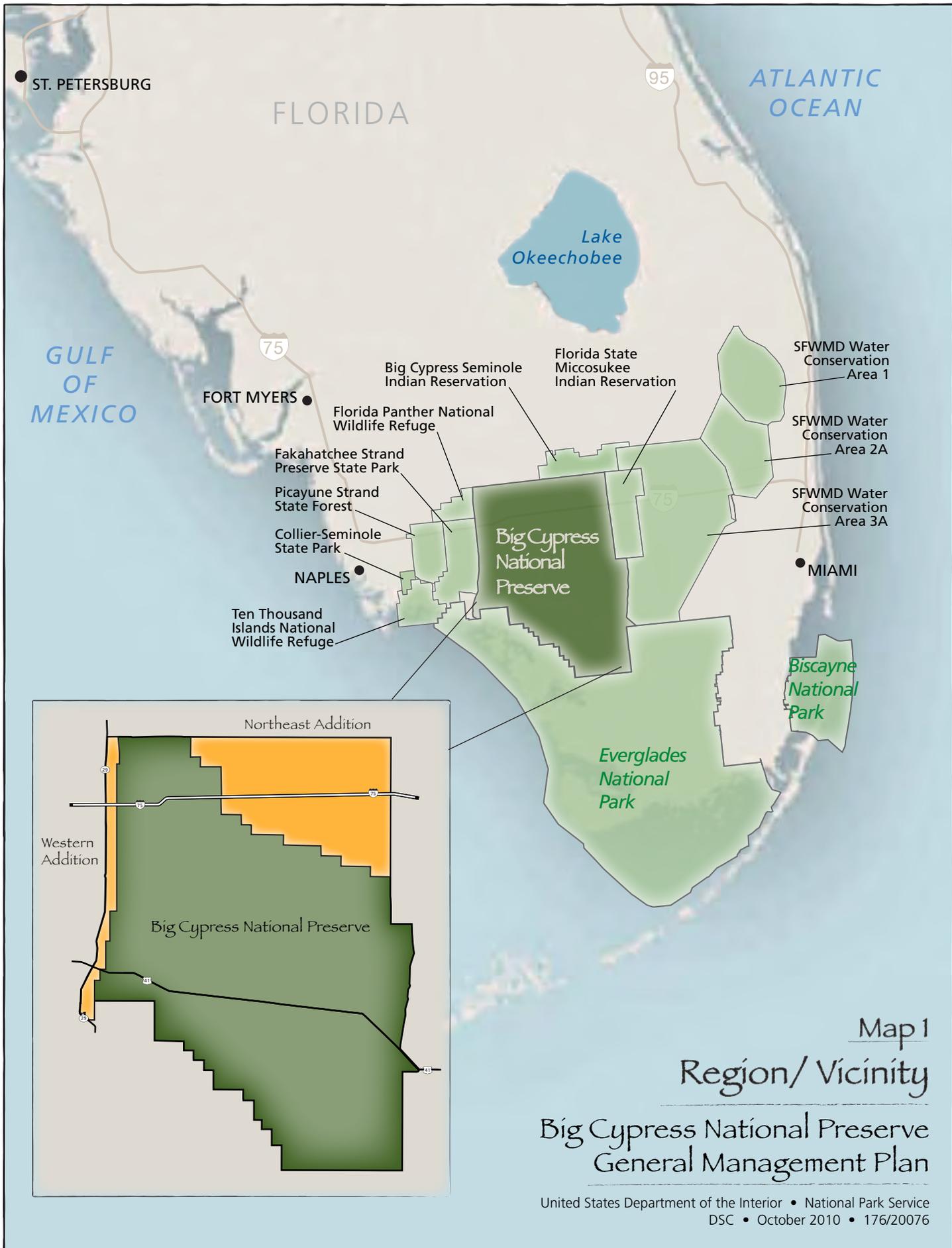
Naturalists study the area's rich natural history and its delicate ecological balances. And some Miccosukee and Seminole Indians who make their homes in the area depend on the Addition's resources for food, shelter, and spiritual needs.

For all of these people and the visitors, however, the Addition must be experienced on its own terms. It never becomes too familiar, and getting lost, stuck, or broken down is part of the challenge of this formidable land.

Natural Resources

Water is a principal natural resource of the entire south Florida region, and most of the Addition is flooded during the wet season. Because of the high annual rainfall (mean annual precipitation is 54 inches, with about 75% falling during the summer) and the flat limestone topography (a seaward slope of about 2 inches per mile), the inundation lasts for several months beyond the actual rainfall period (Duever et al. 1986a). Because the Addition is relatively undeveloped, it serves as a large natural reservoir and nutrient filter, permitting natural biological processes to nourish diverse ecological communities that are distinctive to southern Florida. In the Northeast Addition the water flows in a southeasterly direction towards the water conservation areas throughout the wet season. The ecology of the Addition is finely tuned to the seasonal flow of water, and any hydrologic changes can alter this sensitive subtropical habitat.

Extensive prairies and marshes, forested swamps, pinelands, and shallow sloughs characterize the Addition. The hydroperiod, the amount of time each year that soils are saturated, is the major determinant of



ST. PETERSBURG

FLORIDA

ATLANTIC OCEAN

Lake Okeechobee

GULF OF MEXICO

FORT MYERS

75

95

Big Cypress Seminole Indian Reservation

Florida State Miccosukee Indian Reservation

SFWMD Water Conservation Area 1

Florida Panther National Wildlife Refuge

SFWMD Water Conservation Area 2A

Fakahatchee Strand Preserve State Park

Picayune Strand State Forest

Collier-Seminole State Park

SFWMD Water Conservation Area 3A

NAPLES

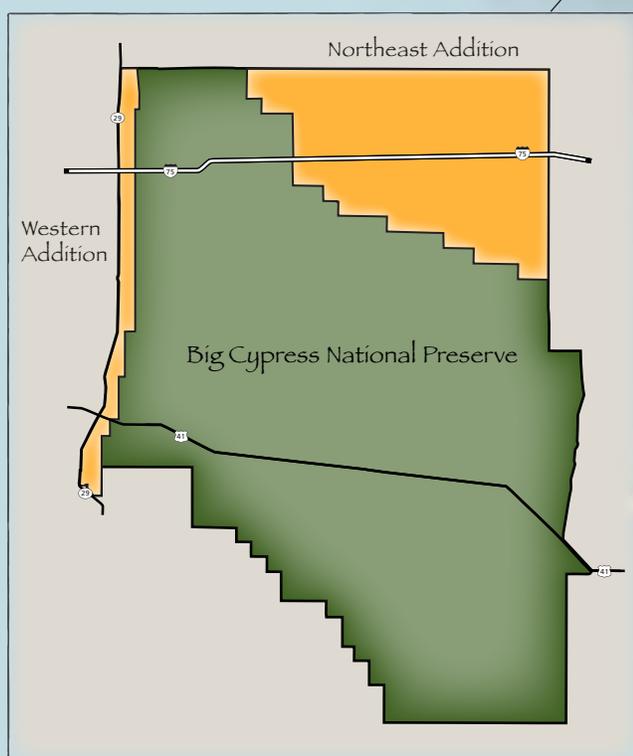
Big Cypress National Preserve

MIAMI

Ten Thousand Islands National Wildlife Refuge

Biscayne National Park

Everglades National Park



Northeast Addition

Western Addition

Big Cypress National Preserve

Map 1
Region/ Vicinity

Big Cypress National Preserve
General Management Plan

vegetative communities, and a difference of only a few inches in elevation changes the hydroperiod and leads to the establishment of totally different plant communities. At one time Big Cypress contained pristine cypress strands and old-growth pinelands, but by 1950 virtually all the cypress strands of commercial value and much of the pinelands within the Addition had been logged. The young cypress strands, mixed-hardwood swamps, and pinelands in the Addition today are still recovering. Big Cypress is also noted for its widespread cypress prairies — natural grasslands dotted with stunted cypress trees.

Most wildlife species native to south Florida occur within the Big Cypress watershed. A total of 31 animal species in the Addition receive some level of special protection by the federal government or the state of Florida. Most of these species are limited to south Florida, and they are declining as a result of habitat reduction caused by water management projects, urbanization, and agricultural expansion.

Nine of the 31 species mentioned above are listed as either federally endangered or threatened and reside in the Preserve — 8 of those 9 are known to be present in the Addition. The state lists 14 species as species of special concern. One of the United States' most endangered mammals, the Florida panther (*Puma concolor coryi*), is the subject of an intensive recovery effort throughout the region, including the Addition.

Cultural Resources

The Preserve and the Addition are located within the Glades region (an area defined by hardwood and pinewood hammocks, sawgrass, and dwarf cypress interspersed with shallow freshwater marshes and prairies) of south Florida. The limited vegetation of this region is a result of thin soils underlain by limestone bedrock. This region also includes the Everglades, portions of the Atlantic coast,

the Ten Thousand Islands, and the Florida Keys. Human habitation of the Glades region can be traced back to the late Pleistocene or Lithic era.

The prehistoric periods of human culture represented by sites in south Florida include (1) the Paleo-Indian period (10,000–8,000 BC), (2) the Archaic period, (which spanned roughly 8,000 BC to 500 BC), and (3) the Glades Tradition (which extends into the historic period, spanning 500 BC to AD 1760).

The historic periods of human culture begin with the initial Spanish contact in 1513 and continue through the 20th century and the creation of Big Cypress National Preserve.

Evidence of Paleo-Indian human habitation is rare in south Florida, and none has been found within the Addition. In all likelihood, most sites associated with the Paleo-Indians of this era are submerged beneath the state's coastal waters. However, at least one area within the Addition, Deep Lake (a sinkhole), has the potential for association with this prehistoric period.

Fifty-seven archeological sites have been identified in the Addition. These resources are associated with the Archaic and Glades periods in the Addition's cultural chronology. Most of these sites are earth middens, which are refuse piles commonly made up of cultural artifacts and faunal remains.

Based on the archeological evidence, Big Cypress was used year-round by early inhabitants for transitory hunting and gathering. Agriculture was apparently insignificant, perhaps because rich plant, fish, and animal food sources were available. Land animals and seafood were the primary sources of protein. Early cultures in the Big Cypress were not as highly developed as other cultures in the Southeast, possibly because people relied on wild food sources rather than cultivating crops, and the foods, especially shellfish, were not easily preserved and stored for later use.

Consequently, only a few large, relatively permanent settlements have been identified.

Today, Seminole and Miccosukee Indians live in the Preserve, including the Addition, and also use these lands as a source of natural materials for housing, crafts, and other cultural and religious uses.

Development and Use

Currently, the Addition is closed to hunting and public recreational motorized use (with the exception of motorized boating in the Everglades City area) — only hiking, camping, bicycling, fishing, and frogging are permitted. Recreational activities allowed in the original Preserve include hunting and fishing, off-road vehicle (ORV) use, hiking, boating and paddling, bicycling, and camping; these same types of activities could be allowed in the Addition.

The principal hiking trail in the Addition is the Florida National Scenic Trail, which uses a temporary route along Nobles Grade and continues north onto Seminole land. It also extends south from I-75 into the original Preserve.

NPS development in the Addition is limited to the Fire Operations Center off SR 29 at Copeland, a fire cache at Deep Lake, and the facilities at Carnestown, which are leased to the Collier County Sheriff's Office and the Everglades City Chamber of Commerce. No formalized/developed access to the Addition currently exists; temporary access is being provided at Interstate 75 (I-75) mile marker 51, Bear Island Grade, and the Florida Department of Transportation rest area at the I-75 mile marker 63. See Map 2: The National Preserve.

South Florida has been the site of oil exploration since 1930. The first productive well was

drilled in 1943 immediately northwest of the Addition on the Sunniland trend, a productive oil and gas area that crosses the Addition. Subsequent discoveries have followed a northwest-southeast orientation along the northern and eastern boundaries of the Addition, ending at the northern boundary of Everglades National Park. Bear Island and Raccoon Point are the two major producing oil fields in the original Preserve. The relatively recent discoveries of oil and gas both within and adjacent to the Addition have prompted interest in additional testing, including geophysical exploration and exploratory drilling. Most mineral rights and subsurface estates remain with the respective private or state interests.

Landownership

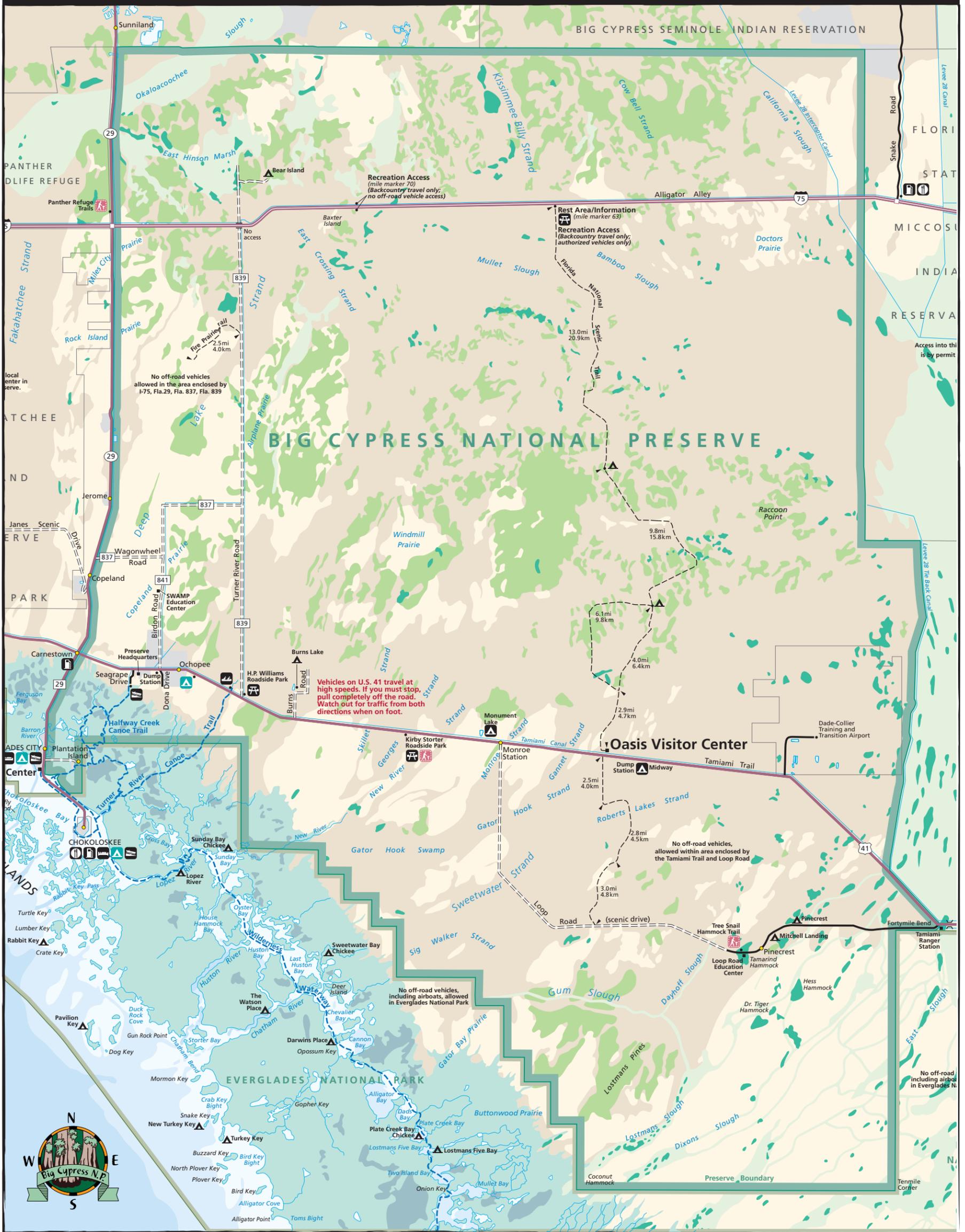
The Addition boundary encompasses about 147,000 acres, and the National Park Service owns about 112,400 acres in the Addition. Nonfederal land in the Addition is owned by the Florida Department of Transportation (about 27,236 acres), the Board of Trustees of the Internal Improvement Trust Fund (3,500 acres), and the Florida State School Board (1,920 acres). There are about 217 privately owned tracts throughout the Addition. Some of these will be classified as improved properties in accordance with the Addition Act, and as such they would be considered acquisition deferred (exempt) unless owners are willing to sell or uses on the land could be detrimental to the purposes of the Addition. About 75 acquisition-deferred, 3-acre parcels are expected to remain.

The state of Florida has agreed to transfer the lands that they own in the Addition to the National Park Service. The land transfer is currently pending and is expected to take place in the future.

Big Cypress National Preserve

Color key to ecosystems

	Cypress		Freshwater Marl Prairie		Mangrove
	Hardwood Hammock		Freshwater Slough		Marine and Estuarine
	Pineland		Coastal Marsh		Developed or disturbed land



	Interpretive trail		Unpaved road		Water depths 0-3 feet (0-1 meter)
	National Park Service campground		Hiking trail		3-6 feet (1-2 meters)
	National Park Service primitive campsite		Distance indicator		More than 6 feet (more than 2 meters)
	State Park campground		Picnic area		
	Private campground		Lodging		
	Boat launch and canoe launch		Food service		
	Canoe launch		Gas station		

Map 2 The National Preserve Big Cypress National Preserve General Management Plan

United States Department of the Interior • National Park Service
DSC • October 2010 • 176/2077

PURPOSE AND NEED FOR THE PLAN

PURPOSE OF AND NEED FOR THE GENERAL MANAGEMENT PLAN

As outlined above, the Addition was established in 1988. Under the provisions of the Arizona-Florida Land Exchange, authorized by Public Law 100-696, the United States acquired approximately 108,000 acres of environmentally sensitive land in southwest Florida, and in return the Collier companies received 68 acres of property in downtown Phoenix, Arizona. The Florida lands acquired by the United States in the exchange serve as additions to the Big Cypress National Preserve and the Florida Panther National Wildlife Refuge, and created the Ten Thousand Islands National Wildlife Refuge. As part of the overall public lands effort, the state of Florida was required to contribute 20% of the value of the land to be acquired within the expanded Big Cypress National Preserve.

This general management plan for the Addition is needed because no comprehensive planning effort has ever been conducted for this area of the Preserve. A *General Management Plan* was completed for the Preserve in 1991, but that plan addressed only the original portion of the Preserve and contained no guidance for the Addition because the Addition was in private ownership until it was acquired and transferred to the National Park Service in 1996. The plan is needed to provide direction on how the National Park Service will accommodate and manage visitor access, manage resources, and manage its operations within the Addition. The scope of this general management plan is the Addition only.

A general management plan also is needed to meet the requirements of the National Parks and Recreation Act of 1978 and NPS policy, which mandate development of a general management plan for each unit in the national park system.

When approved, this *General Management Plan* will be the basic document for managing the Addition for the next 15 to 20 years. The purposes of this management plan are as follows:

- Confirm the purpose, significance, and special mandates of the Big Cypress National Preserve Addition.
- Clearly define resource conditions and visitor uses and experiences to be achieved in the Addition.
- Provide a framework for NPS managers to use when making decisions about how to best protect Addition resources, how to provide quality visitor uses and experiences, how to manage visitor use, and what kinds of facilities, if any, to develop in or near the Addition.
- Ensure that this foundation for decision-making has been developed in consultation with interested stakeholders and adopted by the NPS leadership after an adequate analysis of the benefits, impacts, and economic costs of alternative courses of action is completed.

Legislation establishing the National Park Service as an agency and governing its management provides the fundamental direction for the administration of the Addition and other units and programs of the national park system. This *General Management Plan* will build on these laws and the legislation that established the Big Cypress National Preserve Addition to provide a vision for its future. The “Guidance for the Planning Effort” section calls the reader’s attention to topics that are important to understanding the management direction for the Addition. The alternatives in this *General Management Plan* address the desired conditions that are not mandated by law and policy and must be determined through a planning process.

A general management plan does not describe how particular programs or projects should be prioritized or implemented. Those decisions will be addressed in future, more detailed planning efforts. All future plans will tier from the approved general management plan. Unlike typical general management plans, this management plan includes a wilderness study and an ORV management plan.

PURPOSE AND NEED FOR THE WILDERNESS STUDY

A wilderness study of the Addition was required by the enabling legislation for Big Cypress National Preserve (Public Law 93-440), as amended by the Addition Act (Public Law 100-301):

[T]he Secretary shall review the area within the preserve or the area within the Addition (as the case may be) and shall report to the President, in accordance with section 3 (c) and (d) of the Wilderness Act (78 Stat. 891; 16 U.S.C. 1132 (c) and (d)), his recommendations as to the suitability or nonsuitability of any area within the preserve or the area within the Addition (as the case may be) for preservation as wilderness, and any designation of any such areas as a wilderness shall be accomplished in accordance with said subsections of the Wilderness Act.

No wilderness study of the Addition has previously been completed. This wilderness study provides a public forum for evaluating lands within the Addition for possible recommendation to Congress for inclusion in the national wilderness preservation system. Wilderness, which can be designated only by Congress, provides for permanent protection of lands in their natural condition. The wilderness study is included as part of this *General Management Plan* because of public interest and timeliness. A wilderness study may be a separate document accompanied by an environmental impact statement, or it may

be part of a general management plan / environmental impact statement. Incorporating the wilderness study in this *General Management Plan / Environmental Impact Statement* provides efficiencies of time and money because the two processes have similar legal requirements and public involvement needs.

Public comment has indicated significant interest in the possible designation of wilderness in the Addition. Many believe that in the interest of protecting endangered species such as the Florida panther, the entire Addition should be designated wilderness, thereby excluding the use of motorized vehicles. Others maintain that none of the Addition qualifies as wilderness, and thus motorized use should be allowed. Because of the requirements of law and the implications that a wilderness recommendation would have on public use and management of the Addition, a wilderness study is needed.

The first step of this wilderness study was to conduct a formal evaluation, known as a wilderness eligibility assessment, of lands in the Addition that are eligible for wilderness consideration, i.e., that meet the criteria for wilderness as described in the Wilderness Act. State-owned lands within the Addition were evaluated with permission. To conduct this assessment, interdisciplinary teams of NPS staff reviewed current data, visited key areas of the Addition during 2006, and obtained additional field data. A workshop of NPS staff was conducted in July 2006 to evaluate wilderness characteristics of the Addition. After the approximately 109,000 acres of wilderness-eligible lands were identified, the next step was to determine which of these lands, if any, should be incorporated into each of the action alternatives in this document. The final step was to evaluate the impacts of the various wilderness proposals set forth in the alternatives. This process was completed by an interdisciplinary team of NPS staff from the Preserve, Southeast Regional Office, Denver Service Center, and the Wilderness

Stewardship and Recreation Management Division (Washington, D.C. program office). The results of the eligibility assessment and lands proposed for wilderness in the preliminary alternatives were shared with the public in a newsletter and were included in the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*. Public meetings were also held to provide members of the public opportunities to contribute and comment.

Based on the public comment received on the wilderness study included in the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*, the National Park Service reevaluated the eligibility of the Addition in February 2010. The revised eligibility assessment and final wilderness eligibility determination found that 71,260 acres are eligible for wilderness designation (see appendix B).

Wilderness studies typically result in a recommendation to Congress to designate all, some, or none of the lands possessing wilderness character as part of the national wilderness preservation system. Based on the wilderness study included in this document, the National Park Service will prepare a proposal for such a recommendation to forward to the U.S. Department of the Interior. This proposal will be based on the proposed wilderness incorporated in the selected alternative and documented in the “Record of Decision.”

PURPOSE AND NEED FOR THE ORV MANAGEMENT PLAN

The purpose of the ORV (off-road vehicle) management plan is to provide guidance on how to manage motorized recreational ORV use in the Addition. The plan provides direction on use levels, suitable locations to develop ORV trails, and details on permitting and managing off-road vehicles and permits.

An ORV management plan is needed because the Addition Act calls for some level of public recreational access, and the National Park Service currently does not have a plan in place to meet this mandate. This plan, under alternative B and the preferred alternative, will provide direction that would allow the National Park Service to develop ORV opportunities in the Addition while meeting its responsibilities for resource protection. Through the process of this GMP planning effort, about 135 miles of trails in the Addition were found to be suitable and sustainable for ORV use (see Map 7: Conceptual ORV Trails on page 105)

This plan addresses ORV administration and management in the Addition. Issues related to numbers of permits issued, miles of trail designated, and overall ORV management are evaluated solely with respect to the Addition rather than the original Preserve as a whole. The reason for this approach is that the National Park Service has already evaluated ORV use and associated impacts in the original Preserve. See the *Final Recreational Off-road Vehicle Management Plan / Supplemental Environmental Impact Statement* (2000). To have addressed integrated ORV use over the entire Preserve in the present document would have necessitated expanding the environmental impact statement to cover the entire Preserve. The result would have been significant delays stemming from a greatly expanded planning effort and related environmental analysis. It should be noted, however, that the analysis in this document for the Addition does include an analysis of cumulative impacts associated with ORV use. This analysis includes a consideration of impacts to — and from — lands outside the Addition.

THE NEXT STEPS

This *Final General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* includes comment letters from

governmental agencies, any substantive comments on the draft document, and NPS responses to those comments. Following distribution of the final plan and a 30-day no-action period, a “Record of Decision” may be signed by the Preserve superintendent and the NPS regional director and published in the *Federal Register*. The “Record of Decision” documents the NPS selection of an alternative for implementation. With the signed “Record of Decision,” the plan can then be implemented.

IMPLEMENTATION OF THE PLAN

The implementation of the approved plan will depend on future funding. The approval of a

plan does not guarantee that the funding needed to implement the plan will be forthcoming. Full implementation of the approved plan could be many years in the future or may not occur if funding is not obtained.

The implementation of the approved plan also could be affected by other factors. Once the *General Management Plan* has been approved, additional legislation, additional feasibility studies, and more detailed planning and appropriate environmental documentation may be required before any proposed actions can be carried out. These more detailed plans would tier from this plan, describing specific actions managers intend to take to achieve desired conditions and long-term goals.

GUIDANCE FOR THE PLANNING EFFORT

DIRECTION FOR THE PLAN

The direction for the alternatives considered in this draft plan is based on the applicable legislative mandates (see appendix A), NPS policies, and the Preserve's purpose and significance. The purpose statements describe why Big Cypress was established as a national preserve. The significance section describes the unique qualities that make the Preserve a special place. Other legislative mandates help to further define the parameters of how planning should be done and certain elements that the plan must address.

Legislative mandates and special commitments include measures that apply to the entire national park system as well as Preserve-specific requirements. In addition, the National Park Service must comply with all federal statutes, executive orders, and NPS policies. The intent of all the mandates and commitments is to establish sustainable conservation and to preserve these lands. As a result, use can occur only to the extent that it does not result in significant adverse effects on the Preserve's natural and cultural resources.

National Park Service Mandates

The National Park Service and its mandates are authorized under the NPS Organic Act (16 USC 1, 2-4) and the General Authorities Act (16 USC 1a-8). The Organic Act directs the National Park Service to promote and regulate the use of the national park system units

by such means and measures as conform to the fundamental purpose of the said parks, . . . which purpose is to conserve the scenery, and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such manner and by

such means as will leave them unimpaired for the enjoyment of future generations.

The Redwood Act, passed in March 1978, amended the NPS Organic Act of 1916. In that act, Congress reaffirmed the mandates of the Organic Act and provided the following additional guidance for managing national park system units:

The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established.

According to Senate Report 95-528, the restatement of these principles of park management in the Redwood Act was intended to serve as the basis for any judicial resolution of competing private and public values and interests in the national park system. If a conflict between visitors' use of a park unit and the protection of resources should occur, this act confirms the intent of Congress to favor resource protection.

The National Park Omnibus Management Act of 1998 (PL 105-391), title II, "National Park System Resource Inventory and Management," supports the integration of scientific study into management practices. This act directs the Secretary of the Interior to take necessary steps to ensure the full and proper use of the results of scientific studies in making management decisions. In conformance with the 1998 act and the National Environmental Policy Act, this plan has attempted to make use of the best available scientific information.

Preserve Vision

The National Park Service envisions Big Cypress National Preserve as a nationally significant ecological resource — a primitive area where ecological processes are restored and maintained and cultural sites are protected from unlawful disturbance. Visitors will benefit from aesthetic gratification and relaxation in a natural setting, the challenge of exploring the landscape, the chance to test traditional backcountry skills, and the opportunity to learn more about the natural environment.

What is a National Preserve, and How Is It Different from a National Park?

The diversity of national park system units is reflected in the variety of titles given to them. These include designations such as national park, national preserve, national monument, national memorial, national historic site, national historical park, national seashore, and national battlefield park. Although some titles are self-explanatory, others have been used in many different ways.

Generally, a **national park** contains a variety of resources and encompasses large land or water areas to help provide adequate protection of the resources. A **national preserve** is established primarily for the protection of certain resources. Activities such as hunting and fishing or the extraction of minerals and fuels may be permitted if they do not jeopardize the natural values. Big Cypress and Big Thicket were authorized as the first national preserves in 1974. As with all units of the national park system, the enabling legislation that accompanies the authorization of a particular park system unit describes its purpose and provides the direction for its establishment and management.

Big Cypress National Preserve was established to protect the watershed values of the Big Cypress Swamp while allowing for the continuation of traditional uses (such as hunting, fishing, ORV use, and mineral extraction) in the area. The national preserve

designation of Big Cypress presents unique opportunities to integrate multiple uses with conservation and preservation — and that is what makes it so different from any other designation within the national park system.

Purpose and Significance Statements

Purpose Statements. Purpose statements are based on the Preserve’s legislation, legislative history, and NPS policies. The statements reaffirm the reasons for which the Preserve was set aside as a unit of the national park system and provide the foundation for Preserve management and use.

The purpose of Big Cypress National Preserve, as stated in the enabling legislation, is

to assure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed in the State of Florida and to provide for the enhancement and public enjoyment thereof.

Significance Statements. Significance statements capture the essence of the Preserve’s importance to our country’s natural and cultural heritage. Significance statements do not inventory Preserve resources; rather, they describe the Preserve’s distinctiveness and help to place the Preserve within its regional, national, and international contexts. Significance statements answer questions such as why are the Preserve’s resources distinctive? What do they contribute to our natural/cultural heritage? Defining the Preserve’s significance helps managers make decisions that preserve the resources and values necessary to accomplish the purpose of the Preserve.

The significance of Big Cypress National Preserve is as follows.

Big Cypress National Preserve, including the Addition, contains vestiges of primitive southwest Florida. It is significant as a unit of the national park system because it

- is a large wetland mosaic that supports a vast remnant of vegetation types found only in this mix of upland and wetland environments
- contains the largest strands of dwarf cypress in North America
- is habitat for the Florida panther and other animal and plant species that receive special protection or are recognized by the state of Florida, the U.S. government, or the Convention on International Trade in Endangered Species (CITES)
- provides opportunities for the public to pursue recreational activities in a subtropical environment
- is home to the Miccosukee Tribe of Indians of Florida and Seminole Tribe of Florida and sustains resources that are important to their cultures
- is a watershed that is an important component to the survival of the greater Everglades ecosystem

Primary Interpretive Themes

Based on the Preserve's purpose and significance, the following interpretive themes have been developed. Primary interpretive themes are the key stories, concepts, and ideas of a park unit. They are the groundwork that NPS staff will use for educating visitors about the Preserve and for inspiring visitors to care for and about the Preserve's resources. With these themes, visitors can form intellectual and emotional connections with Preserve resources and experiences. Subsequent interpretive planning may elaborate on these primary themes.

Although the following themes were written for the original Preserve, they will apply to the Addition after approval of this management plan.

Water — *Preserving the Big Cypress watershed is key to the survival of the south Florida ecosystem.*

- Fresh water flowing through the Big Cypress Swamp provides a steady supply of life-giving nourishment to the Ten Thousand Islands, a vital estuary system.
- Wetlands are one of the most endangered ecosystems in the world. Development, recreational use, and non-point source pollutants threaten the Big Cypress Swamp from all sides.
- Subtle geologic features influence water flow and vegetation patterns that, in turn, affect wildlife, fire frequency, and soil compaction.

Biological Diversity — *Acting as custodian for ecological and biological processes, Big Cypress National Preserve provides habitat and protection for a great diversity of plant and animal species.*

- The diversity of habitat types found in Big Cypress, from pinelands, mixed hardwood hammocks, wet prairies, dry prairies, and marshes to estuarine mangrove forests, provides for a diversity of plant and animal species.
- Rare subtropical and temperate plants and animals have retreated to this remaining stronghold. Rare orchids, Florida panthers, red-cockaded woodpeckers, and unusual ferns are found here and few other places in the world.
- The vast biological diversity existing in the Big Cypress National Preserve makes it one of the most unusual

natural areas in the world. The Big Cypress is a wetland interspersed with pine islands and hardwood hammocks. One may experience a variety of ecological communities as they are modified and characterized by the presence or absence of water, depending on the hydroperiod.

- Fire and living things have evolved together. Fire is responsible for sculpting the landscape. Prescribed fire returns nutrients to the ecosystem and prevents excessive fuel buildup.
- Exotic species such as melaleuca (*Melaleuca quinquenervia*), Brazilian pepper (*Schinus terebinthifolius*), Old World climbing fern (*Lygodium microphyllum*), water lettuce (*Pistia stratiotes*), hydrilla (*Hydrilla verticillata*), air potato (*Dioscorea bulbifera*), and Australian pine (*Casuarina equisetifolia*) threaten native plant communities. With no natural enemies, exotics multiply rapidly and crowd out native species.

Human/Culture — *Big Cypress National Preserve reveals stories from times long past and into the future, reflecting a pattern of changing culture and human involvement.*

- A rich history of human involvement with the swamp spans time. The Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida; escaped slaves; land speculators; timber harvesters; and hunters, fishermen, guides, cattlemen, and recreationists have all left their trails through the swamp.
- The establishment of Big Cypress National Preserve is a story of cooperation and conflict between various user groups to stop a threat to a treasured place.

Recreation/Multiuse — *Big Cypress National Preserve manages a spectrum of human, recreational, and commercial activities.*

- Big Cypress National Preserve provides an important oasis of wildness for recreation, reflection, and rejuvenation.
- Providing a unique environment with scenic vistas and wild areas, Big Cypress National Preserve hosts opportunities for human activities.
- Water birds, alligators, turkey, deer, raccoons, and many other creatures call the Big Cypress their own. With increasing development in south Florida, opportunities to view such wildlife are becoming rare.
- Allowed multiple uses make the Big Cypress National Preserve different from other national park system units. Integrating multiple uses with conservation and preservation presents unique opportunities for Preserve management.
- Open space, quiet places, and wilderness are endangered in south Florida. Big Cypress National Preserve, along with other natural areas in the region, is vital to the quality of life in the state.
- The Big Cypress is a unique expanse of cypress-dominated scenery. A windshield tour across Alligator Alley or Tamiami Trail provides vast scenic vistas.

Special Mandates and Administrative Commitments

Special mandates and administrative commitments refer to specific legal requirements that apply directly to an individual national park system unit. These formal agreements are most often established concurrently in the unit's enabling legislation. Special

requirements for the Addition (PL 100-301) include the following:

The Secretary shall administer the lands as a unit of the national park system in a manner that will assure their natural and ecological integrity in perpetuity and in accordance with the NPS Organic Act.

The Addition Act and its legislative history identify the following six categories of use that are allowed within the Addition, subject to reasonable regulation:

- uses associated with "improved properties"
- exercise of rights associated with oil and gas
- hunting
- fishing
- trapping
- certain Indian rights

The Addition Act further directs that rules and regulations necessary and appropriate to limit or control the following uses be developed:

- motorized vehicles
- exploration for and extraction of oil, gas, and other minerals
- grazing
- the draining or constructing of works or structures that alter natural watercourses
- agriculture
- hunting, fishing, and trapping
- new construction
- such other uses as may need to be limited or controlled

The Addition Act gives specific guidelines regarding the development of rules and regulations for hunting, fishing, trapping, and entry.

The Secretary shall permit hunting, fishing, and trapping on lands and waters under his jurisdiction within the preserve and the Addition in accordance with the applicable laws of the United States and the State of Florida, except that he may designate zones where and periods when no hunting, fishing, trapping, or entry may be permitted for reasons of public safety, administration, floral and faunal protection and management, or public use and enjoyment. Except in emergencies, any regulations prescribing such restrictions relating to hunting, fishing, or trapping shall be put into effect only after consultation with the appropriate State agency having jurisdiction over hunting, fishing, and trapping activities.

The Senate and House reports (S. Rept. 93-1128 and H. Rept. 93-502) also give guidance as to how ORVs are to be managed. Although this guidance does not prohibit their use along designated roads and trails, it does say that the use of such vehicles must be carefully regulated to protect the natural, wildlife, and wilderness values of the Preserve (and thus the Addition).

The regulations in 36 CFR (*Code of Federal Regulations*) 7.86 (a)(2)(iii) mandate, among other things, consultation with the state of Florida before making a temporary or permanent closure of an area or route. The point of contact for the state is the executive director of the Florida Fish and Wildlife Conservation Commission.

The Addition Act also permits members of the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida, subject to reasonable regulations, to continue their usual and customary use and occupancy, including hunting, fishing, and trapping on a subsistence basis and traditional tribal ceremonies.

Regarding recreational access, the Addition Act states that

The Secretary and other involved Federal agencies shall cooperate with the State of Florida to establish recreational access points and roads, rest and recreation areas, wildlife protection, hunting, fishing, frogging, and other traditional opportunities in conjunction with the creation of the Addition and in the construction of Interstate Highway 75. Three of such access points shall be located within the Preserve (including the Addition).

One of these access points has been constructed at mile marker 71 and provides walk-in access to the original Preserve both north and south of I-75.

Regarding oil and gas exploration and development, the Addition Act states that

The Secretary shall promulgate . . . rules and regulations governing the exploration for development and production of non-Federal interests in oil and gas located within the boundaries of Big Cypress National Preserve and the Addition . . . as are necessary and appropriate to provide reasonable use and enjoyment of privately owned oil and gas interests, and consistent with the purposes for which the Big Cypress National Preserve and Addition were established.

Currently, oil and gas exploration in the Addition is managed in accordance with the “Agreement among the United States of America, Collier Enterprises, Collier Development Corporation, and Barron Collier Company” (Addition Lands Agreement) dated May 1988. A Preserve-wide oil and gas management plan is currently in preparation by the National Park Service. When completed, this plan will provide guidance for oil and gas exploration for the entire Preserve, including the Addition.

Regarding wilderness, the Addition Act says the following:

[T]he Secretary shall review the area within the preserve or the area within the Addition (as the case may be) and shall report to the President, in accordance with section 3 (c) and (d) of the Wilderness Act (78 Stat. 891; 16 U.S.C. 1132 (c) and (d)), his recommendations as to the suitability or nonsuitability of any area within the preserve or the area within the Addition (as the case may be) for preservation as wilderness, and any designation of any such areas as a wilderness shall be accomplished in accordance with said subsections of the Wilderness Act.

GUIDING PRINCIPLES FOR MANAGEMENT

A number of guiding principles and strategies for management are described below. These are based on legal mandates and NPS policies that would continue to shape the way in which the Addition is managed under the alternatives being considered in this plan. All the alternatives support the purposes and significance of Big Cypress National Preserve. Some of these principles and strategies describe approaches that NPS staff is currently taking. Other principles and strategies are not being implemented at present, but they are consistent with NPS policy, they are not controversial, and their implementation may not require additional analysis under the National Environmental Policy Act.

Cultural Resources

The protection of the Addition’s cultural resources is essential for understanding the past, present, and future relationship of people with the area. The strategies mentioned below will enable the National Park Service to protect the Addition’s

cultural resources. At the same time, these strategies will encourage visitors and employees to recognize and understand the value of the Addition's cultural resources and allow their integrity to be preserved unimpaired.

Archeological Resources, Historic Structures, Cultural Landscapes, and Ethnographic Resources. The strategies for managing archeological resources, historic structures, cultural landscapes, and ethnographic resources will be as follows:

- NPS staff will continue to survey and document or inventory cultural resources in accordance with the National Historic Preservation Act and other applicable regulations.
- Field data regarding archeological resources will be gathered to develop a more accurate predictive model of prehistoric site distribution and address related research questions.
- All identified resources will continue to be evaluated in accordance with the eligibility criteria for the National Register of Historic Places.
- Avoidance techniques and other measures will be used to prevent impacts on known significant sites from visitors and project-related disturbances.
- NPS staff will continue to support research and consultation to increase the understanding of all cultural resources.
- As appropriate, federally recognized tribes (the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, and the Seminole Tribe of Oklahoma), the tribal historic preservation officers, and the state historic preservation officer will continue to be consulted on surveys, studies, excavations, and actions that potentially could affect cultural resources.
- Interpretive- and curricula-based programs and media will continue to educate visitors and the public about

cultural and historic issues relating to the Addition.

Museum Collections. Museum collections (prehistoric and historic objects, artifacts, works of art, archival material, and natural history specimens) would be acquired, accessioned and cataloged, preserved, protected, and made available for access and use according to NPS standards and guidelines.

Relationships with American Indians. The National Park Service recognizes that the Big Cypress area has long occupied a prominent position for American Indians in southern Florida. NPS staff will work to ensure that traditional American Indian ties to the Big Cypress are recognized and will strive to maintain positive, productive government-to-government relationships with federally recognized tribes that are culturally affiliated with the Addition. The viewpoints and needs of tribes will continue to be respected, and issues that arise will be promptly addressed. American Indian values will be incorporated in the management and operation of the Addition. To enhance its relationship with the tribes, the National Park Service will carry out the following strategies and actions:

- Consult regularly and maintain government-to-government relations with federally recognized tribes that have traditional ties to resources within the Addition (the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, and the Seminole Tribe of Oklahoma) to ensure productive, collaborative working relationships.
- Continue to identify and deepen the understanding of the significance of the Addition's resources and landscapes to American Indian people through collaborative research and sharing.
- Once they have been identified, protect and preserve the sites, resources, landscapes, and structures of

significance to the federally recognized tribes as required under federal laws and *NPS Management Policies 2006*.

- Encourage the participation of tribes in protecting the Addition's natural and cultural resources of interest and concern to them.
- Involve tribes in the Addition's interpretation program to promote accuracy of information about American Indian cultural values and to enhance public appreciation of those values.
- Support the continuation of traditional activities in the Addition by members of the Miccosukee and Seminole tribes to the extent allowed by applicable laws and regulations.

Natural Resources

The protection, study, and management of the Addition's natural resources and processes are essential for achieving the Addition's purpose and maintaining its significance. The following principles and strategies will help the National Park Service to retain the ecological integrity of the Addition, including its natural resources and processes. These actions will help ensure

- that the Addition's natural features are unimpaired,
- that the Addition continues to be a dynamic, biologically diverse environment, and
- that the Addition is recognized and valued as an outstanding example of resource stewardship, conservation, education, and public use.

Management activities will be evaluated to ensure that the best management practices are used to carry out the proposed action. This evaluation will determine the best method to use to ensure that management actions are completed in a manner that is best for the resource and is conducted in an

efficient manner. NPS administrative ORV use will be limited to what is determined to be necessary to conduct emergency operations and to accomplish essential NPS management activities.

Air Quality. The Addition is designated a class II area under the Clean Air Act. The Addition is currently within a designated attainment area (i.e., concentrations below standards) for criteria pollutants. The following policies and strategies will ensure that the Addition's air quality will be enhanced or maintained with no significant degradation and that scenic views are maintained.

- Emissions associated with administration of the Addition will be reduced.
- Baseline information about air-quality-related values will be expanded through research, inventory, and monitoring programs to identify human stressors and general air quality trends.
- The National Park Service will expand programs for sharing air quality information with surrounding agencies and will develop educational programs to inform visitors and regional residents about the threats of air pollution to preserve resources.
- The National Park Service will continue to participate in regional air quality planning, research, and the implementation of air quality standards.
- Fire management will be conducted in compliance with regional air quality standards, and efforts will be made to minimize the effects of smoke from prescribed fire activity.
- The National Park Service will protect views of the Addition's noteworthy night sky for resource purposes and for visitor enjoyment.

Ecosystem Management. Approaches to ecosystem management are varied and occur at many levels. To achieve the desired

conditions described for Addition resources, a regional perspective must be considered, and it must be recognized that actions taken on lands surrounding the Addition directly and indirectly affect the Addition. Many of the threats to Addition resources, such as water quality degradation and invasive species, come from outside Addition boundaries. An ecosystem approach is required to understand and manage the Addition's natural resources. An understanding of the health and condition of the ecosystem also is imperative.

Cooperation, coordination, and partnerships with agencies, tribal governments, and neighbors are crucial to meeting or maintaining the desired conditions for the Addition. This approach to ecosystem management may involve many parties or cooperative arrangements with federal and state agencies, tribes, or private landowners to obtain a better understanding of transboundary issues.

Big Cypress is managed holistically as part of a greater ecological, social, economic, and cultural system. The following strategies will allow the National Park Service to lead in resource stewardship and in the conservation of ecosystem values within and outside the Addition. These strategies will allow the National Park Service to maintain good relations with owners of adjacent property, surrounding communities, and private and public groups that affect and are affected by the Addition. The strategies also will allow proactive management of the Addition and will be designed to resolve external issues and concerns and to ensure that Addition values are not compromised.

- The National Park Service will continue its involvement in the implementation of the Comprehensive Everglades Restoration Plan.
- The National Park Service will continue to seek agreements with the South Florida Water Management District, the

Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, and other owners of adjacent property to protect the Big Cypress watershed.

- The National Park Service will continue to work cooperatively to manage nonnative species in the region.
- The National Park Service will continue to act as a partner with the research community to further the knowledge of the natural and cultural resources of the Addition.
- The National Park service will work to protect the values of marine and estuarine resources, including preservation of fundamental physical and biological processes.

Fire Management. Prescribed and wildland fire will be used as a tool to meet NPS management objectives. The following strategies will ensure that wildland fire will be used in an effective manner to protect Addition resources.

- The National Park Service will maintain a current fire management plan for the Preserve, including the Addition.
- NPS staff will collaborate with adjacent communities, groups, state and federal agencies, and tribes to manage fire in the Addition and the region.
- NPS staff will continue to support national, regional, and local fire management activities and provide public education on the role of fire management in its historic and ecological context.
- Fire will be used to maintain and restore native plant communities and control nonnative plant species.

Floodplains. Natural floodplain values will be preserved or restored. Long-term and short-term environmental effects associated with the occupancy and modification of floodplains will be avoided.

When it is not practicable to locate or relocate development or inappropriate human activities to a site outside the floodplain or where the floodplain will be affected, the National Park Service will

- prepare and approve a “Statement of Findings” in accordance with Director’s Order 77-2
- use nonstructural measures as much as practicable to reduce hazards to human life and property while minimizing impacts of floodplains on the natural resources
- ensure that structures and facilities are designed to be consistent with the intent of the standards and criteria of the National Flood Insurance Program (44 CFR 60)

Inventory and Monitoring. Knowing the condition of natural resources in a particular park unit is fundamental to the National Park Service’s ability to protect and manage it. The National Park Service is confronted with increasingly complex and challenging issues in the Addition, and NPS staff need scientifically credible data to make good management decisions. Inventories involve compiling existing information as well as collecting new information. Inventories contribute to a statement of the condition of Addition resources in relation to a standard condition, especially the natural or unimpaired state.

A long-term ecosystem monitoring program is necessary to enable managers to make better informed decisions, to provide early warning of changing conditions in time to develop effective mitigating measures, to convince individuals and other agencies to make decisions benefiting the Addition, to satisfy certain legal mandates, and to provide reference data for relatively pristine sites for comparison with areas outside the Addition. Monitoring also enables NPS staff to evaluate the effectiveness of management actions and obtain more accurate assessments of

progress towards management goals. Using monitoring information will increase confidence in managers’ decisions and improve their ability to manage Addition resources.

- Inventories and long-term monitoring programs will continue to be developed to address the status and health of Addition resources. Key indicators of resource or ecosystem conditions will be developed and monitored over the long term to record ecosystem health.
- Inventories will be conducted to identify vertebrate and invertebrate animal species, vascular and nonvascular plant species, and air and water resources in the Addition.
- The Addition will continue to participate in the South Florida/Caribbean Inventory and Monitoring Network. NPS staff will work with its partners, such as the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service, and collaborators to inventory resources and monitor vital components of the ecosystem including the exchange of relevant natural resource data. This will make it possible to better assess the condition of Addition resources and trends and to develop databases, data analyses, and retrieval tools so that the usefulness of natural resource information can be improved.
- NPS staff will continue to cooperate with the National Park Service’s Fire Management Office in the ongoing fire effects monitoring. The monitoring will be used to determine if resource objectives are being met and if any unwanted effects are occurring.

Natural Sound. Natural sound predominates in the Addition. The acoustic environment is both a natural and cultural resource that is in a healthy and robust condition. Visitors have the opportunity throughout most of the Addition to experience natural sounds. The sounds of

modern society are generally confined to the areas near highways in the Addition.

- The National Park Service will protect the Addition's natural sounds for resource purposes and for visitor enjoyment.

Soil Resources. Soil resources are an essential component of ecosystem function and plant diversity in the Addition. The following policies and strategies will ensure that the Addition's soil resources are not significantly degraded.

- The National Park Service will allow natural geologic processes to proceed unimpeded.
- NPS staff will actively seek to understand and preserve the Addition's soil resources and prevent to the extent possible its physical removal or contamination.
- High-impact visitor use areas will be monitored, and actions will be taken to reduce impacts on soil resources.

Threatened or Endangered Species. The Endangered Species Act mandates that agencies, including the National Park Service, promote the conservation of all federally listed threatened or endangered species and their critical habitats on lands and in waters administered by the agency. Several federally listed and state-listed threatened or endangered species are known to exist in and around the Addition and to use habitats in the area. The following actions will be taken to protect threatened or endangered species.

- NPS staff will continue to work with the U.S. Fish and Wildlife Service, tribal governments, and the Florida Fish and Wildlife Conservation Commission to ensure that NPS actions help special status species (state-listed or federally listed threatened, endangered, rare, declining, sensitive, candidate, or special

concern species) to recover. If any state or federally listed or proposed threatened or endangered species are found in areas that would be affected by construction, visitor use, or restoration activities proposed under any of the alternatives in this plan, NPS staff will consult with the above agencies.

- NPS staff will cooperate with the agencies mentioned above to inventory, monitor, protect, and perpetuate the natural distribution and abundance of all special status species and their essential habitats in the Addition. These species and their habitats will be specifically considered in ongoing planning and management activities.
- The National Park Service will continue to be a partner with the U.S. Fish and Wildlife Service, American Indian tribes, Florida state agencies, and nongovernmental organizations in the recovery of the Florida panther, one of North America's most endangered mammals.
- Interpretive- and curricula-based education programs and media will continue to educate visitors and the public about NPS efforts to maintain native biodiversity.

Vegetation. Whenever possible, natural processes will be relied on to maintain native plants and plant communities. Communities will include the diverse species, genetic variability, plant associations, and successional stages representative of an ecologically functioning system in subtropical south Florida. The following actions will be taken to manage the Addition's vegetation.

- Plant communities will be inventoried to determine the species present and monitored to assess their condition. NPS staff will continue efforts to inventory rare plants.
- The National Park Service will continue efforts to eradicate invasive exotic (nonnative) plants in the Addition. NPS

staff will continue to work with other federal, state, and local agencies and private landowners to prevent the spread of exotic plant species into and out of the Addition.

- NPS staff will continue to use fire as a management tool for restoring and maintaining native plant communities.
- Interpretive and curricula-based programs and media will continue to educate visitors and the public about NPS efforts to restore native wetland vegetation and manage exotic plant species.

Water Resources and Wetlands. Surface water and groundwater will be protected, and water quality will be met or exceed all applicable water quality standards. To achieve these goals, the National Park Service will

- maintain baseline water quality and water stage monitoring programs
- maintain and operate NPS and NPS-permitted programs and facilities to avoid pollution of surface water and groundwater
- preserve and enhance the natural and beneficial values of wetlands
- conform with NPS management policies and Director’s Order 77-1 concerning wetland protection
- maintain a “no net loss of wetlands” policy and strive to achieve a longer-term goal of net gain of wetlands across the national park system through the restoration of previously degraded wetlands
- avoid to the extent possible the long- and short-term adverse impacts associated with the destruction or modification of wetlands and avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative

- compensate for remaining unavoidable adverse impacts on wetlands by restoring wetlands that have been previously degraded

Wilderness. This document includes a wilderness study, and the alternatives included in the plan contain different amounts of land that are proposed for wilderness designation.

All the alternatives in this document have been developed to ensure that lands proposed for wilderness designation are managed in accordance with the mandates of the Wilderness Act, which defines wilderness character based on the following four criteria:

untrammelled — The Wilderness Act states that wilderness is “an area where the earth and its community of life are untrammelled by man,” and “generally appears to have been affected primarily by the forces of nature.” In short, wilderness is essentially unhindered and free from modern human control or manipulation. This quality is degraded by modern human activities or actions that control or manipulate the components or processes of ecological systems inside the wilderness.

natural — The Wilderness Act states that wilderness is “protected and managed so as to preserve its natural conditions.” In short, wilderness ecological systems are substantially free from the effects of modern civilization. This quality is degraded by intended or unintended effects of modern people on the ecological systems inside the wilderness since the area was designated.

undeveloped — The Wilderness Act states that wilderness is “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation,” “where man himself is a visitor who does not remain” and “with

the imprint of man's work substantially unnoticeable." This quality is degraded by the presence of structures, installations, habitations, and by the use of motor vehicles, motorized equipment, or mechanical transport that increases people's ability to occupy or modify the environment.

solitude or a primitive and unconfined type of recreation — The Wilderness Act states that wilderness has "outstanding opportunities for solitude or primitive and unconfined type of recreation." This quality is about the *opportunity* for people to experience wilderness; it is not directly about visitor experiences per se. This quality is degraded by settings that reduce these opportunities, such as visitor encounters, signs of modern civilization, recreation facilities, and management restrictions on visitor behavior.

The National Park Service will adhere to the following strategies in the event that Congress designates wilderness in the Addition.

- Management decisions affecting wilderness will be consistent with the minimum requirement concept in accordance with federal laws and policies.
- A wilderness management plan will be developed that will guide the preservation, management, and use of the wilderness area. The plan would, among other elements, address desired future conditions, user capacity indicators and standards, and establish a monitoring program.
- The wilderness will be monitored to ensure that management actions and visitors do not unacceptably impact wilderness resources, values, and character as specified in an approved wilderness plan.

- Natural processes will be allowed to shape and control the wilderness ecosystems.
- Wilderness educational programs will be expanded to inform visitors about wilderness ethics and how to minimize their impacts on the Addition. "Leave No Trace" and "Tread Lightly" practices will be emphasized.
- Efforts will be expanded to ensure that wilderness features, such as natural soundscapes and views of the night skies, are not degraded.

Until such time as wilderness is designated by Congress, the National Park Service would manage those parts of the Addition eligible for wilderness designation in such a way as to maintain their wilderness character, in accordance with NPS policy.

Wildlife and Fish. The condition of wildlife and fish will be determined through baseline inventories and long-term monitoring programs. The following policies and strategies will ensure that the Addition's wildlife and fish are protected.

- NPS staff will seek to perpetuate the native animal life as part of the natural ecosystem. Minimizing human impacts on native animals will be emphasized, as will minimizing human influence on naturally occurring fluctuations of animal populations. Ecological processes will be relied on to control the populations of native species to the greatest extent practicable.
- The preservation of populations and habitats of migratory species inhabiting the Addition will be ensured. Whenever possible, NPS staff will cooperate with others to ensure the preservation of the populations and habitats of migratory species outside the Addition.
- Educational programs will be developed to inform visitors and the general public about wildlife issues and concerns.

- The management of populations of exotic animal species will be undertaken whenever such species threaten Addition resources or public health and when control is prudent and feasible.
- NPS staff will continue to work to restore extirpated native species where suitable habitat exists and restoration is compatible with social, political, and ecological conditions.
- The National Park Service will manage wildlife and hunting in the Addition in accordance with Executive Order 13433, “Facilitation of Hunting Heritage and Wildlife Conservation.”
- Interpretive- and curricula-based programs and media will continue to educate visitors and the public about wildlife issues and concerns.

NPS Management

Climate Change. Climate change is perhaps the most far-reaching and irreversible threat the national park system has ever faced. Climate change refers to a suite of changes occurring in the earth’s atmospheric, hydrologic, and oceanic systems. These changes, including increased global air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level, provide unequivocal evidence that the climate system is warming (IPCC 2007). Although the warming trend, commonly referred to as global warming, is discernable over the entire past century and a half, recent decades have exhibited an accelerated warming rate, with 11 of the last 12 years ranking among the 12 warmest years on record. Most of the observed temperature increase can be attributed to human activities that contribute heat-trapping gases to the atmosphere (IPCC 2007). These “greenhouse gases,” particularly carbon dioxide from the burning of fossil fuels, cause Earth’s atmosphere to act like a blanket and trap the sun’s heat. Although the insulating effect (or greenhouse effect) of our

atmosphere is important to living systems, the rapid increase in greenhouse gases since the mid 19th century has turned the thermostat up higher than what our systems are adapted to.

Although climate change is a global phenomenon, it manifests itself differently in different places. One of the most dramatic effects of global warming is the impact it has on extreme weather events. A disrupted climate could affect natural and cultural resources, and is likely to interfere with public use and enjoyment of the Addition. Although many places in the world have already observed and recorded changes that can be attributed to climate change, the impacts to the Addition have not been specifically determined, and the actual implications within the lifespan of this general management plan (15-20 years) are unknown.

Climate change is expected to affect human health; damage infrastructure; and alter crop production, animal habitats, and many other features of our natural and managed environments. Rising mean sea levels in combination with increasingly severe storms and high tides are expected to cause more frequent and severe flooding, erosion, and damage to coastal systems and structures. In a place where differences in mean elevation are measured in inches, rising sea levels could have a serious impact on Addition resources, inundating more areas and changing natural communities.

The strategies for responding to the effects of climate change include the following:

- NPS staff will continue to audit their greenhouse gas contributions and make decisions to reduce the Preserve’s carbon footprint.
- NPS staff will engage their partners to assist with appropriate climate change research.

- NPS staff will engage visitors and the public on the topic of climate change through interpretive and educational media.
- NPS staff will use adaptive management to respond to the effects of climate change on Addition resources, including facilities.

Commercial Services. Commercial services could become a part of providing visitor services in the Addition to achieve the goals and objectives for visitor services. By NPS policy, commercial services must be determined to be necessary and appropriate. NPS authorization is necessary for all commercial services in the Addition. Strategies and objectives for managing possible future commercial services are as follows:

- All commercial operations serving Addition visitors are managed through appropriate types of authorizations such as concession contracts and commercial use authorizations.
- All commercial activities in the Addition provide high-quality visitor experiences while protecting important natural, cultural, and scenic resources.
- Levels of commercial use are consistent with resource protection and high-quality visitor experiences.
- Only those necessary and appropriate commercial operations not conveniently located outside the Addition are authorized.
- The commercial services program in the Addition is managed efficiently and effectively consistent with all applicable laws and policies.

A commercial services plan for the original Preserve was completed in September 2009. It describes the actions required to achieve NPS goals for commercial services and related visitor experiences. The commercial services plan will be amended to include the

Addition after this *General Management Plan* is approved.

Orientation, Interpretation, and Education. A variety of methods are used to orient visitors to the Addition, to provide information about the Addition, and to interpret the Addition's resources. NPS staff will continue to pursue strategies to ensure that information is available so that visitors can plan a rewarding visit. Increasing outreach and educational programs will help connect diverse audiences to the Addition's resources, build a local and national constituency, and gain public support for protecting the Addition's resources. Continuing to provide interpretation will build emotional, intellectual, and recreational ties with the Addition and its cultural and natural heritage.

The strategies for managing orientation, interpretation, and education will be as follows:

- Emphasis will continue to be placed on providing information, orientation, and interpretive services in the most effective manner possible. Appropriate techniques and technologies will be used to increase the visibility of the national park system and its programs and to make people aware of issues facing the Addition.
- Interpretive- and curricula-based education programs and media will continue to be grounded in key resource issues, management priorities, and public safety while providing opportunities for visitors to connect Addition resources with national and global issues.
- Cooperative efforts and partnerships with local communities, public and private agencies, tribes, organizations, stakeholders, and land managers in the region will be enhanced so that visitors can be better informed about the abundance, variety, and availability of

the region’s recreational and interpretive opportunities. This information will orient visitors about what to do (and what not to do), attractions to see, and how to enjoy the Addition in a safe, low-impact manner.

- When feasible, the National Park Service will seek partnerships with other public agencies and with the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida to share orientation, contact stations, and administrative facilities.
- NPS staff will strengthen partnerships with local and state agencies and other national parks, educational institutions, and other organizations to enrich interpretive and educational opportunities regionally and nationally.

Public Health and Safety. While recognizing that there are limitations on its capability and constraints imposed by the Organic Act to not impair resources, the National Park Service and its cooperators will seek to provide a safe and healthful environment for visitors and employees. The following strategies will be pursued:

- NPS staff will strive to identify recognizable threats to safety and health and protect property by applying nationally accepted standards.
- Consistent with mandates and non-impairment, NPS staff will reduce or remove known hazards and/or apply appropriate mitigation measures, such as closures, guarding, gating, education, and other actions.

User Capacity. The strategy of addressing user capacity for the Addition is a tiered approach that will examine broad trends while focusing more specific monitoring and management on areas where action is most likely needed to achieve desired conditions.

- Sixteen indicators were developed for the Addition, along with standards that

could serve as management thresholds for the quality of resources and visitor experiences in the Addition.

- The National Park Service will use a variety of visitor management tools to help minimize impacts and maintain desired conditions, including education, ORV management through permitting and administration, site and trail management, and regulating access.
- The National Park Service will continue to develop and refine the user capacity indicators and standards to ensure resource protection and facilitate effective management of the Addition and its uses.

Relations with Private and Public Organizations, Owners of Adjacent Land, and Government Agencies.

The National Park Service must consider that the Addition — socially, politically, ecologically, and historically — is part of a greater area and that actions in the Addition affect the surrounding environment and society. For instance, the management of the Addition influences local economies through tourism expenditures and the goods and services the Park Service purchases to support Addition operations. To ensure that the National Park Service continues to have good relations with landowners and communities surrounding the Addition and to ensure that the Addition is managed proactively to resolve external issues and concerns, the following strategies will be implemented:

- NPS staff will continue to establish partnerships with public and private organizations to achieve the purposes and mission of the Addition. Partnerships will be sought for the purposes of resource protection, research, education, visitor enjoyment, visitor access, and management.
- To foster a spirit of cooperation and encourage compatible uses of adjacent lands, NPS staff will keep landowners, land managers, tribes, local

governments, and the public informed about NPS management activities. NPS staff will consult periodically with land-owners and communities that are affected by or potentially affected by Addition visitors and management actions.

- The National Park Service will work closely with local, state, and federal agencies and tribal governments whose programs affect or are affected by activities in the Addition. In particular, to meet mutual management needs, NPS managers will maintain a close working relationship with the U.S. Fish and Wildlife Service, Everglades National Park, the Miccosukee Tribe of Indians of Florida, the Seminole Tribe of Florida, the Florida Division of Forestry, the Florida Fish and Wildlife Conservation Commission, the South Florida Water Management District, and the owners of adjacent private land.

Sustainable Design/Development. NPS staff will strive to develop facilities that are harmonious with Addition resources, compatible with natural processes, aesthetically pleasing, functional, as accessible as possible to all segments of the population, energy-efficient, and cost-effective. To meet these goals, the National Park Service will employ the following strategies:

- NPS staff will ensure that all decisions regarding NPS operations, facilities management, and development in the Addition — from the initial concept through design and construction — reflect principles of resource conservation. Thus, all developments and NPS operations will be sustainable to the maximum degree possible and practical. New developments and existing facilities will be located, built, and modified according to the NPS 1993 “Guiding Principles of Sustainable

Design” or other similar guidelines. Through sustainable design and development, the National Park Service will strive to minimize the Addition’s carbon footprint.

Transportation to and within the Addition. Visitors will have reasonable access to the Addition.

- Transportation facilities in the Addition will provide access for the protection, use, and enjoyment of Addition resources. They will preserve the integrity of the surroundings, respect ecological processes, protect resources, and provide the highest visual quality and a rewarding visitor experience.
- The National Park Service will participate in all transportation planning forums that may result in links to the Addition or impact Addition resources. Working with federal, tribal, state, and local agencies on transportation issues, the National Park Service will seek reasonable access to the Addition and connections to external transportation systems.

Utilities and Communication Facilities. Addition resources or public enjoyment of the Addition will not be denigrated by nonconforming uses. Telecommunication structures will only be permitted in the Addition to the extent that they do not jeopardize the Addition’s mission and resources. No new nonconforming use or rights-of-way will be permitted through the Addition without specific statutory authority and approval by the director of the National Park Service or his representative, and will be permitted only if there is no practicable alternative to such use of NPS lands.

RELATIONSHIP OF OTHER PLANNING EFFORTS TO THIS GENERAL MANAGEMENT PLAN

The Addition is located in Collier County, Florida. A variety of public lands surround the Addition. Everglades National Park is located to the south; to the east is the Miccosukee Indian Reservation and South Florida Water Management District Conservation Area 3A; to the north is the Big Cypress Seminole Indian Reservation and private lands; and to the west is Fakahatchee Strand Preserve State Park and the Florida Panther National Wildlife Refuge (see Map 1: Region/Vicinity). Private lands are scattered in the area, including within the Addition, but are relatively small in size.

Several plans have influenced or would be influenced by the approved *General Management Plan* for the Addition. These plans have been prepared (or are being prepared) by the National Park Service, the U.S. Fish and Wildlife Service, the state of Florida, and several local agencies and organizations. Some of these plans are described briefly here, along with their relationship to this general management plan.

NATIONAL PARK SERVICE PLANS

Big Cypress National Preserve

Commercial Services Plan

The *Commercial Services Plan* is intended to address the existing conditions and law in a manner that will be compliant with the 1998 National Park Service Concessions Management Improvement Act (PL 105-391) and regulations. As an implementation plan, this *Commercial Services Plan* must also be consistent with the established planning direction in the 1991 *General Management Plan* for the Preserve and achieve the desired future conditions or goals for the Preserve. This plan covers the original Preserve only; the Addition will be

addressed in an addendum to this plan after the completion of the *General Management Plan* for the Addition.

The preferred alternative for the original Preserve's *Commercial Services Plan* proposes to develop the Preserve's visitor services to the level and quality described in the 1991 *General Management Plan*. The concept of this alternative is to enhance the Preserve's visitor services by developing one facility at Monroe Station to provide the visitor services deemed necessary and appropriate, with the opportunity to provide a second, smaller facility at Seagrape Drive as funding permits. Other services may begin and end outside the Preserve. Some services expected to be provided include the following: hunting and fishing guides; buggy tours; hiking tours (both day use and multiday); boat and kayak rentals, livery, and guided tours; firewood sales for campgrounds; bicycle rentals; general van tours, birding and wildlife viewing, and photography — by van, foot, or buggy, and offered through a cooperative association (The Everglades Association). The plan also proposes the development of a back-country camping complex in the northern portion of the Turner River Management Unit. Some management changes could be made to improve effectiveness and efficiency, and some minor changes to the level of services could be made for resource protection and visitor experience enhancement to be consistent with the management zone prescriptions established in the 1991 *General Management Plan*.

The *Commercial Services Plan* was reviewed during the development of this *General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*.

Draft South Florida and Caribbean Parks Exotic Plant Management Plan and Environmental Impact Statement (2006c)

The plan outlines the management of exotic plants in nine south Florida and Caribbean parks, including Big Cypress National Preserve and the Addition. The plan promotes restoration of native plant communities and habitat conditions in ecosystems that have been invaded by exotic plants and protects resources, values, visitors, staff, and area residents from adverse effects resulting from exotic plant presence and control activities. The plan takes a collaborative approach to managing exotic plants across the nine parks, improving effectiveness and efficiency and providing a consistent management framework for responding to this threat. The plan also seeks to establish plant and treatment location priorities, reduce new exotic plant introductions, and reduce the number of individually targeted plants to protect natural resources. The range of actions includes a no-action alternative, increased planning, monitoring and mitigation, and active restoration. The *South Florida and Caribbean Parks Exotic Plant Management Plan* includes the Addition and provides specific management direction for exotic plant management in the Addition.

Fire Management Plan / Environmental Assessment (2005)

NPS Director's Order #18, "Wildland Fire Management" (NPS 2008), states "Every park area with burnable vegetation must have a fire management plan approved by the superintendent." Fire is recognized as an ecological process necessary for the maintenance and health of the ecosystem. Fire must be managed to ensure the health and safety of visitors; protect property; ensure firefighter safety; minimize resource damage and costs; protect natural and cultural resources; and perpetuate, restore, replace, or replicate natural processes. This plan seeks to implement an integrated program of wildland fire suppression,

prescribed fire, and wildland fire for resource benefits. The Preserve has the largest fire load of any unit in the national park system, and many plant communities in the original Preserve and the Addition depend on burning for their survival. Wildfire suppression and prescribed fire are covered in the 1991 *General Management Plan*; however, this 2005 *Fire Management Plan* provides detailed guidance regarding fire management for the original Preserve and the Addition.

General Management Plan / Environmental Impact Statement (1991)

The general management plan is mandated by the National Parks and Recreation Act of 1978. This plan for the original Preserve was completed in 1991, and it guides visitor use, natural and cultural resource management, and general development for the next 10 to 15 years. It provides a clearly defined direction for resource management and preservation as well as appropriate visitor use and interpretation of the resources of the original Preserve. The *General Management Plan* for the original Preserve contains descriptions of resources that were used in preparation of this *General Management Plan* for the Addition; it also contains guidance for Preserve management that is complimentary and relevant to the Addition.

I-75 Recreational Access Plan / Environmental Assessment (1991)

The Addition Act directed the National Park Service to cooperate with the state to develop three recreation access points along I-75 within the Preserve, including the Addition. Many of the requirements and recommendations included in this access plan are incorporated in the 1991 *General Management Plan*. The *I-75 Recreational Access Plan* was used in the development of this management plan for the Addition. The development of recreational access points along I-75 is included as a component of all alternatives (including the no-action alternative)

included in this general management plan because they are legally required in the Addition Act.

Land Protection Plan (1988)

This plan was written in response to the May 1982 policy statement in the *Federal Register* regarding use of the federal portion of the Land and Water Conservation Fund. The monies were to be used to identify land and/or interests in land to be in federal ownership to achieve management purposes that include resource protection and public access in a cooperative, cost-effective manner. The plan identifies methods for protecting the Preserve's resources while taking into consideration public access and visitor experiences. Such resources include natural, historic, scenic, cultural, and recreational resources among others. Due to severance of subsurface oil and gas rights from the surface estate, oil and gas activities are not identified within the plan. The plan delineates the Preserve into zones and subzones for management purposes, and outlines the acceptable activities on "improved property". The *Land Protection Plan* was reviewed during the development of this management plan for the Addition.

Long-Range Interpretive Plan (2002)

This plan provides the vision for visitor experiences in the Preserve based on the purpose, significance, and mission put forth in the "Preserve's Strategic Plan." The *Interpretive Plan* proposes both development and management activities to satisfy current visitor demands, and identifies a media and activity action plan to meet future visitor needs. The interpretive plan was meant to guide the Preserve's interpretation direction for 10 years. The significance statements and primary interpretive themes included in the *Long-Range Interpretive Plan* are applied to the Addition in this management plan.

Minerals Management Plan (1991)

The 1991 *General Management Plan* included a "Minerals Management" section for the original Preserve that focused on specific surface protection stipulations and actions needed to protect important resource values within those areas of the original Preserve that are open to oil and gas activity. This section will be superseded by a Preserve-wide oil and gas management plan that is currently in preparation. The new plan will provide guidance for oil and gas exploration for the entire Preserve, including the Addition.

Recreational Off-road Vehicle Management Plan / Environmental Impact Statement (2000)

This plan is called for and directed by the 1991 *General Management Plan*. It was also prepared to comply with the 1995 settlement agreement negotiated between the Florida Biodiversity Project and several agencies and bureaus. ORV use is allowed in the original Preserve by the enabling legislation in a manner that is compatible with resource preservation. The ORV plan outlines the management of recreational ORV use in the original 582,000 acres of the Preserve. It specifies that ORV travel is facilitated by a system of designated access points and trails; that sensitive areas be closed; that temporal and seasonal closures be instituted; and that permits and education be required to operate off-road vehicles in the original Preserve. Many of the elements included in the *Recreational Off-road Vehicle Management Plan* are included in the ORV plan for the Addition.

Resource Management Plan (n. d.)

The original Preserve was established "to assure the preservation, conservation and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed." The boundary of the Preserve was expanded in 1988 to include about 147,000 acres of adjacent tracts. This plan includes initial planning and resource inventorying for the Addition. Resource conditions in the

Preserve vary from nearly pristine to areas where natural function no longer exists. The historical timber harvest, as well as past agriculture activities in the area and those currently occurring outside the Preserve, threaten natural systems. Urban expansion as well as large-scale expansion of oil and gas extraction is also of concern. The plan outlines issues within the Preserve, including natural resources, cultural resources, exotic plants and wildlife, and the hydrologic environment. The plan emphasizes that conservation, restoration, and preservation must take place on an ecosystem scale. The *Resource Management Plan* was reviewed during the development of this management plan for the Addition.

Water Resources Management Plan (1996)

The plan complements and is consistent with the 1991 *General Management Plan* and *Minerals Management Plan* for the Preserve and addresses the water resources component of the *Resources Management Plan* in more detail. The plan reviews existing information, analyzes water resource issues, and presents a coordinated action plan to address such issues. This plan reconfirms the premise of the Preserve's original enabling legislation — that water is a controlling force on the ecosystems of the Preserve and provides direction and guidance to staff in managing water problems in the Preserve. The Preserve faces many hydrologic threats to its environmental integrity and thus this plan has been developed. The plan outlines natural resource management and permitting activities in the Preserve and contributes to south Florida water resource management more broadly. The *Water Resources Management Plan* was reviewed during the development of this general management plan.

Everglades National Park

General Management Plan (in progress)

Everglades National Park is currently developing a general management plan to replace its 1979 *Master Plan*. The new plan will provide a broad conceptual framework to guide decisions for long-term NPS management and resource protection during the next 20 years. The Everglades *General Management Plan* was reviewed during the development of this management plan for the Addition.

OTHER FEDERAL AGENCY PLANS

Army Corps of Engineers

Comprehensive Everglades Restoration Plan (CERP) (2000)

The comprehensive plan is a framework and guide to restore, protect, and preserve the water resources of central and southern Florida, including the Preserve. The plan was approved in the Water Resources Development Act of 2000, and it is a component of the world's largest ecosystem restoration effort, encompassing 16 counties and an 18,000-square-mile area. The comprehensive plan includes more than 60 elements designed to capture, store, and redistribute fresh water. Implementation of the comprehensive plan will take more than 30 years to complete and will improve the quality, quantity, timing, and distribution of water flows through the Preserve. The *Comprehensive Everglades Restoration Plan* was reviewed during the development of this management plan for the Addition.

U.S. Fish and Wildlife Service

Florida Panther National Wildlife Refuge Comprehensive Conservation Plan (1998)

The National Wildlife Refuge System Improvement Act of 1997 requires the U.S.

Fish and Wildlife Service to develop comprehensive conservation plans for all lands and waters of the National Wildlife Refuge System. The *Florida Panther National Wildlife Refuge Comprehensive Conservation Plan* meets the requirements of the act. The refuge was established to conserve fish, wildlife, and plants listed as endangered and/or threatened species under the Endangered Species Act of 1973, specifically the Florida panther. The Refuge abuts the northwest boundary of the Preserve and functions as a vital habitat linkage for panthers. The *Florida Panther National Wildlife Refuge Comprehensive Conservation Plan* was reviewed during the development of this management plan for the Addition.

Interagency Florida Panther Response Plan
(2008)

The U.S. Fish and Wildlife Service, in partnership with the National Park Service and the Florida Fish and Wildlife Conservation Commission, prepared a final response plan in October 2008 that includes guidelines for the agencies responding to human-panther interactions and depredations. The plan also provides guidelines for developing an outreach and education program to help people understand panther behavior and actions humans should take when living or recreating in panther habitat.

Related to the response plan is the *Florida Panther Recovery Plan*, updated and released in 2006. This is the third update of the Service's panther recovery plan since 1981 when the first plan was crafted. The revised plan will be substituted for the panther chapter in the Service's *Multi-Species Recovery Plan* as well as its range-wide species recovery plan for the panther.

These plans were reviewed during the development of this management plan for the Addition.

Manatee Management Plan

In 2001 the U.S. Fish and Wildlife Service's Southeast Region published a third revision to the *Florida Manatee Recovery Plan*, which identified information on the manatee's endangered status, as well as recovery goals, criteria to ensure a healthy population, and ultimate removal from the endangered list. Future management and information exchange with researchers throughout the world is also outlined. The plan is part of the *Comprehensive Everglades Restoration Plan* and is part of ongoing research from scientists in the Florida Integrated Science Center, Florida Marine Research Institute, Ten Thousand Islands National Wildlife Refuge, Big Cypress National Preserve, and Everglades National Park (USGS 2005). Manatees are found in the Preserve, and this plan will contribute to their protection. The *Manatee Management Plan* was reviewed during the development of this management plan for the Addition.

South Florida Multi-Species Recovery Plan
(1999)

This plan was written to recover multiple species by restoring ecological communities throughout the south Florida ecosystem (26,002 square miles). There are more than 600 species considered either rare or imperiled in south Florida, 68 of which are federally listed as threatened or endangered. A number of limiting factors for habitat-limited species are outlined, including habitat loss, fragmentation, and degradation as a result of urbanization, agriculture or other land-use conversions, wetland drainage and alteration of hydrological patterns, invasion of exotic species, fire suppression, soil subsidence, degradation of water quality, and increased levels of contaminants. Recovery objectives are identified at the species level, while recovery criteria are identified at the species and community level. Recovery actions have been developed to provide consistency between each of the 68 species, and habitat level recovery actions have

been developed to facilitate the integration of individual species needs at the community level. The plan does not replace existing approved species recovery plans, but rather outlines south Florida's contribution to rangewide recovery. A number of threatened and endangered species reside within the Preserve, and the Preserve is a critical habitat link in the ecosystem. The *South Florida Multi-Species Recovery Plan* was consulted during the development of this management plan for the Addition.

TRIBAL PLANS

Seminole Tribe of Florida

Seminole Big Cypress Water Conservation Plan (1997)

The plan was completed in 1997 and addresses a number of issues, including water transfer and conveyance, storage, water quality, and historic flows. This water project began as a *Comprehensive Everglades Restoration Plan* pilot program under the 1996 Water Resource Development Act, is considered a "Critical Restoration Project," and is currently being implemented. The plan seeks to mitigate man-made impacts on the natural system and contributes to overall ecosystem restoration. The plan ensures that the reservation's federal water right is met. Further, the plan provides for additional water retention and storage to alleviate flooding and increase residential development potential. Water quality is addressed, and water resource areas will be used to reduce phosphorus loads. These areas, in conjunction with bypass structures under the west feeder canal, will ensure full sheet flow contact across the entire wetland system, rehydrating wetlands and mimicking flows prior to the Central and Southern Florida projects. Big Cypress National Preserve is directly linked to the Seminole Reservation by the flows from the reservation into the Preserve. The

Seminole Big Cypress Water Conservation Plan was reviewed during the development of this management plan for the Addition.

STATE AGENCY PLANS

Florida Department of Agriculture and Consumer Services, Division of Forestry

Picayune Strand State Forest Management Plan (2008)

The 10-year plan was approved in August 2008. The plan establishes goals for critical elements of the forest, including restoration, recreation, reforestation, horticulture, exotic plant management, threatened and endangered species, and prescribed fire. It is the first detailed, long-range plan for the forest, and it will guide the management of the forest from 2008 through 2018. The forest is adjacent to Fakahatchee Strand Preserve State Park, which abuts Big Cypress National Preserve to the west. The *Picayune Strand State Forest Management Plan* was reviewed during the development of this management plan for the Addition.

Florida Fish and Wildlife Conservation Commission

A Conceptual Management Plan for the Everglades Complex of Wildlife Management Areas (ECWMA) (2002)

The Everglades Complex is part of the Kissimmee-Okeechobee-Everglades basin and lies within three counties — southwestern Palm Beach, western Broward, and northwestern Miami-Dade. It includes three management areas — Holey Land, Rotenberger, and Everglades-Francis S. Taylor. Through a cooperative management agreement with the South Florida Water Management District, the Florida Fish and Wildlife Conservation Commission has management authority over ECWMA lands (mainly lands in Water Conservation Areas 2 and 3) for game and fresh water fish preservation, protection,

propagation, and recreational use. The plan lists 28 state and federally listed and endangered or threatened species and their habitat. The majority of the complex is east and northeast of the Preserve; however, the southwest corner of Everglades-Francis S. Taylor Wildlife Management Area abuts the eastern boundary of the Preserve from the Tamiami Ranger Station north to the Broward County line. The ECWMA plan was reviewed during the development of this management plan for the Addition.

Florida Department of Environmental Protection, Division of Recreation and Parks

Coastal Zone Management Program

The Florida Coastal Zone Management Program was developed with the passage of the Coastal Zone Management Act of 1966 and approved by the National Oceanic and Atmospheric Administration in 1981. The program gives the state oversight responsibilities in controlling dredge and fill operations, pollution abatement, and other environmental concerns. The National Park Service has reviewed the state coastal zone management plan and has determined that this *General Management Plan* for the Addition is consistent with the Coastal Zone Management Act.

Fakahatchee Strand Preserve State Park Management Plan (2000)

The plan is intended to meet the requirements in Sections 253.034 and 259.032, Florida Statute and Chapter 18-2, *Florida Administrative Code*. The primary purpose of the state park is outdoor recreation and conservation, with preservation and enhancement of natural conditions taking precedent over user considerations. Park goals outlined in the plan include restoring park hydrology, assisting in the recovery of the Florida panther, appropriately managing cultural resources, and eliminating exotic plant species.

Development is restricted to the minimum necessary for ensuring the state park's protection and maintenance, limited access, user safety and convenience, and appropriate interpretation. In relation to the Preserve, the park serves as a critical link in the water resources of the region. Surface water from the Preserve and the Florida Panther National Wildlife Refuge enters the park from the north on its way to Everglades National Park to the south. The *Fakahatchee Strand Preserve State Park Management Plan* was reviewed during the development of this management plan for the Addition.

State Comprehensive Outdoor Recreation Plan — Outdoor Recreation in Florida (2000)

This plan assesses recreational supply, demand, and needs for 11 regions in the state. Region 9 (Southwest Florida) includes the Preserve and the surrounding area. The plan identifies goals for recreational opportunities and facilities, including hiking, bicycling, horseback riding, camping, fishing, and ORV use. The actions contained in this general management plan will help meet the state's goals for outdoor recreation.

LOCAL PLANS

Collier County

Collier County Manatee Protection Plan (1995)

The U.S. Fish and Wildlife Service of the Department of the Interior protects manatees under the Marine Mammal Protection Act of 1972 and the Endangered Species Act of 1973. In addition, the Florida Manatee Sanctuary Act, Chapter 16N-22, *Florida Administrative Code*, provides manatee protection by declaring the state of Florida a "refuge and sanctuary for the manatee, the 'Florida State Marine Mammal.'" The Addition is in Collier County, one of 13 key manatee counties in Florida. This plan seeks to reduce the number of boat-related

manatee mortalities, achieve an optimal sustainable manatee population, protect manatee habitat, promote boating safety, and increase public awareness of the need to protect manatees and their environment. This general management plan is consistent with the *Collier County Manatee Protection Plan*.

Collier County 2030 Long-range Transportation Plan (2007)

The *2030 Long-range Transportation Plan's* purpose is to ensure an organized scope of needs and goals regarding transportation within Collier County and outlying areas through 2030. This plan is updated as necessary and was last done in July 2007.

The *2030 Long-range Transportation Plan* demonstrates the need for both regional and alternative transportation strategies and defines the opportunity to incorporate those components into an overall transportation program. The plan provides for the enhanced funding to expand the operations and services of transit, improve connectivity through the use of pedestrian and bicycle facilities and local road interconnection, congestion management system and intelligent transportation system (CMS and ITS) programs and improvements. The plan has also included the Metropolitan Planning Organization's regional partners in the development and integration of

multimodal regional components. This plan also addresses things such as wildlife crossings along SR 29. This general management plan is consistent with the *Long-range Transportation Plan*.

Growth Management Plan

The plan is required under the 1985 Florida Growth Management Act and is to be consistent with state and regional plans. It is composed of many elements, namely the Future Land Use Element, the *Golden Gate Area Master Plan*, the *Immokalee Area Master Plan*, the Capital Improvement Element, Intergovernmental Coordination Element, Housing Element, Recreation and Open Space Element, Conservation and Coastal Management Element, the Economic Element, and Public Utilities Element. When combined, these elements provide the framework to effectively guide future development, while providing for the protection of open space; natural resources; and public health, safety, and welfare. Development in Collier County directly impacts natural resources in the Preserve and Addition. Therefore, managed growth policies outlined in this plan are necessary to reduce negative impacts of development and ensure that the entire Preserve is protected for future generations.

PLANNING ISSUES AND CONCERNS

INTRODUCTION

The general public; NPS staff; representatives from other county, state, and federal agencies; and representatives from various organizations identified various issues and concerns during scoping (early information gathering) for this *General Management Plan*. An issue is defined as an opportunity, conflict, or problem regarding the use or management of public lands. Comments were solicited at public meetings, through planning newsletters, and on the NPS web site (see the “Consultation and Coordination” chapter).

Comments received during scoping demonstrated that there is much that the public likes about the original Preserve and the Addition. The issues and concerns for the Addition generally involve determining the appropriate types and levels of visitor use and facility development in the Addition while remaining compatible with desired resource conditions. The alternatives in this general management plan provide strategies for addressing the issues within the context of the Addition’s purpose, significance, and special mandates.

ISSUES

The following issues were identified for the Addition.

Management Direction

Although acquisition of the Addition was authorized in the 1988 legislation, these lands were in private ownership until 1996 when most of the lands were acquired through the Arizona–Florida Land Exchange and transferred to the National Park Service. No comprehensive planning has been conducted for the Addition since that time. A general management plan is needed to provide

direction for managing the Addition consistently with the original Preserve and determining what kind of resource conditions and visitor experiences the National Park Service, in consultation with the public, American Indians, and landowners, will seek to achieve.

Visitor Access and Use Levels

Many people were concerned about the type of access provided to visitors as well as the use levels that would occur in the Addition. Some expressed concern that not enough motorized access would be allowed for traditional uses; others were concerned that too much motorized use would be allowed, with adverse impacts on resources. People’s opinions about ORV permitting, hunting, and commercial services were highly polarized. The location, number, and types of recreational access points were major points of interest. More than 6 million vehicles per year travel the I-75 corridor. Many of the people in those vehicles use the Addition, further underscoring the importance of addressing access and use concerns.

Resource Impacts from Visitor Use and Facility Development

Many people were concerned about the effects ORV use would have on cultural resources, sensitive wildlife, including the Florida panther, and native plant communities. The level of facility development and the impact it would have on natural hydrologic processes and wildlife habitat was also an issue.

Resource Preservation and Restoration

The National Park Service’s ability to preserve and restore natural resources in the Addition

is highly dependent on the range of uses and the levels of motorized access and facility development that are approved. Many people were concerned about the National Park Service's ability to protect resources while meeting the allowed multiple uses in the Addition, including management of hunting, oil and gas operations, motorized use, and access for owners of private property.

Wilderness

Evaluating the Addition for wilderness eligibility has been a long-standing controversial issue. The National Park Service is required to study the Addition for wilderness suitability based on the requirements of the Addition's enabling legislation passed by Congress. Public opinion about wilderness designation in the Addition is centered on protecting resources through wilderness designation while at the same time providing for a diversity of ORV riding opportunities. Furthermore, public opinion differs regarding whether these lands possess wilderness character.

Addition Operations and Management

With the exception of two fire management facilities in the Western Addition, the National Park Service currently has no operations facilities in the Addition. The Northeast Addition has no NPS presence, and staff have to drive up to an hour (60 miles) from the Preserve headquarters in Ochopee to get there. To effectively and efficiently manage resources and visitor use in the Addition, suitable locations for operations facilities that will provide for adequate patrol and enforcement, emergency response, resource management, visitor orientation and education, fire management, and maintenance must be determined. No NPS facility exists along the I-75 corridor where the NPS staff can engage and educate the many visitors who travel the interstate annually.

ISSUES AND CONCERNS NOT ADDRESSED IN THIS GENERAL MANAGEMENT PLAN

Not all of the issues or concerns raised by the public are included in this management plan because they

- are already prescribed by law, regulation, or policy (see the "Guidance for the Planning Effort" section)
- would be in violation of laws, regulations, or policies
- were at a level that was too detailed for a general management plan and would be more appropriately addressed in subsequent planning documents

This section briefly describes each of these issues, and the basis for excluding them from this management plan.

Usual and Customary Use and Occupancy by American Indians

The Addition's enabling legislation states that the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida have the right to continue their usual and customary use and occupancy of the Addition subject to reasonable regulations.

The National Park Service will work cooperatively with the tribes to develop regulations to accommodate their use and occupancy rights accordingly.

Hunting, Fishing, and Trapping Management

The Addition Act states that

the Secretary shall permit hunting, fishing, and trapping on lands and waters under his jurisdiction within the preserve and the Addition in accordance with the applicable laws of the United States and the State of

Florida, except that he may designate zones where and periods when no hunting, fishing, trapping, or entry may be permitted for reasons of public safety, administration, floral and faunal protection and management, or public use and enjoyment. Except in emergencies, any regulations prescribing such restrictions relating to hunting, fishing, or trapping shall be put into effect only after consultation with the appropriate State agency having jurisdiction over hunting, fishing, and trapping activities.

No matter which alternative is implemented, the National Park Service will work with the Florida Fish and Wildlife Conservation Commission to define hunting seasons and develop hunting regulations consistent with both agencies' policies and goals for the Addition. (Hunting access is addressed in this plan and is provided for in all alternatives.)

Oil and Gas Management

Oil and gas exploration in the Addition is currently managed in accordance with the "Agreement among the United States of America, Collier Enterprises, Collier Development Corporation, and Barron Collier Company" (Addition Lands Agreement) dated May 1988. Nothing in this general management plan would affect the existing legal rights of mineral owners or change the approved exploration plans and practices of operators. A Preserve-wide oil and gas management plan is currently being

prepared by the National Park Service. When completed, this plan will provide guidance for oil and gas exploration for the entire Preserve, including the Addition.

Acquisition Deferred (Exempt) Properties

There are more than 200 privately owned tracts in the Addition. Some of these tracts will be classified as improved properties in accordance with the Addition Act, and as such they would be considered acquisition deferred (exempt) unless owners are willing to sell or uses on the land could be detrimental to the purposes of the Addition. This general management plan does not provide guidance nor make any decisions about the treatment of these privately owned parcels. Land acquisition and disposition issues are handled according to the terms outlined in the Addition Act and are conducted by NPS real estate specialists and attorneys.

ORV Management in the Original Preserve

ORV management in the original Preserve was addressed in the *Recreational Off-road Vehicle Management Plan / Environmental Impact Statement* (2000). Therefore, any concerns or updates needed to the 2000 ORV plan are outside the scope of this general management plan for the Addition.

IMPACT TOPICS — RESOURCES AND VALUES AT STAKE IN THE PLANNING PROCESS

IDENTIFICATION OF IMPACT TOPICS

An important part of planning is seeking to understand the consequences of making one decision over another. To this end, this general management plan is accompanied by an environmental impact statement, which identifies the anticipated impacts of possible actions on Addition resources and on visitors and neighbors. Impacts are organized by topic, such as “impacts on the visitor experience” or “impacts on vegetation.” Impact topics focus the environmental analysis and ensure the relevance of impact evaluation.

Impact topics for this document were identified based on federal laws and other legal requirements, Council on Environmental Quality (CEQ) guidelines, NPS management policies, staff subject-matter expertise, and issues and concerns expressed by the public and other agencies early in the planning process (see previous section). The planning team selected the impact topics for analysis based on the potential for each topic to be affected by the alternatives. Also included is a discussion of some impact topics that are commonly addressed in general management plans, but that are dismissed from detailed analysis in this plan for the reasons given.

The “Environmental Consequences” chapter contains a detailed description of the impacts that would result from implementing the actions described in the alternatives.

IMPACT TOPICS RETAINED AND DISMISSED

To focus the analysis on the key or important impacts, some topics have been dismissed from detailed analysis. Impact topics were dismissed if they were considered during the planning process but determined not to be relevant to the development of this management plan because either: (a) implementing the alternatives would have no effect, negligible effect, or minor effect on the resource, or (b) the resource does not occur in the Addition.

Table 1 identifies all of the impact topics considered for this *General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* and states whether they were retained or dismissed. The table is organized by theme (e.g., natural resources, wilderness, cultural resources, visitor use and experience, socio-economic environment, and NPS operations) and includes a rationale as to why the impact topic was retained or dismissed.

TABLE 1: IMPACT TOPICS RETAINED AND DISMISSED FOR BIG CYPRESS NATIONAL PRESERVE ADDITION

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Natural Resource Impact Topics			
Surface Water Flow	Retained	Water was named as a prime resource in the Addition's enabling legislation. The hydrologic cycle is the primary determinant of the distribution, composition, and structure of the Addition's ecological communities. Development can alter, and has altered in the past, natural surface flows, with subsequent effects on the natural environment. Many actions proposed in the plan, including recreational facility development and ORV use, may displace soils in such a way that they change water flow patterns and directions. Therefore, surface water flow was retained as an impact topic.	<i>NPS Management Policies 2006; Director's Order 77-2</i>
Water Quality	Retained	Surface and subsurface water quality directly affect the health and condition of natural communities, as well as the human environment. Proposed actions outlined in the alternatives, such as continued oil and gas operations, the provision of visitor use facilities, ORV use, and the application of herbicides for exotic plant control, involve potential contaminants. Therefore, water quality was retained as an impact topic.	Clean Water Act; Executive Order 12088; <i>NPS Management Policies 2006</i>
Wetlands	Retained	Most of the Addition is classified as wetlands, with the exceptions being scattered hardwood hammocks, some pinelands, and artificially filled areas. During the wet season (May through October), as much as 90% of the Addition can be inundated with water. Due to the likelihood that one or more actions proposed in the plan could have an impact on wetlands, it was retained as an impact topic.	Executive Order 11990; Clean Water Act; NPS Director's Order 77-1; <i>NPS Management Policies 2006</i>
Soils	Retained	Soils are key to maintaining the ecological integrity of the Addition. Actions included in the alternatives, including recreational facility development, ORV use, and restoration, could cause soil loss or reduced productivity. Any impacts that would adversely affect soil resources would be of concern to NPS managers and the public. Therefore, soils were retained as an impact topic.	<i>NPS Management Policies 2006</i>

Impact Topics — Resources and Values at Stake in the Planning Process

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Floodplains	Retained	Portions of the Addition, primarily in the southwest, are classified as being within the 100-year floodplain. Retention of existing facilities and the development of new facilities could adversely affect the protection, management, and use of these floodplains, or substantially change the character and natural processes of the floodplains. Therefore, floodplains were retained as an impact topic.	Executive Order 11988; Director's Order 77-2; <i>NPS Management Policies 2006</i>
Vegetation: Cypress Strands and Domes, Mixed-Hardwood Swamps, and Sloughs	Retained	The vegetation communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. The vegetation types included in this document are identical to those identified in the 2000 <i>Recreational ORV Management Plan</i> , which contains the most comprehensive and current listing of plant communities. Actions in the alternatives of this document, including recreational facility development, ORV use, and prescribed fire use, could result in changes in plant composition or the loss of vegetation. Proposed actions could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, this vegetative community was retained as an impact topic.	NPS Organic Act and <i>NPS Management Policies 2006</i>
Vegetation: Prairies and Marshes	Retained	The vegetation communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. The vegetation types included in this document were modeled on those identified in the 2000 <i>Recreational ORV Management Plan</i> , which contains the most comprehensive and current listing of plant communities. Actions in the alternatives of this document, including recreational facility development, ORV use, and prescribed fire use, could result in changes in plant composition or the loss of vegetation. Proposed actions could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, this vegetative community was retained as an impact topic.	NPS Organic Act and <i>NPS Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Vegetation: Mangrove Forests	Retained	The vegetation communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. The vegetation types included in this document were modeled on those identified in the 2000 <i>Recreational ORV Management Plan</i> , which contains the most comprehensive and current listing of plant communities. Actions in the alternatives of this document, including recreational facility development, ORV use, and prescribed fire use, could result in changes in plant composition or the loss of vegetation. Proposed actions could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, this vegetative community was retained as an impact topic.	NPS Organic Act and <i>NPS Management Policies 2006</i>
Vegetation: Pinelands	Retained	The vegetation communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. The vegetation types included in this document were modeled on those identified in the 2000 <i>Recreational ORV Management Plan</i> , which contains the most comprehensive and current listing of plant communities. Actions in the alternatives of this document, including recreational facility development, ORV use, and prescribed fire use, could result in changes in plant composition or the loss of vegetation. Proposed actions could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, this vegetative community was retained as an impact topic.	NPS Organic Act and <i>NPS Management Policies 2006</i>
Vegetation: Hardwood Hammocks	Retained	The vegetation communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. The vegetation types included in this document were modeled on those identified in the 2000 <i>Recreational ORV Management Plan</i> , which contains the most comprehensive and current listing of plant communities. Actions in the alternatives of this document, including recreational facility development, ORV use, and prescribed fire use, could result in changes in plant composition or the loss of vegetation. Proposed actions could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, this vegetative community was retained as an impact topic.	NPS Organic Act and <i>NPS Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Vegetation: Exotic/ Nonnative Species	Retained	<p>The native plant communities that exist in the Big Cypress region are considered an important resource. The Addition contains a diversity of native plant species. Exotic, or nonnative, plant species impact native species by outcompeting them — they aggressively take over disturbed habitats, expand their distribution and displace natives at alarming rates, use more water, and impact wildlife that depend on native plant communities and functional ecosystems. Exotic plants are easily distributed by recreational use and other activities in the Addition and require steadfast management. Another consideration is the effect that wilderness designation and management would have on exotic plant control activities and restoration techniques. The implications of the “minimum tool requirement” could be substantial. Actions in the alternatives could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Because of the seriousness of these issues, exotic species were specifically included as an impact topic.</p>	<p>NPS Organic Act and NPS <i>Management Policies 2006</i></p>
Federal Threatened and Endangered Species: Florida Panther	Retained	<p>Panthers have been observed in the Addition. They are subject to the effects of management, visitor use, and development. Proposed actions, including ORV use, hunting, and other activities, could impact the quality of habitat preferred by this species, as well as its behavior and foraging opportunities. Therefore, Florida panthers were retained as an impact topic.</p>	<p>Endangered Species Act; NPS <i>Management Policies 2006</i></p>
Federal Threatened and Endangered Species: West Indian Manatee	Retained	<p>Manatees use marine resources and waterways within the Addition. Manatees are highly sensitive to the effects that management, visitor use, or development has on marine habitats. Proposed actions, such as motorboat use and other visitor use, could reduce the quality of habitat preferred by these species, directly disturb individual animals, or reduce foraging opportunities. Therefore, the West Indian manatee was retained as an impact topic.</p>	<p>Endangered Species Act; Marine Mammal Protection Act; NPS <i>Management Policies 2006</i></p>
Federal Threatened and Endangered Species: Red-Cockaded Woodpecker	Retained	<p>At least one red-cockaded woodpecker colony lives in the Addition. Proposed actions, such as ORV use and other visitor use, could reduce the quality of habitat preferred by these species, directly disturb individual animals, or reduce foraging opportunities. Therefore, red-cockaded woodpeckers were retained as an impact topic.</p>	<p>Endangered Species Act; Migratory Bird Treaty Act; NPS <i>Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Federal Threatened and Endangered Species:</p> <p>Wood Stork</p>	Retained	<p>Wood stork rookeries can be found within the Addition. The wood stork is sensitive to human interference and would likely be subject to the effects of NPS management, visitor use, or development. Proposed actions, such as ORV use and other visitor use, could impact nest sites, reduce the quality of habitat preferred by these species, directly disturb individual animals, or reduce foraging opportunities. Therefore, the wood stork was retained as an impact topic.</p>	<p>Endangered Species Act; Migratory Bird Treaty Act; <i>NPS Management Policies 2006</i></p>
<p>Federal Threatened and Endangered Species:</p> <p>Cape Sable Seaside Sparrow</p>	Dismissed	<p>No suitable habitat for Cape Sable seaside sparrows exists in the Addition. None of the proposed actions in the alternatives would affect sparrow habitat. Therefore, this sparrow was dismissed from further consideration.</p>	<p>Endangered Species Act; Migratory Bird Treaty Act; <i>NPS Management Policies 2006</i></p>
<p>Federal Threatened and Endangered Species:</p> <p>Everglade Snail Kite</p>	Retained	<p>No Everglade snail kite nests exist within the Addition. Their primary habitat and nest sites are found in adjacent conservation area lands owned by the South Florida Water Management District. The kite currently only uses the Addition for foraging purposes. The actions proposed in this plan could reduce the quality of kite habitat, disturb individuals, displace foraging opportunities, or limit potential range expansion into the Preserve. Therefore, the Everglade snail kite was retained as an impact topic.</p>	<p>Endangered Species Act; Migratory Bird Treaty Act; <i>NPS Management Policies 2006</i></p>
<p>Federal Threatened and Endangered Species:</p> <p>American Crocodile</p>	Retained	<p>Although the American crocodile has been recently observed in the Addition, they are not typically found in the immediate area. The crocodile's range seems to be expanding, which provides further evidence that crocodile populations are stable or growing. Some of the actions being proposed in the alternatives could adversely affect crocodiles that use the Addition or their habitat; however, the level of development included in the plan is generally minimal and not located in crocodile use areas. Recreational use could also affect water quality in the mangrove estuaries in the Western Addition, which could affect crocodiles or their prey. Therefore, the American crocodile was retained as an impact topic.</p>	<p>Endangered Species Act and <i>NPS Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
<p>Federal Threatened and Endangered Species:</p> <p>American Alligator</p>	Dismissed	<p>The American alligator is listed because of the similarity of its appearance to the endangered American crocodile. Alligators in the Addition are numerous. The actions proposed in the alternatives would have only negligible to minor effects on alligators, including localized impacts on water quality and habitat values associated with recreational use and limited development. Overall, the integrity of alligator habitat would be maintained. Therefore, the American alligator was dismissed from further consideration.</p>	<p>Endangered Species Act and NPS <i>Management Policies 2006</i></p>
<p>Federal Threatened and Endangered Species:</p> <p>Eastern Indigo Snake</p>	Retained	<p>The eastern indigo snake has been observed only sporadically in the Addition. No real data on its use of the Addition exists. The greatest threat to these snakes is habitat loss. Most of the ORV use associated with the action alternatives will be on designated ORV trails and avoid snake burrows and use areas. However, this recreational use may flush snakes (or their prey), which may disrupt the snake's foraging, breeding, and dispersing behaviors. The ORV access may also lead to spur trails that have direct effects on snake burrowing and foraging areas. Limiting the number of ORV permits under the two alternatives that include ORV use would help minimize habitat disturbance. Given these effects, the eastern indigo snake was retained as an impact topic.</p>	<p>Endangered Species Act and NPS <i>Management Policies 2006</i></p>
<p>Other Federal and State Listed Species</p>	Dismissed	<p>Other federally protected species known to occur in Collier County, such as the piping plover, crested caracara, roseate tern, Florida scrub-jay, Kemp's ridley, hawksbill, leatherback, green turtle, and loggerhead were dismissed because these species are not found in the Addition.</p> <p>Bald eagles do not nest in the Addition, but they do roost and forage in the area. The bald eagle was recently removed from the federal Threatened and Endangered Species List and is no longer subject to the Endangered Species Act. However, the species is still protected by other federal and state laws. Visitor use in the Addition could cause short-term adverse impacts on bald eagles, such as flushing and displacement; however, the effect would be negligible to minor. The integrity of bald eagle habitat would be maintained under all alternatives. Therefore, this topic was dismissed from further consideration.</p>	<p>Endangered Species Act; Migratory Bird Treaty Act; National Environmental Policy Act; NPS <i>Management Policies 2006</i></p> <p>Bald and Golden Eagle Protection Act; Migratory Bird Treaty Act; NPS <i>Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Other Federal and State Listed Species (cont.)	Dismissed	<p>Other state protected species known to occur in Collier County, such as the Big Cypress fox squirrel, Miami blue butterfly, southeastern American kestrel, snowy plover, least tern, Florida sandhill crane, Florida black bear, peregrine falcon, and white-crowned pigeon were dismissed because these species typically are not found in the Addition and/or their preferred habitat would not be physically disturbed by any of the actions proposed in the alternatives. Therefore, specific measures to protect these species are not needed, other than the general protection afforded by the Addition.</p>	<p>Florida Fish and Wildlife Conservation Commission's List of Endangered, Threatened, or Species of Special Concern</p>
		<p>The <i>Liguus</i> tree snail is listed as a state species of special concern. Impacts from actions proposed in the alternatives would have only a minor effect on the species due to ongoing threats from illegal collection. The National Park Service currently has a permit process in place to allow for special collection of this species, which should serve to minimize adverse impacts from collection.</p>	<p>Florida Fish and Wildlife Conservation Commission's List of Endangered, Threatened, or Species of Special Concern</p>
		<p>More than 100 state-protected plant species occur in the Addition, three of which are candidates for federal listing. The actions proposed in this plan would have no effect on the relative abundance of these species and would not jeopardize their long-term survival and success. Any facility development would be sited to avoid the preferred habitat of these species.</p>	<p>Rule Chapter 5B-40 of the Florida Administrative Code (Regulated Plant Index)</p>
Major Game Species:	Retained	<p>White-tailed deer, feral hogs, and wild turkey are common in the region. They are included as an impact topic because of their importance as prey for the endangered Florida panther and as the principal game animals for potential hunting in the Addition. Hunting activities in the Addition could reduce local populations, thus potentially affecting the panther's foraging opportunities. Actions in the alternatives could beneficially or adversely affect these species, which would be of concern to many people as well as NPS managers.</p>	<p>NPS <i>Management Policies 2006</i> and Executive Order 13443, "Facilitation of Hunting Heritage and Wildlife Conservation"</p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Other Wildlife Species	Dismissed	<p>Potential impacts to other wildlife species, such as other birds, reptiles, amphibians, invertebrates, and mammals, resulting from recreational facility development and ORV use would likely include flushing and displacement of individual species, but overall habitat integrity in the Addition would be maintained. The species that are sensitive to habitat loss and the effects of increases in human activity and disturbance have been retained for detailed analysis; those species in the category of “other wildlife” are considered to be generalists and thus more resilient to change and minor impacts. The adverse impact on other wildlife species from the actions included in the alternatives would be negligible to minor. Therefore, effects to other wildlife species were dismissed from further consideration.</p>	<p>NPS Organic Act and NPS <i>Management Policies 2006</i></p>
Fisheries/Aquatic Life	Dismissed	<p>The Addition contains a variety of native and nonnative fishes. Recreational fishing in the Addition is regulated by the Florida Fish and Wildlife Conservation Commission. None of the alternatives would change the management of fishing or result in changes that would affect the fish populations in the Addition. Recreational fishermen would continue to be able to harvest fish in the Addition under all of the alternatives, subject to the regulations of the Florida Fish and Wildlife Conservation Commission. The National Park Service would continue to work with the state to ensure that healthy fish populations are maintained. No commercial fishing is allowed or would be allowed in the Addition under any of the alternatives.</p> <p>Herbicides are used for exotic plant control in the Addition, but NPS staff follows all Environmental Protection Agency, Florida Department of Agriculture, and manufacturer requirements. Therefore, impacts on water quality and any biotic components that fisheries and aquatic life rely on should be negligible or minor.</p> <p>Because of the reasons stated above, any adverse effects on fisheries/aquatic life from the activities proposed in the alternatives would be negligible to minor. Therefore, this topic has been dismissed from further analysis.</p>	<p>NPS <i>Management Policies 2006</i></p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Air Quality	Dismissed	<p>The Addition has been designated a Class II area under the Clean Air Act. The Addition is currently within a designated attainment area (i.e., concentrations are below standards) for criteria pollutants. The contribution of pollutants resulting from implementing any of the alternatives would be negligible compared to current levels. Fugitive dust and exhaust emissions would be produced by recreational development activities, ORV use, and increased vehicular traffic to the Addition; however, these activities would not be expected to cause national ambient air quality standards to be exceeded because visitation increases would be relatively small and the level of new development proposed is minimal. Air quality impacts from the use of prescribed fire were analyzed in the Preserve’s <i>Fire Management Plan/ Environmental Assessment</i>, which also addresses the Addition. Any amount of pollutants added because of the actions proposed in the alternatives would be negligible compared to existing levels. Therefore, air quality was dismissed from further consideration.</p>	<p>Clean Air Act and NPS <i>Management Policies 2006</i></p>
Lightscape Management (Dark Night Sky Preservation)	Dismissed	<p>Light pollution is present in some areas of the Addition, although many areas retain a high degree of natural darkness. The National Park Service strives to minimize the intrusion of artificial light into the night scene by limiting the use of artificial outdoor lighting to basic safety requirements, shielding the lights when possible, and using minimal impact lighting techniques. Any new facilities proposed in the alternatives that would necessitate new night-time lighting would be constructed with down lighting that would minimize light pollution. Furthermore, the level and type of new development and lighting proposed in the plan is minimal and dispersed. The effects of actions contained in this plan on natural lightscapes would be minor. Therefore, lightscape was dismissed from further analysis.</p>	<p>NPS Organic Act; enabling legislation; NPS <i>Management Policies 2006</i></p>

Impact Topics — Resources and Values at Stake in the Planning Process

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Prime and Unique Farmlands	Dismissed	Prime farmland is soil that produces general crops such as common foods, forage, fiber, and oil seed; unique farmland produces specialty crops such as fruits, vegetables, and nuts. The Farmland Protection Policy Act (7 USC 4201 <i>et seq.</i>) and the U.S. Department of the Interior (Environmental Statement Memorandum No. ESM94-7 – Prime and Unique Agricultural Lands) require an evaluation of impacts on prime or unique agricultural lands. No prime or unique agricultural lands exist in the Addition according to the Natural Resources Conservation Service (NRCS). Therefore, this topic was dismissed from further consideration.	Council on Environmental Quality 1980 memorandum
Natural or Depletable Resource Requirements and Conservation Potential	Dismissed	The Addition’s enabling legislation permits oil and gas exploration and development by mineral owners. Consequently, oil and gas operations in the Addition are allowed under all Addition management scenarios. None of the actions included in the <i>General Management Plan</i> would result in changes to oil and gas exploration or the extraction of new resources from the Addition. The use and consumption of fuel and other nonrenewable resources for NPS operations, activities, and development associated with the alternatives is small in comparison to that of the region. The National Park Service strives to use sustainable practices and technology and reduce its impact on natural or depletable resources. Under all of the alternatives, ecological principles would be applied to ensure that the Addition’s natural resources were maintained and conserved. Therefore, this topic was dismissed from further consideration.	<i>NPS Management Policies 2006</i>
Wilderness Impact Topics			
Wilderness Resources and Values	Retained	Lands within the Addition have been found to possess wilderness characteristics and values. Proposed actions, including visitor use and NPS management activities, could have an impact on wilderness qualities. Actions in the alternatives could beneficially or adversely affect these resources, which would be of concern to many people as well as NPS managers. Therefore, wilderness resources and values were retained as an impact topic.	<i>Wilderness Act and NPS Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Cultural Resource Impact Topics			
Archeological Resources	Retained	Actions under the alternatives that allow increased access to the Addition, including backcountry camping, hiking, hunting, and ORV use, could result in impacts to archeological resources. Therefore, this topic has been retained for further analysis.	Secretarial Order 13007; National Environmental Policy Act; Director's Order 28; NPS <i>Management Policies 2006</i> ; NPS-28A, "Archeological Resources Management"
American Indian Ethnographic Resources	Retained	Actions under the alternatives that allow increased access to the Addition, including backcountry camping, hiking, hunting, and ORV use, could result in impacts on American Indian ethnographic resources, including sacred sites. Therefore, this topic has been retained for further analysis.	Executive Order 13007; National Environmental Policy Act; Director's Order 28; NPS <i>Management Policies 2006</i> ; NPS-28, "Cultural Resources Management"
Other Ethnographic Resources	Dismissed	<p>Recent investigations have documented the historic connections between the "Gladesmen" and the natural environment of south Florida, including Big Cypress National Preserve. The term "Gladesmen" refers to a predominantly Anglo-American group of settlers who have occupied areas in south Florida since the end of the Civil War. Here they developed a subsistence economy heavily dependent on hunting and fishing. The Gladesmen became renowned over several generations for their knowledge of the Big Cypress and their ability to navigate the area's labyrinth of waterways in light skiffs. Gladesmen became highly valued as guides for explorers, hunters, fishermen, and researchers. The Gladesmen traditions gradually evolved in the 20th century as airboats and all-terrain vehicles replaced skiffs as the preferred modes of transportation in the Big Cypress.</p> <p>None of the sites or structures associated with the Gladesmen have been identified as ethnographic resources or traditional cultural properties. There are no impacts anticipated to cultural resources associated with the Gladesmen. Therefore, this topic has been dismissed from further analysis.</p>	National Environmental Policy Act; Director's Order 28; NPS <i>Management Policies 2006</i> ; NPS-28, "Cultural Resources Management"; and National Register Bulletin — "Guidelines for Evaluating and Documenting Traditional Cultural Properties."
Cultural Landscapes	Dismissed	No cultural landscapes have been identified in the Addition. Some village sites and historic homesteads may be evaluated in the future as potential cultural landscapes. However, none of the actions under the alternatives pose impacts on features that would contribute to the integrity of potentially important cultural landscapes. Therefore, this topic was dismissed from further consideration.	NPS-28, "Cultural Resources Management", NPS <i>Management Policies 2006</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Historic Structures	Dismissed	<p>None of the structures in the Addition are listed or have been determined eligible for listing in the National Register of Historic Places. Some structures associated with village sites and historic homesteads may be evaluated in the future for listing on the National Register. However, none of the actions under the alternatives pose impacts to these sites. Therefore, this topic was dismissed from further consideration.</p>	<p>NPS-28, “Cultural Resources Management” and NPS <i>Management Policies 2006</i></p>
Museum Collections	Dismissed	<p>None of the actions under the alternatives pose direct impacts on NPS museum collections. No museum collections are stored in the Addition. All Preserve museum collections are stored in facilities at Everglades National Park. Any museum collections that are generated as a result of implementing the alternatives would be properly catalogued, curated, and managed as part of the Preserve’s museum collections program. The Preserve has a current “Collections Management Plan” that was completed in conjunction with all other south Florida national park system units. Therefore, this topic was dismissed from further consideration.</p>	<p>DO-24, Museum Collections Management” and NPS <i>Management Policies 2006</i></p>
Indian Trust Resources	Dismissed	<p>Secretarial Order 3175 requires that any anticipated impacts on Indian trust resources from a proposed project or action by Department of the Interior agencies be explicitly addressed in environmental documents. The federal Indian trust responsibility is a legally enforceable fiduciary obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it represents a duty to carry out the mandates of federal law with respect to American Indian and Alaska Native tribes.</p> <p>None of the actions that might be implemented as a result of the plan alternatives would change any existing conditions or practices concerning American Indian treaty or statutory rights or cultural interests that the tribes traditionally associated with the Addition maintain in relation to the Addition. However, such recognition does not translate into the creation of a trust resource because these actions take place in the context of preserving and managing the resources for the benefit of all Americans as required by the Organic Act and subsequent legislation. There are no Indian trust resources as defined in the order in the Addition. Therefore, this topic was dismissed from further consideration.</p>	<p>Secretarial Order 3175</p>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Visitor Use And Experience Impact Topics			
Recreational Opportunities Motorized Use (ORV Riding) Nonmotorized Use (hiking, horseback riding, and bicycling) Hunting (including fishing and frogging)	Retained	Opportunities for recreational public motorized use (ORV use), nonmotorized use, and hunting vary among the alternatives. The types and levels of access are important components of visitor use and experience in the Addition and are of concern to many people as well as NPS managers. Therefore, the impact topic of recreational opportunities was retained.	Enabling legislation; NPS <i>Management Policies 2006</i>
Soundscape (Natural Sound Preservation)	Retained	<p>An important part of the NPS mission is the preservation of natural soundscapes associated with national park system units. Natural soundscapes exist in the absence of human-caused sound. The natural ambient soundscape is the aggregate of all the natural sounds that occur in a park unit, together with the physical capacity for transmitting natural sounds. Natural sounds occur within and beyond the range of sounds that humans can perceive and can be transmitted through air, water, or solid materials. The frequencies, magnitudes, and durations of human-caused sound considered acceptable varies among national park system units, as well as potentially throughout each park unit; generally acceptable levels are greater in developed areas and less in undeveloped areas.</p> <p>Unnatural sounds, often a byproduct of recreational activities, can be intrusive and can impact natural soundscape conditions that affect visitor experience and use and wildlife. Uses involving motorized activities under one or more of the alternatives could create conditions that would be of concern to NSP managers and the public. Section 8.2 of NPS <i>Management Policies 2006</i> requires that visitor uses within park units do not “impede the attainment of a park’s desired condition for natural and cultural resources as identified through the park’s planning process, or . . . unreasonably interfere with the atmosphere of peace and tranquility or the natural soundscape maintained in wilderness and natural, historic, or commemorative locations within the park.” Therefore, soundscape was retained as an impact topic, but is discussed under visitor use and experience, relevant wild-life topics, and wilderness resources and values.</p>	NPS Organic Act; NPS <i>Management Policies 2006</i> ; Director’s Order 47

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Public Health and Safety	Dismissed	The proposed developments and actions in the alternatives would not result in any identifiable adverse impacts on human health or safety. Therefore this topic was dismissed from further analysis.	CEQ regulations; <i>DO-12 Handbook</i>
Socioeconomic Environment Impact Topics			
Local Economy	Retained	Recreation-related tourism plays an important role in the local and regional economy. The alternatives included in this plan propose varying levels of recreational access and opportunities that would affect visitation levels and possibly spending in the local area. Furthermore, the facility development actions and NPS staffing components of the alternatives could affect the local economy. Therefore, local economy was retained as an impact topic.	National Environmental Policy Act
Transportation	Dismissed	The plan alternatives would have only minor impacts on transportation in or through the Addition. All federal and state highways (including I-75, U.S. 41, and SR 29) would continue to function as they do today. Temporary impacts on traffic flow on I-75 could be experienced as a result of access improvements at mile markers 51 and 63; however, the adverse impacts would only be experienced on a short-term basis during construction and were accounted for under the <i>I-75 Recreational Access Plan/EA</i> . Furthermore, visitor access to the Addition is addressed as part of visitor use and experience, which was retained as an impact topic. Therefore, transportation was dismissed from further analysis.	National Environmental Policy Act
Conformity with Local Land Use Plans	Dismissed	The basic land use of the Addition as a public recreation and resource management area is in conformance with local land use plans. The creation of additional recreation and visitor service opportunities in the Addition as proposed in the alternatives would be consistent with existing Addition land uses or local (non-NPS) or tribal land use plans, policies, or controls for the area. Therefore, this topic was dismissed from further consideration.	CEQ regulations; <i>DO-12 Handbook</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Urban Quality and Design of the Built Environment	Dismissed	The quality of urban areas is not a concern in this planning project except possibly in the Carnestown area. Throughout the Addition, vernacular architecture and Addition - compatible design would be considered for new structures built under all of the alternatives. Emphasis would be placed on designs and materials and colors that blend in and do not detract from the natural and built environment. Therefore, adverse impacts are anticipated to be negligible. No further consideration of this topic is necessary.	<i>40 Code of Federal Regulations (CFR)1502.16</i>

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Environmental Justice	Dismissed	<p>Executive Order 12898 requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing the disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities. According to the Environmental Protection Agency, environmental justice is the</p> <p><i>fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies.</i></p> <p>Collier County contains both minority and low-income populations; however, environmental justice is dismissed as an impact topic for the following reasons:</p> <ul style="list-style-type: none"> • NPS staff and planning team actively solicited public participation as part of the planning process and gave equal consideration to input from all persons regardless of age, race, income status, or other socioeconomic or demographic factors. • Implementation of any of the alternatives would not result in any disproportionate human health or environmental effects on minorities or low-income populations and communities. • The impacts associated with implementation of the alternatives would not result in any effects that would be specific to any minority or low-income community. Any anticipated impacts, such as traffic, would not disproportionately affect minority or low-income populations. • Impacts would not occur all at one time but would be spread over a number of years. • The impacts to the socioeconomic environment resulting from implementation of any of the alternatives would be negligible. 	Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,"

Impact Topic	Retained or Dismissed	Rationale	Relevant Law, Regulation, or Policy
Addition Operations Impact Topics			
NPS Operations and Facilities	Retained	<p>Actions proposed in the alternatives could impact staffing, facility management, resource management, and other management and operations. Support facilities necessary to house, transport, inform, and serve visitors and staff require proper planning, design, programming, construction, operation and maintenance. Facilities should be cost-effective, integrate sustainable design, and consider impacts on the landscape, environs, and resources of the Addition. Actions proposed in the alternatives could impact NPS operations and facilities. Therefore this was retained as an impact topic.</p>	<p>NPS Organic Act; DOI Departmental Manual; NPS <i>Management Policies 2006</i> ; enabling legislation; Director’s Order 80</p>

CHAPTER 2



ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

INTRODUCTION

This chapter is organized into several sections:

- The “**Introduction**” explains how the alternatives, including the preferred alternative, were developed; explains possible boundary adjustments; and describes the management zones.
- Then, **alternatives** (A, B, preferred, and F) are described, both with text and maps, and a summary of the possible costs for each alternative are explained.
- The next large section, “**The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness,**” describes how the user capacity framework will assist the National Park Service in managing visitor use impacts, how managers will use adaptive management to ensure resource protection; how ORV use will be managed, including permits and numbers of permits, types of vehicles, potential closures, education about ORV use, and a schedule for implementing the ORV program and trail system; and a discussion of wilderness that includes a definition, permitted uses in wilderness, the wilderness eligibility assessment process, and a summary of findings.
- This is followed by sections on
 - **mitigative measures** that will be followed under all the action alternatives,
 - a section that describes **future studies and implementation plans** that will be needed,
 - a discussion about the **environmentally preferred alternative,**
 - a discussion of the **alternatives/actions that were considered but dismissed,**
 - **tables that summarize the alternatives and the impacts of implementing the alternatives** (the analysis for this table is in chapter 4).

Many aspects of the desired conditions of the Big Cypress National Preserve Addition are defined in the Addition’s establishing legislation, its purpose and significance statements, and the guiding principles for management that were described in chapter 1. Within these parameters, the National Park Service solicited input from the public, NPS staff, government agencies, tribal officials, and other organizations regarding issues and desired conditions for the Addition. Planning team members gathered information about expected visitation and the condition of the Addition’s facilities and resources. Then a set of four management zones and four management alternatives were developed to reflect the range of ideas proposed by NPS staff and the public.

This chapter describes the management zones and the alternatives for managing the Addition for the next 15 to 20 years. It includes tables that summarize the key differences among the alternatives (see table 10) and the differences in key impacts (see table 11) that would be expected from implementing each alternative. Table 11 is based on the analysis in “Chapter 4, Environmental Consequences.” Chapter 2 also describes mitigative measures that would be used to lessen or avoid impacts, and the environmentally preferred alternative. Also discussed are the future studies that would be needed, as well as several actions and alternatives that the planning team considered but dismissed.

This *Final General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* presents four alternatives, including the National Park Service’s preferred alternative, for future management of the Big Cypress National Preserve Addition. Alternative A, the “no-action” alternative, which is required by law, presents a continuation of existing management direction and is included as a

baseline for comparing the consequences of implementing each alternative. The other three “action” alternatives are alternative B, the preferred alternative, and alternative F. These action alternatives present different ways to manage resources and visitor use and improve facilities and infrastructure in the Addition. These four alternatives embody the range of what the public and the National Park Service want to see accomplished with regard to natural resource conditions, cultural resource conditions, visitor use and experience conditions, and management in the Addition.

As noted in the previous "Guidance for Planning" section in chapter 1, the National Park Service would continue to follow existing agreements and servicewide mandates, laws, and policies regardless of the alternatives considered in this plan. These mandates and policies are not repeated in this chapter.

HOW THE ALTERNATIVES WERE DEVELOPED

A set of six preliminary alternatives (alternatives A, B, C, D, E, and F) were developed and presented to the public in October 2005. The alternatives were developed by the National Park Service based on public input and Addition management considerations to explore different ways to manage resources, visitor use, and improve facilities and infrastructure in the Addition.

In April 2007 the preliminary alternatives were revised to include conceptual ORV trails and areas of proposed wilderness; these revisions were presented to the public. Together the alternatives represent a reasonable range of wilderness and ORV opportunities.

Since April 2007, the planning team dismissed preliminary alternatives C, D, and E from further consideration because they included goals and actions for environmental protection, visitor use, and ORV opportunities that

were the same as those in alternative B, the preferred alternative, and alternative F (see the “Alternatives and Management Actions Considered but Dismissed” section later in this chapter for more details). The naming structure of the current set of alternatives is intended to track the original set of preliminary alternatives and minimize confusion.

The alternatives included in this plan present a continuum of resource preservation and recreation opportunities as prescribed in the Addition’s enabling legislation. The no-action alternative (alternative A) is required by law and serves as a baseline for analyzing the action alternatives. Alternative B includes the highest level of motorized access and trail designation and the lowest level of proposed wilderness. Alternative F contains the lowest level of motorized access and trail designation and the highest level of proposed wilderness. The preferred alternative contains the agency’s selected combination of ORV opportunities and resource preservation and proposed wilderness. In developing this range of alternatives, the National Park Service adhered to the requirements of the National Environmental Policy Act and the Wilderness Act, while giving careful consideration to the national preserve designation that Congress assigned to the Addition.

The alternatives focus on *what* resource conditions and visitor uses/experiences should be at the Addition rather than on details of *how* these conditions and uses/experiences should be achieved. Thus, the alternatives do not include many details on resource or visitor use management.

More detailed plans or studies will be required before most conditions proposed in the alternatives are achieved. The implementation of any alternative also depends on future funding and completion of appropriate environmental compliance. Approval of this plan does not guarantee that funding will be forthcoming. The plan establishes a vision of the future that will guide day-to-day and year-

to-year management of the Addition, but full implementation could take many years.

IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The development of a preferred alternative involved evaluating the alternatives through the use of an objective analysis process called “choosing by advantages” or CBA. Through this process, the planning team identified and compared the relative advantages of each alternative according to a set of factors. The benefits or advantages of each alternative were compared for each of the following CBA factors:

1. provide for a range of appropriate visitor opportunities and access
2. protect cultural and natural resources and restore natural processes
3. preserve or enhance wilderness values
4. provide for effective/efficient NPS operations and public safety

The relationships between the advantages and costs of each alternative were established. This information was used to combine the best attributes of the preliminary alternatives into the preferred alternative. This alternative gives the National Park Service (and the public) the greatest overall benefits for each point listed above for the most reasonable cost.

This process indicated that alternative D provided the greatest advantages. The differences between alternatives B and C and between E and F were relatively slight. Factor 2 was identified as having the paramount advantage and the scoring for this factor varied widely among the alternatives.

As part of the CBA process, the highest ranking advantages of the alternatives were analyzed and considered for inclusion in the development of the preferred alternative. Important elements of preliminary alternatives C, D, and E were used to develop the

preferred alternative, providing the highest number of advantages to the National Park Service. The preferred alternative provides the best combination of motorized access, back-country recreational opportunities, proposed wilderness, new visitor facilities, and facilities needed for Addition operations and management.

CHANGES TO THE PREFERRED ALTERNATIVE RESULTING FROM PUBLIC COMMENT ON THE DRAFT GENERAL MANAGEMENT PLAN

The preferred alternative included in this final plan was developed based on public comments received on the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*. Changes to the wilderness eligibility assessment (see appendix B), proposed wilderness, ORV trail routes and mileage, and ORV administration and management were made as a result of the input received from agencies, American Indian tribes, and the public. The sections that follow, including the description of the preferred alternative, include these changes.

POTENTIAL FOR BOUNDARY ADJUSTMENTS

The National Park and Recreation Act of 1978 requires general management plans to address whether boundary modifications should be made to park units. The planning team reviewed the Addition boundary and determined that no boundary adjustments are warranted. The alternatives do not contain any proposals for boundary adjustments.

MANAGEMENT ZONES

The management zones were developed as part of this planning effort and were presented to the public in newsletters and

public meetings; then they were modified in response to public comments. A management zone defines specific resource conditions and visitor experiences to be achieved and maintained in each specific area of the Addition under each action alternative. (Because management zones are not part of the Addition's current management tools, management zones are not included in the no-action alternative.) The four management zones for the Addition are presented in table 2. In the table, resource conditions, visitor experience, and appropriate activities and facilities are described for each zone. Although the zones describe the type of development that is allowed, they do not dictate the developments that will occur.

In formulating the alternatives, the management zones were placed in different locations or configurations on the maps according to the overall concept of each alternative. That is, each management alternative represents a different way to apply the four management

zones to the Addition. For example, alternative B, whose overall concept emphasizes motorized recreation, has more of the backcountry recreation zone than alternative F, whose overall concept is to maximize wilderness in the Addition.

The primitive backcountry management zone is compatible with the legal requirements associated with wilderness. Should wilderness be designated in the Addition, the management emphasis and actions of this zone would preserve wilderness resources and values. Furthermore, as discussed in the "Guiding Principles for Management" section of this document, management decisions for designated wilderness areas would be made in accordance with the minimum requirement concept outlined in the Wilderness Act and NPS policies. Permitted and prohibited uses in designated wilderness are addressed on page 116.

TABLE 2: MANAGEMENT ZONES

Management Zone	Resource Conditions	Visitor Experience	Appropriate Facilities / Activities
<p>DEVELOPED</p> <p>Visitor orientation/education would be the dominant goals for this zone. NPS administrative facilities would also be included in this zone.</p>	<ul style="list-style-type: none"> Natural environment could be modified for essential visitor and NPS operational needs. Known cultural resources would be avoided to extent possible or impacts would be mitigated appropriately. Facilities would be designed and managed to ensure resource protection and public safety. Human-related noise would predominate. Natural sounds may be audible during low visitor use periods. 	<ul style="list-style-type: none"> Visitor attractions would be convenient and easily accessible. NPS or self-guided opportunities would be available. Moderate to high levels of encounters with other visitors and NPS staff would be expected, including relatively high levels of human-related noise. 	<ul style="list-style-type: none"> I-75 access points orientation and interpretation facilities, such as visitor centers comfort stations boardwalks and trails to access adjacent natural/cultural features NPS administrative/staff facilities — offices, housing, support facilities for NPS management (shops, storage areas, fire cache, etc.) commercial facilities to support appropriate visitor activities closed to hunting
<p>FRONTCOUNTRY</p> <p>Visitor orientation and access would be the dominant goals for this zone.</p>	<ul style="list-style-type: none"> Natural environment could be modified for essential visitor needs. Known cultural resources would be avoided to extent possible or impacts would be mitigated appropriately. Facilities would be designed and managed to ensure resource protection and public safety. Natural sounds may exist, but they would be frequently interrupted by human activity. 	<ul style="list-style-type: none"> Visitor attractions would be convenient and easily accessible. Self-guided opportunities would be available. Low to moderate levels of encounters with other visitors and NPS staff would be expected, including relatively moderate levels of human-related noise. 	<ul style="list-style-type: none"> recreational access or trailhead parking picnic areas orientation facilities and signs campgrounds comfort stations boardwalks and trails to access adjacent natural/cultural features commercial activities that are consistent with the visitor opportunities and activities closed to hunting

Management Zone	Resource Conditions	Visitor Experience	Appropriate Facilities / Activities
<p>BACKCOUNTRY RECREATION</p> <p>Preservation of natural and cultural resources, restoration of degraded resources, and continuation of natural processes would be the dominant goals in this zone. Visitors would experience a natural landscape through a variety of recreational opportunities supported by a network of designated trails.</p>	<ul style="list-style-type: none"> • Native species and natural processes would predominate. • Cultural resources would exhibit a high degree of integrity. • Evidence of human impact would be apparent along trail corridors and designated campsites, but would be infrequent and limited in extent elsewhere in this zone. • Natural sounds would be audible in this zone, but they would be interrupted by noises from motors and other human activity. 	<ul style="list-style-type: none"> • Some opportunities for solitude, challenge, adventure, and self-reliance would be provided. • Variety of visitor experiences would be available — from NPS-led to self-discovery. • Encounters with NPS staff and other visitors could be frequent — should expect to experience human-related noise. 	<ul style="list-style-type: none"> • activities could include hiking, backpacking, hunting, fishing, horseback riding, camping, boating, bicycling, ORV use • trails and routes may be designated for hiking, bicycling, and boating. • navigational markers may be provided • information/interpretation kiosks and signs • backcountry support facilities such as ranger stations and fire cache • resource protection and monitoring equipment • vehicle and stock use allowed only on designated roads and trails • hunting allowed in designated areas and seasons as determined by the National Park Service in consultation with the Florida Fish and Wildlife Conservation Commission • dispersed camping, and where necessary for resource protection, designated campsites • outfitter/guide activities would be consistent with visitor opportunities and activities

Management Zone	Resource Conditions	Visitor Experience	Appropriate Facilities / Activities
<p>PRIMITIVE BACKCOUNTRY</p> <p>Preservation of natural and cultural resources, restoration of degraded resources, and continuation of natural processes would be the dominant goals in this zone. Visitors would experience a natural landscape with opportunities for primitive and unconfined recreation directly dependent on ability, knowledge, and self-reliance.</p>	<ul style="list-style-type: none"> • Native species and natural processes would predominate. • Cultural resources would exhibit a high degree of integrity. • Evidence of human impact would be infrequent and limited in extent. • Natural sounds would dominate in this zone; however, human-related noise would likely be more audible near other zones and primary visitor use areas. 	<ul style="list-style-type: none"> • Numerous opportunities would be available for challenge, adventure, solitude, and self-reliance. • Visitors might find discovery areas with no on-site interpretation and very limited facilities. • Encounters with NPS staff and other visitors would be infrequent — should expect to experience natural sounds. 	<ul style="list-style-type: none"> • visitor facilities — limited to designated trails, marked routes, and designated campsites • dispersed camping, and where necessary for resource protection, designated campsites • resource protection and monitoring equipment • activities could include hiking, backpacking, hunting, fishing, horseback riding, camping, nonmotorized boating, bicycling • no motorized use allowed • mechanized use would be limited to bicycling on designated roads and trails only (outside eligible wilderness) • hunting allowed in designated areas and seasons as determined by the National Park Service in consultation with the Florida Fish and Wildlife Conservation Commission • outfitter/guide activities would be consistent with visitor opportunities

ALTERNATIVE A (NO ACTION: CONTINUATION OF CURRENT MANAGEMENT)

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

The Addition would be managed the way it is being managed now. No management zones would be used to guide planning and decision-making — current management trends and strategies would continue.

MOTORIZED RECREATIONAL OPPORTUNITIES — TRAILS AND PERMITS

The Addition would continue to be closed to public recreational ORV use. Motorized boating would continue to be permitted in the canals and waterways adjacent to SR 29.

No ORV permits would be granted, and no trails would be designated because public recreational ORV use would not be allowed. ORV access to private property by inholders would continue to be allowed by special use permit.

NONMOTORIZED RECREATIONAL OPPORTUNITIES

Limited opportunities for hiking, paddling, horseback riding, and bicycling would continue to be available. New opportunities for walk-in hunting would be provided.

Access points would be developed at mile markers 51 and 63 under the *I-75 Recreational Access Plan*; however, access would be walk-in only.

Access to the Florida National Scenic Trail would remain at I-75 mile marker 63, and the northern route would remain temporary and undesignated.

The National Park Service would work with the Florida Fish and Wildlife Conservation Commission to provide hunting access, define hunting seasons, and develop hunting regulations consistent with both agencies' policies and goals for the Addition.

VISITOR ORIENTATION AND EDUCATION

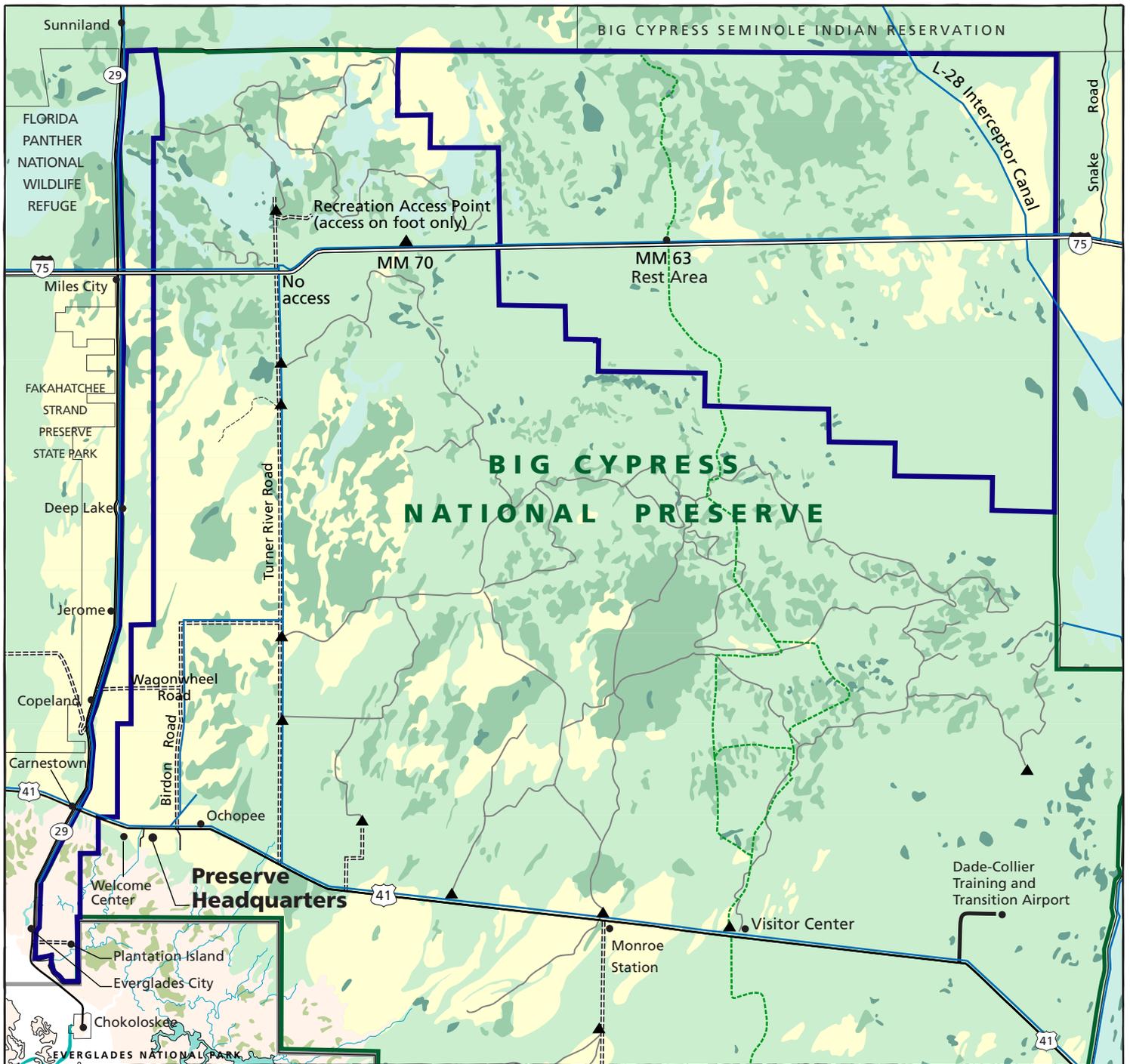
No new facilities would be developed under this alternative, which means that no visitor contact facilities would be present in the Addition. Visitor orientation to the Addition would continue to occur at the NPS facilities on U.S. Highway 41 (hereafter referred to as U.S. 41). Environmental education would continue to be conducted at the Birdon Road facility, with no presence in or connection to the Addition.

WILDERNESS

No land would be proposed for wilderness designation under this alternative; however, those lands in the Addition eligible for wilderness designation would continue to be managed to preserve their wilderness characteristics and values (see map 8).

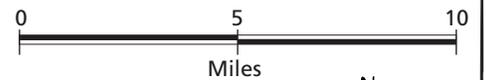
PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

No new partnerships, programs, or activities would be initiated for the Addition. Existing partnerships, programs, and activities would continue.



Legend

- Preserve Boundary
- Addition Boundary
- Canal
- ▲ Existing Access Point
- - - Florida National Scenic Trail
- - - Designated Primary ORV Trail
- - - Unpaved Road
- - - Existing Hiking Trail



Map 3 • Alternative A • No-Action Alternative
 Big Cypress National Preserve—Addition
 General Management Plan

FACILITIES

No new facilities would be developed under this alternative. Existing facilities would continue to be maintained as at present.

I-75 Mile Marker 51

An access point would be developed at mile marker 51 under the *I-75 Recreational Access Plan*; however access would be only from nonmotorized use.

I-75 Mile Marker 63

Informal walk-in access would continue to be available via the rest area. An access point would be developed at mile marker 63 under the *I-75 Recreational Access Plan*; however access would be only from nonmotorized use.

Bear Island Grade at SR 29

This location would remain undeveloped and informal, nonmotorized access would continue.

Nobles and Jones Grades

No new facilities would be developed. Only nonmotorized access would remain along the road grades.

Miles City (I-75 at SR 29)

This intersection would remain undeveloped.

Deep Lake (SR 29)

No facility improvements would be made at this location. Parking would remain on the shoulder of SR 29, and access to the site would continue to be informal.

Copeland (SR 29)

The NPS Fire Operations Center would continue to be used by fire management staff and would remain at this location.

Carnestown (U.S. 41 at SR 29)

The facilities would continue to be leased to other government agencies and organizations.

ESTIMATED COSTS

The NPS staffing level under the no-action alternative would continue to be the equivalent of 77 full-time staff members. This includes 6 employees in the superintendent's office, 10 in administration, 20 in maintenance, 12 in interpretation, 14 in resource management, and 15 in visitor and resource protection. An additional 21 employees work for the Preserve's fire program, but these full-time-equivalent employees are not accounted for in the staffing numbers because they would remain the same across all alternatives. Volunteers and partnerships would continue to be key contributors to NPS operations.

The total cost of this alternative (annual operating costs) would be \$6.5 million.

The cost estimates provided here are given for comparison to other alternatives only; they are not to be used for budgeting purposes. Although the numbers appear to be absolutes, they represent a midpoint in a possible range of costs.

Presentation of these costs in this plan does not guarantee future NPS funding. Project funding would not come all at once; it would likely take many years to secure and may be provided by partners, donations or other nonfederal sources. Although the National Park Service hopes to secure this funding and would prepare itself accordingly, the Preserve may not receive enough funding to achieve all

desired conditions within the timeframe of the *General Management Plan* (the next 20 or more years). More information on costs is

provided in the “Development of Cost Estimates” section and table 6.

ALTERNATIVE B

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

Alternative B would enable participation in a wide variety of outdoor recreational experiences. It would nearly maximize motorized access, provide the least amount of proposed wilderness, and develop limited new hiking-only trails. New visitor and operations facilities along the I-75 corridor would also be provided.

The approximate acreages and percentages of the Addition that would be in each of the management zones under alternative B are shown in table 3.

TABLE 3: MANAGEMENT ZONES IN ALTERNATIVE B

Zone	Acreage	% of Addition
Developed	18	< 1
Frontcountry	6	< 1
Backcountry Recreation	94, 529	65
Primitive Backcountry	51, 294	35

The National Park Service would work with the Florida Fish and Wildlife Conservation Commission to provide hunting access, define hunting seasons, and develop hunting regulations that are consistent with both agencies' policies and goals for the Addition.

Management of the Addition and the actions that would be taken by the National Park Service in the next 20 years under alternative B are described in the following sections.

MOTORIZED RECREATIONAL OPPORTUNITIES — TRAILS AND PERMITS

Motorized recreational opportunities, including ORV use, motorized boating, and

hunting, would be nearly maximized under this alternative. Up to 132 miles would be included as part of the conceptual primary (see glossary) ORV trail network. Secondary trails would be allowed within the backcountry recreation management zone. Specific access points and facilities to support motorized use are described in the "Facilities" section, including a potential connection from SR 29 to existing trails in the Bear Island area. Future connections to existing ORV trails south of the Northeast Addition would require additional National Environmental Policy Act compliance.

A maximum of 660 ORV permits would be issued annually for the Addition, and up to 132 miles of primary ORV trails would be designated. This maximum number of ORV permits is based on the ratio of ORV trail mileage to issued permits in the original Preserve (as detailed later in this chapter in the section titled "The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness"). Under alternative B, the entire ORV trail system would be implemented without phased establishment and the assessment of monitoring results as described under the preferred alternative.

NONMOTORIZED RECREATIONAL OPPORTUNITIES

New access points would be established for hiking, bicycling, horseback riding, and hunting. Some new hiking trails would be developed at frontcountry locations. Access points would be developed at mile markers 51 and 63 under the *I-75 Recreational Access Plan*. These access points would provide access for both motorized and nonmotorized uses. Hiking, bicycling, and horseback riding would also be allowed on the approximately 132 miles of primary ORV trails in the Addition.

New paddling trails would be developed in the tidal areas south of U.S. 41 in the Western Addition. Specific access points and facilities to support nonmotorized uses are described in the “Facilities” section.

Conceptual hiking trails would be included as part of this alternative — one completing a north-south connection and one completing an east-west connection through the Addition.

The National Park Service would work cooperatively with the Florida Trail Association and the U.S. Forest Service to determine the appropriate access points and routing of the Florida National Scenic Trail to minimize conflicts between motorized and nonmotorized users. The trail would be formally designated.

VISITOR ORIENTATION AND EDUCATION

A visitor contact station and outdoor orientation and interpretive panels would be developed along I-75 under this alternative as described in the “Facilities” section.

WILDERNESS

About 37,567 acres of land would be proposed for wilderness designation under this alternative (see following map).

NPS staff would work cooperatively with the state of Florida and the U.S. Fish and Wildlife Service (and other appropriate federal, state, and local agencies) to ensure that the legislative act that formally designates wilderness in the Addition contains language that allows for effective management of exotic species, wildland and prescribed fire, and law enforcement activities.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

The National Park Service would explore new partnerships to provide visitor services at Carnestown.

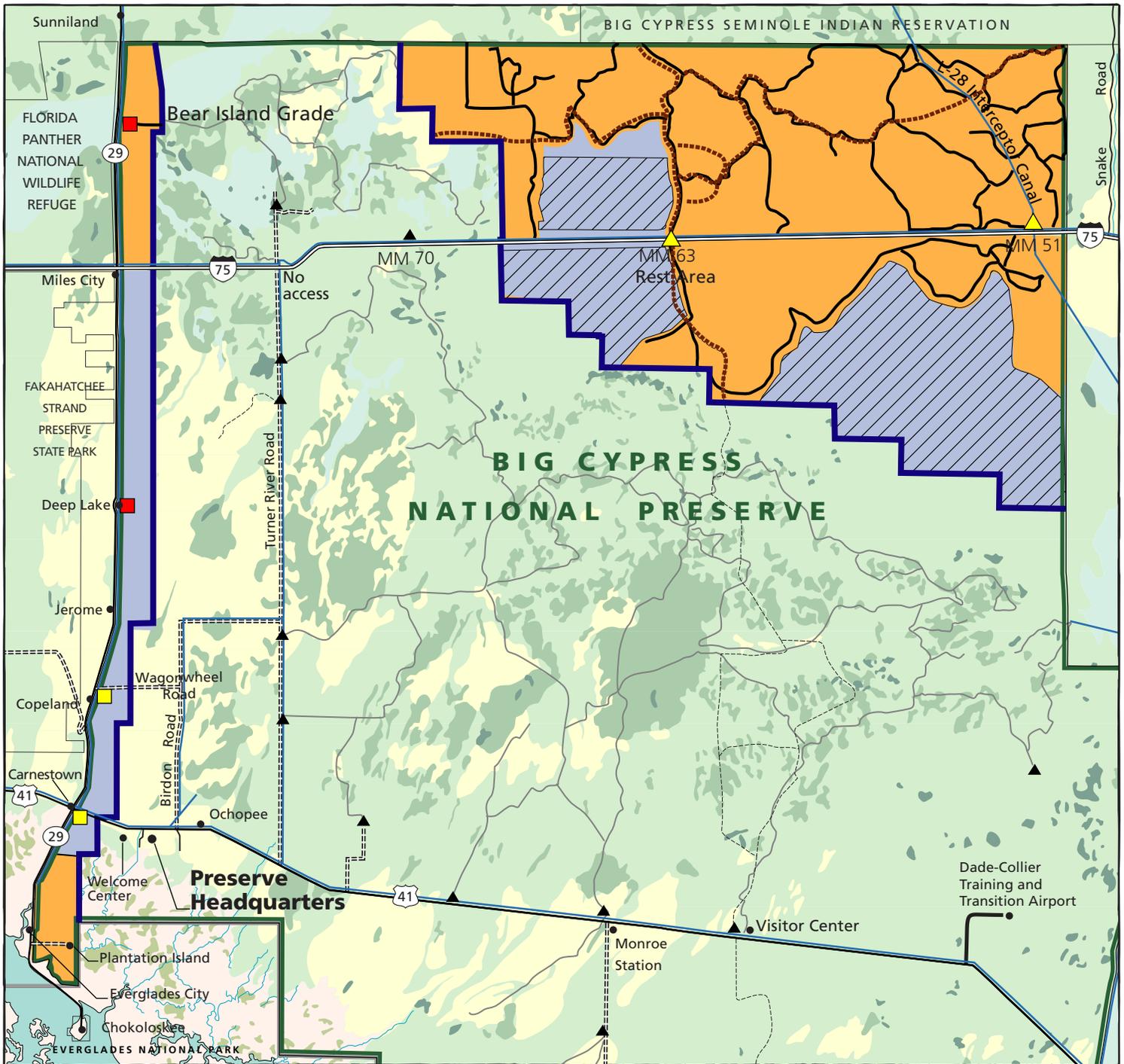
FACILITIES

I-75 Mile Marker 51

A new access point would be developed at this location that includes parking and restrooms. The site would provide access for motorized and nonmotorized activities. Visitor orientation and interpretation panels would also be installed. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station and boat ramp to access the South Florida Water Management District canal.

I-75 Mile Marker 63

Using the Florida Department of Transportation rest area at this location, a new access point would be developed that would include parking and trailhead. The site would provide access for motorized and nonmotorized activities. A new visitor contact station and NPS operations facility would also be developed at this location. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.



Legend

- Preserve Boundary
- Addition Boundary
- Canal
- Existing Access Point
- Proposed Access Point
- Conceptual Hiking Trail
- Designated Primary ORV Trail
- Conceptual Primary ORV Trail
- Unpaved Road
- Existing Hiking Trail
- Frontcountry
- Primitive Backcountry
- Backcountry Recreation
- Developed
- Proposed Wilderness



Map 4 • Alternative B • Big Cypress National Preserve—Addition General Management Plan

Bear Island Grade at SR 29

A new trailhead and parking area would be developed at this location, providing motorized and nonmotorized access to the Bear Island Grade. This new access point would provide a connection to ORV trails in the original Preserve. Visitor orientation and interpretation panels would also be installed.

Nobles and Jones Grades

No new facilities would be developed. The road grades would only be used for access.

Miles City (I-75 at SR 29)

This intersection would remain undeveloped.

Deep Lake (SR 29)

The site would be developed into a day use area with parking, restrooms, and a hiking trail/boardwalk to Deep Lake.

Copeland (SR 29)

The NPS Fire Operations Center would remain at this location.

Carnestown (U.S. 41 at SR 29)

Facilities at the site would be used to support visitor service partnership needs.

ESTIMATED COSTS

The NPS staffing level needed to implement alternative B would be the equivalent of 93

full-time staff members (16 additional full-time-equivalent employees or 17 positions) — 15 permanent full-time employees and 2 half-time temporary/seasonal employees). These 16 additional employees include 2 permanent interpreters, 2 seasonal interpreters, 4 maintenance workers, 5 law enforcement rangers, 2 visitor use assistants, 1 ORV program manager, and 1 biological science technician. Volunteers and partnerships would continue to be key contributors to NPS operations.

One-time capital costs of alternative B, including projects that are planned for the near future or are underway, new construction, and nonfacility costs such as major resource plans and projects, are estimated at \$6.7 million. Annual operating costs under this alternative would be \$7.9 million.

The cost estimates provided here are given for comparison to other alternatives only; they are not to be used for budgeting purposes. Although the numbers appear to be absolutes, they represent a midpoint in a possible range of costs.

Presentation of these costs in this plan does not guarantee future NPS funding. Project funding would not come all at once; it would likely take many years to secure and may be provided by partners, donations or other nonfederal sources. Although the National Park Service hopes to secure this funding and would prepare itself accordingly, the Preserve may not receive enough funding to achieve all desired conditions within the timeframe of the *General Management Plan* (the next 20 or more years). More information on costs is provided in the “Development of Cost Estimates” section and table 6.

PREFERRED ALTERNATIVE

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

The preferred alternative would provide diverse frontcountry and backcountry recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. This alternative would provide a substantial amount of ORV access and riding opportunities, provide a moderate amount of wilderness, provide nonmotorized trail opportunities and new camping opportunities, and develop a partnership approach to visitor orientation. New visitor and operations facilities along the I-75 corridor would also be provided.

The approximate acreages and percentages of the Addition that would be in each of the management zones under the preferred alternative are shown in table 4.

TABLE 4: MANAGEMENT ZONES IN THE PREFERRED ALTERNATIVE

Zone	Acreage	% of Addition
Developed	18	< 1
Frontcountry	11	< 1
Backcountry Recreation	49,449	33
Primitive Backcountry	96,413	65

Areas that were found to be eligible for wilderness designation, but were not included as proposed wilderness in the preferred alternative, would be zoned primitive backcountry. No public motorized use would be allowed in these areas, and they would be managed to protect their natural values.

NPS staff would work with the Florida Fish and Wildlife Conservation Commission to

provide hunting access, define hunting seasons, and develop hunting regulations that are consistent with both agencies' policies and goals for the Addition.

Management of the Addition and the actions that would be taken by the National Park Service in the next 20 years under the preferred alternative are described in the following paragraphs.

MOTORIZED RECREATIONAL OPPORTUNITIES — TRAILS AND PERMITS

Motorized recreational opportunities, including ORV use, motorized boating, and hunting would be phased in over time. Approximately 130 miles of trails would be included as part of the conceptual primary (see glossary) ORV trail network. Secondary trails would be allowed only within the backcountry recreation management zone. Access points and facilities to support motorized use are described in the "Facilities" section, including a potential connection to existing trails in the Bear Island area. Future connections to existing ORV trails in the original Preserve may require additional environmental compliance.

A maximum of 650 ORV permits would be issued annually for the Addition, and up to 130 miles of primary ORV trails would be designated. This number of ORV permits is based on the ratio of ORV trail mileage to issued permits in the original Preserve (as detailed later in this chapter in the section titled "The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness").

However, under the preferred alternative, the extent of trails and the number of

permits available to the public would be accomplished in phases. For example, a certain amount of trails would be designated and a certain number of permits would be allowed. The number of initial permits available would be proportionate to the initial extent of the trail system. For example, using a factor of five permits per mile of trail, if 20 miles of trail were opened, then 100 permits would be issued. The National Park Service would determine the initial extent of the trail system based on field conditions, proximity to access points, and levels of trail stabilization needed. Monitoring of the impacts would take place, and if impacts were at or below acceptable limits, more trails would be designated and more permits would be allowed.

NONMOTORIZED RECREATIONAL OPPORTUNITIES

New access points would be established for hiking, bicycling, horseback riding, and hunting. Access points would be developed at mile markers 51 and 63 under the *I-75 Recreational Access Plan*. These access points would provide access for both motorized and nonmotorized uses. Hiking, bicycling, and horseback riding would also be allowed on the up to 130 miles of ORV trails in the Addition. Some new hiking trails would be developed at frontcountry locations. New paddling trails would be developed in the tidal areas south of U.S. 41 in the Western Addition. Specific access points and facilities to support nonmotorized uses are described in the “Facilities” section.

Conceptual hiking trails would be included as part of this alternative — one completing a north-south connection and one completing an east-west connection through the Addition.

The National Park Service would work cooperatively with the Florida Trail Association and the U.S. Forest Service to determine the appropriate access points and

routing of the Florida National Scenic Trail to minimize conflicts between motorized and nonmotorized users. The trail would be formally designated.

VISITOR ORIENTATION AND EDUCATION

A new visitor contact station and some outdoor orientation and interpretive panels would be developed along I-75 under this alternative as described in the “Facilities” section.

WILDERNESS

About 47,067 acres of land would be proposed for wilderness designation under this alternative (see following map).

NPS staff would work cooperatively with the state of Florida and the U.S. Fish and Wildlife Service (and other appropriate federal, state, and local agencies) to ensure that the legislative act that formally designates wilderness in the Addition contains language that allows for effective management of exotic species, wildland and prescribed fire, scientific research and monitoring, and law enforcement activities.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

The National Park Service would pursue partnerships to achieve management objectives and consider partnerships that provide a range of commercial services, including boat tours south of U.S. 41. The original Preserve’s *Commercial Services Plan* would be amended to include the Addition.

FACILITIES

I-75 Mile Marker 51

A new access point would be developed at this location that includes parking. The site would provide access for motorized and nonmotorized activities. Visitor orientation and interpretation panels would also be installed. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station and boat ramp to access the South Florida Water Management District canal.

I-75 Mile Marker 63

Using the Florida Department of Transportation rest area at this location, a new access point would be developed that includes parking and trailhead. The site would provide access for motorized and nonmotorized activities. A new visitor center and NPS operations facility would also be developed at this location. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.

Bear Island Grade at SR 29

A new trailhead and parking area would be developed at this location, providing motorized and nonmotorized access to the site and to Bear Island Grade. This new access point

would provide a connection to ORV trails in the original Preserve. Visitor orientation and interpretation panels would also be installed.

Nobles and Jones Grades

Primitive backcountry group camping areas would be provided at the terminus of these grades.

Miles City (I-75 at SR 29)

A new hiking trailhead, information kiosk, and small parking area would be developed outside the interchange area, which is closed to development.

Deep Lake (SR 29)

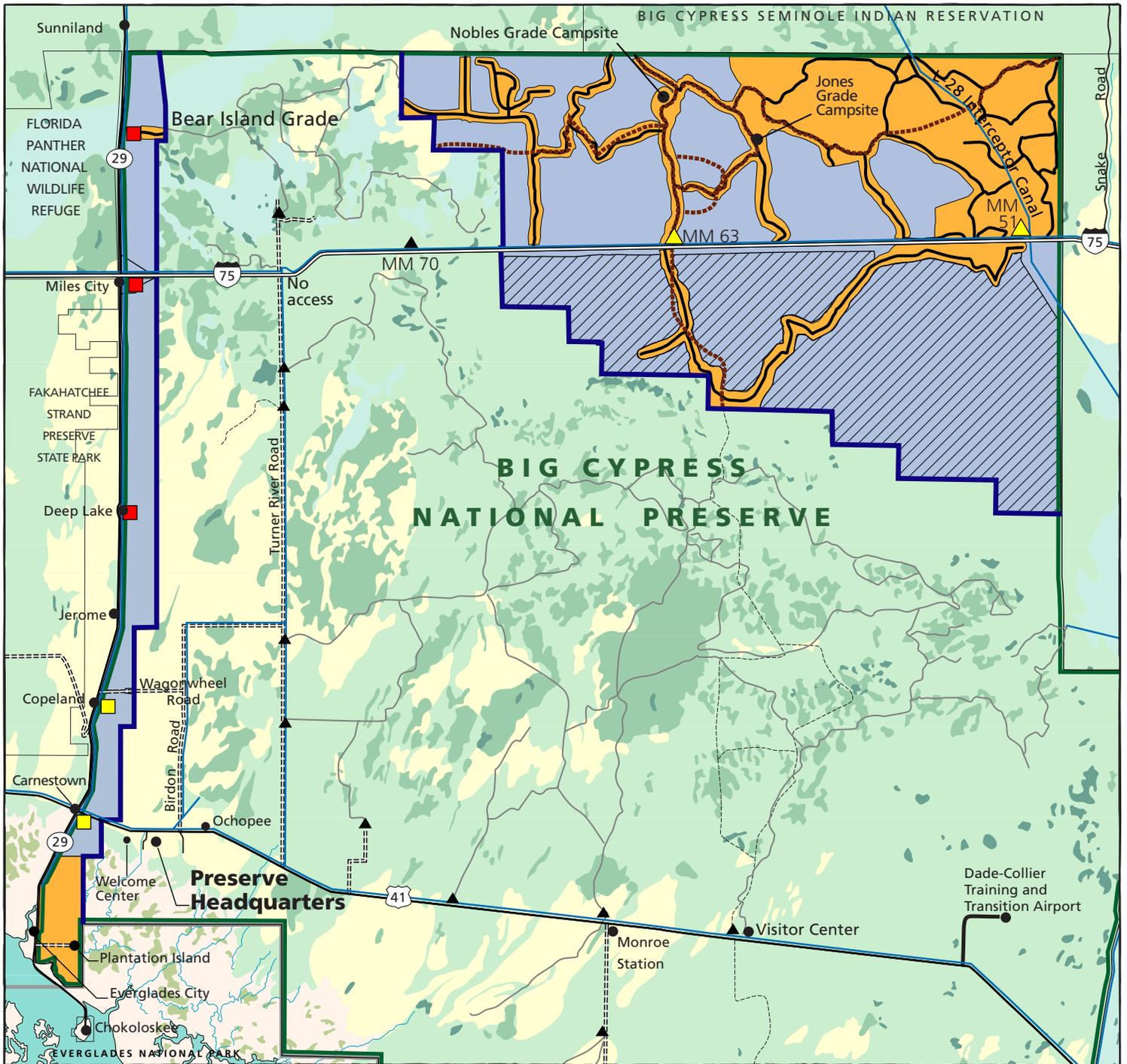
The site would be developed into a day use area with parking, restrooms, picnic shelters, and a hiking trail/boardwalk to Deep Lake.

Copeland (SR 29)

The NPS Fire Operations Center would be maintained at this location and expanded as necessary for other NPS operational needs.

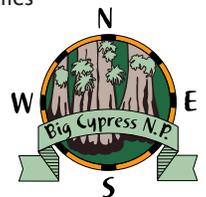
Carnestown (U.S. 41 at SR 29)

The facilities would be used to support commercial services and/or partner organizations (such as the Sheriff's Office) that would operate at this location, including enhancements that would support visitor service needs.



Legend

- | | | |
|-----------------------|------------------------------|------------------------|
| Preserve Boundary | Conceptual Hiking Trail | Frontcountry |
| Addition Boundary | Designated Primary ORV Trail | Primitive Backcountry |
| Canal | Conceptual Primary ORV Trail | Backcountry Recreation |
| Existing Access Point | Unpaved Road | Developed |
| Proposed Access Point | Existing Hiking Trail | Proposed Wilderness |



Map 5 • Preferred Alternative • Big Cypress National Preserve–Addition General Management Plan

ESTIMATED COSTS

The NPS staffing level needed to implement the preferred alternative would be the equivalent of 93 full-time staff members (16 additional full-time-equivalent employees or 17 positions) — 15 permanent full-time-employees and 2 half-time temporary/seasonal employees). These 16 additional employees include 2 permanent interpreters, 2 seasonal interpreters, 4 maintenance workers, 5 law enforcement rangers, 2 visitor use assistants, 1 ORV program manager, and 1 biological science technician. Volunteers and partnerships would continue to be key contributors to NPS operations.

One-time capital costs of the preferred alternative, including projects that are planned for the near future or are underway, new construction, and nonfacility costs such as major resource plans and projects, are esti-

mated at \$6.7 million. Annual operating costs under this alternative would be \$7.9 million.

The cost estimates provided here are given for comparison to other alternatives only; they are not to be used for budgeting purposes. Although the numbers appear to be absolutes, they represent a midpoint in a possible range of costs.

Presentation of these costs in this plan does not guarantee future NPS funding. Project funding would not come all at once; it would likely take many years to secure and may be provided by partners, donations or other nonfederal sources. Although the National Park Service hopes to secure this funding and would prepare itself accordingly, the Preserve may not receive enough funding to achieve all desired conditions within the time frame of the *General Management Plan* (the next 20 or more years). More information on costs is provided in the “Development of Cost Estimates” section and table 6.

ALTERNATIVE F

CONCEPT AND GENERAL MANAGEMENT STRATEGIES

Alternative F would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of wilderness, no ORV use, and minimal new facilities for visitor contact along I-75.

The approximate acreages and percentages of the Addition that would be in each of the management zones under alternative F are shown in table 5.

TABLE 5: MANAGEMENT ZONES IN ALTERNATIVE F

Zone	Acreage	% of Addition
Developed	15	< 1
Frontcountry	6	< 1
Backcountry Recreation	3,422	2
Primitive Backcountry	142,442	98

The management of the Addition and the actions that would be taken by the National Park Service in the next 20 years under alternative F are described in the following paragraphs.

MOTORIZED RECREATIONAL OPPORTUNITIES — TRAILS AND PERMITS

No ORV use would be available under this alternative. Motorized boating would continue to be permitted in certain areas of the canals and waterways adjacent to SR 29.

No ORV permits would be granted and no trails would be designated because public recreational ORV use would not be allowed. ORV access to private property by inholders

would continue to be allowed by special use permit.

NONMOTORIZED RECREATIONAL OPPORTUNITIES

New access points would be established, and trails would be developed for hiking, camping, bicycling, horseback riding, and walk-in hunting. Access points would be developed at mile markers 51 and 63 under the *I-75 Recreational Access Plan*; however, access would be walk-in only. Some new hiking trails would be developed at frontcountry locations. New paddling trails would be developed in the tidal areas south of U.S. 41 in the Western Addition. Specific access points and facilities to support nonmotorized uses are described in the “Facilities” section.

Conceptual hiking trails would be included as part of this alternative — one completing a north-south connection and one completing an east-west connection through the Addition.

The National Park Service would work cooperatively with the Florida Trail Association to determine the appropriate access points and routing of the Florida National Scenic Trail to minimize conflicts between motorized and nonmotorized users. The trail would be formally designated.

The National Park Service would work with the Florida Fish and Wildlife Conservation Commission and the U.S. Forest Service to provide hunting access, define hunting seasons, and develop hunting regulations that are consistent with both agencies’ policies and goals for the Addition.

VISITOR ORIENTATION AND EDUCATION

Visitor information/orientation panels would be developed along I-75 under this alternative, as described in the “Facilities” section.

WILDERNESS

About 71,260 acres of land would be proposed for wilderness designation under this alternative, including the Everglades City area which would allow historic motorboating to continue within designated wilderness (see following map).

NPS staff would work cooperatively with the state of Florida and the U.S. Fish and Wildlife Service (and other appropriate federal, state, and local agencies) to ensure that the legislative act that formally designates wilderness in the Addition contains language that allows for effective management of exotic species, wildland and prescribed fire, and law enforcement activities.

PARTNERSHIPS, PROGRAMS, AND ACTIVITIES

No new partnerships, programs, or activities would be initiated for the Addition.

FACILITIES

I-75 Mile Marker 51

A new access point (nonmotorized only) would be developed at this location that includes parking and visitor information. Visitor orientation and interpretation panels would also be installed. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station

and boat ramp to access the South Florida Water Management District canal.

I-75 Mile Marker 63

Using the Florida Department of Transportation rest area at this location, a new access point (nonmotorized only) would be developed that includes parking, a trailhead, and visitor information. Visitor orientation and interpretation panels would be installed. A new NPS operations facility would also be developed at this location. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.

Bear Island Grade at SR 29

A new trailhead and parking area would be developed at this location, providing non-motorized access to the Bear Island Grade. Only hiking, bicycling, and horseback riding would be allowed on the trail within the Western Addition. Outside the Western Addition (in the original Preserve), ORV use would continue on the designated ORV trails in the Bear Island area. Visitor orientation and interpretation panels would also be installed at the trailhead.

Nobles and Jones Grades

These sites would remain undeveloped, and Nobles Grade would be removed and restored. Nonmotorized public access would remain on Jones Grade.

Miles City (I-75 at SR 29)

This intersection would remain undeveloped.

Deep Lake (SR 29)

A new trailhead would be developed at this location, including a hiking trail/boardwalk to Deep Lake.

Copeland (SR 29)

The NPS Fire Operations Center would be maintained at this location and expanded as necessary for other NPS operational needs.

Carnestown (U.S. 41 at SR 29)

Facilities would be removed, and the site would be restored to natural conditions.

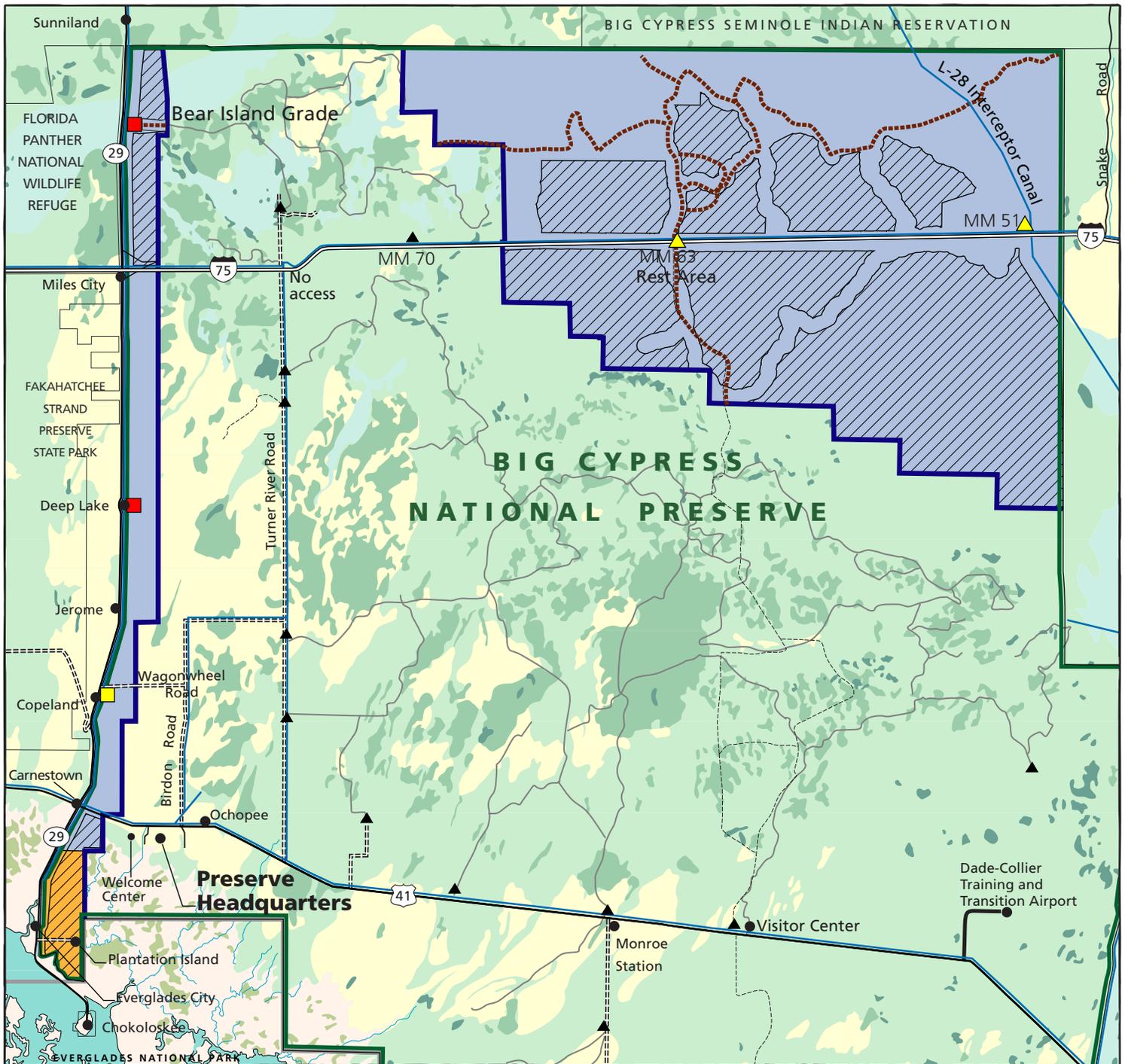
ESTIMATED COSTS

The NPS staffing level needed to implement alternative F would be the equivalent of 87 full-time staff members (10 additional positions). These 10 additional positions (10 full-time employees) would include 2 permanent interpreters, 2 maintenance workers, 5 law enforcement rangers, and 1 visitor use assistant. Volunteers and partnerships would continue to be key contributors to NPS operations.

One-time capital costs of alternative F, including projects that are planned for the near future or are underway, new construction, and nonfacility costs such as major resource plans and projects, are estimated at \$4.9 million. Annual operating costs under this alternative would be \$7.5 million.

The cost estimates provided here are given for comparison to other alternatives only; they are not to be used for budgeting purposes. Although the numbers appear to be absolutes, they represent a midpoint in a possible range of costs.

Presentation of these costs in this plan does not guarantee future NPS funding. Project funding would not come all at once; it would likely take many years to secure and may be provided by partners, donations or other nonfederal sources. Although the National Park Service hopes to secure this funding and would prepare itself accordingly, the Preserve may not receive enough funding to achieve all desired conditions within the timeframe of the *General Management Plan* (the next 20 or more years). More information on costs is provided in the “Development of Cost Estimates” section and table 6.



Legend

- Preserve Boundary
- Addition Boundary
- Canal
- Existing Access Point
- Proposed Access Point
- Conceptual Hiking Trail
- Designated Primary ORV Trail
- Unpaved Road
- Existing Hiking Trail
- Frontcountry
- Primitive Backcountry
- Backcountry Recreation
- Developed
- Proposed Wilderness



Map 6 • Alternative F • Big Cypress National Preserve—Addition General Management Plan

DEVELOPMENT OF COST ESTIMATES

NPS decision-makers and the public must consider an overall picture of the complete costs and advantages of various alternatives, including the no-action alternative, to make wise planning and management decisions for the Big Cypress National Preserve Addition.

In estimating costs of the alternatives, different types of costs need to be taken into account, including one-time and annual operating costs.

One-time costs include initial construction for new facility development (including NPS infrastructure costs) or for nonfacility costs related to natural and cultural resources management and visitor use projects.

Annual operating costs are the total annual costs for maintenance and operations associated with each alternative, including maintenance, utilities, supplies, staff salaries and benefits, leasing, and other materials.

The presentation of costs within a general management plan is applied to the types and general intensities of development in a comparative format. The following applies to costs presented within this general management plan:

- The costs are presented as estimates and are not appropriate for budgeting purposes.
- The cost estimates were developed in 2008; they are very general and intended for alternative comparison purposes only.
- The costs presented have been developed using industry standards to the extent available.
- Actual costs will be determined at a later date and will take into consideration the design of facilities, identification of detailed resource protection needs, and changing visitor expectations.
- Approval of the general management plan does not guarantee funding or staffing for proposed actions.
- Project funding will not come all at once; it will likely take many years to secure and may be provided by partners, donations, or other nonfederal sources.
- Some proposals may not be funded within the life of this *General Management Plan* and full implementation may occur many years into the future.

The implementation of the approved plan will depend on future funding. The approval of a plan does not guarantee that the funding needed to implement the plan will be forthcoming. Full implementation of the approved plan could be many years in the future or may not occur if funding is not obtained.

TABLE 6: COST COMPARISON OF THE ALTERNATIVES

	Alternative A	Alternative B	Preferred Alternative	Alternative F
Annual Operating Costs (ONPS)^{1,6}	\$6,500,000	\$7,900,000	\$7,900,000	\$7,500,000
Staffing (FTE)²	77 for the Preserve No additional staff for the Addition	93 for the Preserve 16 of those FTEs (or 17 positions) are for the Addition	93 for the Preserve 16 of those FTEs (or 17 positions) are for the Addition	87 for the Preserve 10 of those FTEs/positions are for the Addition
One-Time Costs				
Visitor Contact Station	0	\$1,200,000	\$1,200,000	0
Operations Center	0	\$4,000,000	\$4,000,000	\$3,400,000
Other Facility Costs ⁴	0	\$1,500,000	\$1,500,000	\$900,000
Nonfacility Costs ⁵	0	0	0	\$600,000
Total One-Time Costs³		\$6,700,000	\$6,700,000	\$4,900,000

Note: All cost estimates are in 2008 dollars. The total construction cost for the two I-75 recreational access points is estimated at \$13.9 million. The state has \$7.2 million approved for construction of the MM51 access point in 2011-2012 and has funds programmed for construction of the MM63 access point in 2017-2018. The access points are required by the Addition Act.

1. Annual operating costs (ONPS) for the entire Preserve are the total costs per year for maintenance and operations associated with each alternative, including utilities, facility and trail maintenance, staff salaries, and benefits. Cost and staffing estimates assume that the alternative is fully implemented as described in the narrative.
2. The total number of FTEs (full-time equivalent employees) is the number of person-years of staff required to maintain the assets of the Preserve and Addition at a good level, provide acceptable visitor services, protect resources, and generally support NPS operations. The FTE number indicates ONPS-funded NPS staff only, not volunteer positions or positions funded by partners. FTE salaries and benefits are included in the annual operating costs.
3. The total one-time costs are the sum of all elements listed in the rows that precede the total.
4. One-time facility costs include those for the design, construction, or rehabilitation of housing, ORV trails, campgrounds, trailheads, and day use areas.
5. One-time nonfacility costs include removal of the Carnestown facilities and associated revegetation.
6. These costs do not include research and monitoring efforts as identified later in table 8.

THE ALTERNATIVES AND USER CAPACITY, ADAPTIVE MANAGEMENT, ORV ADMINISTRATION AND MANAGEMENT, AND WILDERNESS

User capacity, adaptive management, ORV administration and management, and wilderness topics discussed in this section are very much part of the action alternatives (B, preferred, and F) just described, and thus this management plan. They are presented separately because they apply to all action alternatives, although some applications vary by alternative — for example, the numbers of ORV trails and permits vary depending on the alternative.

USER CAPACITY

The National Park Service defines user capacity as the types and extent of visitor use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with the purposes of the park unit. It is a process involving planning, monitoring, and management actions to ensure that a park unit's values are protected.

Managing user capacity in national park units is inherently complex and depends not only on the number of visitors, but also on where they go, what they do, and the “footprints” they leave behind. In managing for user capacity, NPS staff rely on various management tools and strategies, rather than solely on regulating the number of people in a park unit or simply establishing limits on visitor use. In addition, the ever-changing nature of visitor use in park units requires a deliberate and adaptive approach to user capacity management.

The foundations for making user capacity decisions in this plan are the Addition's purpose, significance, special mandates, and management zones. These define why the Addition was established and identify the most important resources and values,

including visitor experience opportunities, that will be protected or provided. The management zones qualitatively describe the desired resource conditions and visitor experiences, including appropriate recreation activities, for different locations throughout the Addition. These elements direct the National Park Service how to protect resources while offering a diversity of visitor opportunities.

Based on the desired conditions described in the management zones, indicators and standards are identified in this plan. An indicator is a measurable variable that can be used to track changes in resource and social conditions related to human activity, so that existing conditions can be compared to desired conditions. A standard is the minimum acceptable condition for an indicator. The indicators and standards help translate the broader qualitative descriptions of desired conditions in the management zones into measurable conditions. As a result, NPS managers can track changes in resource conditions and visitor experiences, and provide a basis for the NPS staff to determine whether desired conditions are being met. The monitoring component of this process also helps test the effectiveness of management actions and provides a basis for informed adaptive management of visitor use.

This plan also includes a range of actions that would be taken to maintain or restore desired conditions. For example, management actions may include providing information about low impact recreational use and the principles of “Leave No Trace” and “Tread Lightly”; directing visitors to designated facilities or areas; adding or altering facilities (e.g., trails, campsites) for containment of use to designated areas; directing visitors to lesser-used areas or off-peak times; restricting the types of recreation activities permitted; and/or

reducing the amount of visitor use in certain areas.

With limited staffs and budgets, NPS managers will focus more frequently on areas where there are likely visitor use changes, and/or clear evidence of problems, or where problems can reasonably be anticipated during the life of this plan. This means monitoring will more frequently take place where conditions are approaching or violate standards, conditions are changing rapidly, specific and important values are threatened by visitation, and/or the effects of management actions taken to address impacts are uncertain.

User capacity decision-making is a continuous process; decisions are adjusted based on monitoring the indicators and standards. Management actions are taken to minimize impacts when needed. As monitoring of the Addition's conditions continues, managers might decide to modify, add, or eliminate indicators if better ways are found to measure important changes in resource and social conditions. Also, if new use-related resource or visitor experience concerns arise in the future, additional indicators and standards will be identified as needed to address these concerns.

User capacity management for general visitor and ORV use in the Addition is addressed in different ways. Capacity management for general visitor use is grounded in the desired conditions for the management zones. NPS staff would monitor use levels and patterns and would conduct periodic visitor surveys of visitor characteristics, expectations, evaluations, and preferences — as they do in the original Preserve. Certain indicators (see table 7) would be used to monitor visitor use and experience as identified later in this chapter. The effectiveness of management actions would be tested against meeting the desired conditions.

User capacity management for ORV use in the Addition would be guided by the elements and criteria included in the later “ORV Administration and Management” section of this chapter. This section includes indicators, standards, and management strategies that are designed to protect resources and enhance visitor experiences, including strategies to minimize and manage adverse impacts from motorized use — such as vehicle regulations, user permit allocations, a monitoring program, and potential management actions that would be used to correct issues and minimize impacts on resources. The overall approach to user capacity for ORV use also includes adaptive management, which allows managers to base decisions on monitoring results. In addition, the committee charter for the original Preserve's ORV Advisory Committee would be amended to include the Addition. This would enable the committee to work with the National Park Service on adopting and refining the indicators and standards over time.

In summary, this *General Management Plan / Wilderness Study / Off-road Vehicle Management Plan* addresses user capacity in the following ways:

- The plan outlines the Addition's purpose, significance, and management zones, which provide the foundation for user capacity management.
- The plan describes the Addition's most pressing use-related resource and visitor experience concerns. This helps NPS managers focus limited resources on specific issues that may need management attention now or into the future. It also helps determine the most important potential indicators and standards to consider.

TABLE 7: USER CAPACITY INDICATORS AND STANDARDS

Indicator Topic	Indicator Measure	What Does It Indicate?	Standard
Change in population of prey species as a result of visitor use	abundance and distribution; demographics	change in population trend	populations of prey species are maintained to satisfy sustainable predator needs* *Continued census of predator and prey species will be necessary to determine # of prey available/# of predators that will be seeking the prey.
Change in population of game species as a result of visitor use	abundance and distribution; demographics	change in population trend	populations of game species are maintained to satisfy sustainable harvest* * Continued census of game species and hunter success will be necessary to determine # of game species available for harvest as game and for predators.
Change in population of T&E species/ species of management concern as a result of visitor use	abundance and distribution; demographics	change in population trend	no adverse affects* *Further specificity on standards for population changes will be provided in the future hunting management plan. Monitoring of T&E populations will be conducted to determine if species' status is stable, improving, or in decline.
Surface Water Flow	feet of elevation expressed in .00 of a foot mean sea level	whether land use affecting natural surface water flow requires mitigation	surface water flow is maintained* *The specific effects of visitor use will be determined as part of a problem analysis prior to taking corrective management action.
Water Quality	turbidity, total phosphorus, total nitrogen	water quality change	persistence of parameters greater than background relative to the Outstanding Florida Waters designation* * The specific effects of visitor use will be determined as part of a problem analysis prior to taking corrective management action.
Change or measured difference from ambient soil conditions	nitrogen, sodium, ammonium, pH, carbon, ion absorption, inorganic/organic soil composition	change in soil chemistry or structure that affects its ability to maintain plant growth	thresholds and parameters could vary, depending on the setting. Goal is to maintain background soil chemistry and structure* *The specific effects of visitor use will be determined as part of a problem analysis prior to taking corrective management action.
Invasive plants, changes in plant communities	% of plant densities, presence of individual nonnative or invasive plants	potential distribution of nonnative or invasive plants by disturbance (ORVs, land development, backcountry use)	Maintenance of native plant communities and eradication of invasive or nonnative plants resulting from land use.
Incidences of disturbance to cultural resources	number of incidences of disturbance to cultural resources per year	trends in visitor behavior and compliance with Preserve rules/ regulations	no (0) incidences of disturbance to cultural resources

CHAPTER 2: ALTERNATIVES, INCLUDING THE PREFERRED ALTERNATIVE

Indicator Topic	Indicator Measure	What Does It Indicate?	Standard
Off-trail travel by motorized and non-motorized users	number of incidences* per winter/spring (i.e., high use) season of off-trail travel *Incidences = observed real-time occurrence of off-trail activity, as well as physical impact resulting from off-trail activity.	vegetation loss, spread of invasive species, disruption to surface water flow, contact with sensitive resources, habitat fragmentation, noncompliance with Preserve rules/regulations	no more than 6 incidences per winter/spring season of off-trail travel for either motorized or nonmotorized use
Trail widening as a result of motorized and nonmotorized use	number of occurrences per winter/spring (i.e., high use) season of motorized and nonmotorized trails exceeding a length of widening beyond the standard	vegetation loss, spread of invasive species, disruption to surface water flow, contact with sensitive resources, habitat fragmentation, noncompliance with Preserve rules/regulations	no more than 6 occurrences per winter/spring season of motorized trails exceeding 36 feet wide for at least 50 linear feet no more than 6 occurrences per winter/spring season of nonmotorized trails exceeding 18 feet wide for at least 25 linear feet
Documented visitor use related complaints or conflicts per area	documented visitor use related complaints or conflicts between users per month for each management unit,* trail system, or visitor facility * N of I-75, S of I-75, and Western Addition	potential user conflicts on trails or in specific areas	5 per month per management unit, trail system, or visitor facility
Documented visitor use-related complaints or conflicts for the Addition	documented visitor use-related complaints or conflicts between users per year for the entire Addition	potential user conflicts on trails or in specific areas	25 per year for the Addition
Documented violations	number of documented violations (includes warnings, citations, or arrests) for noncompliance per month for each management unit, trail system, or access point	compliance with designated trail policy and identification of specific areas of concern	30 per month per management unit, trail system, or access point
Number of groups encountered	number of groups (hunting and non-hunting) encountered per hour in the Frontcountry zone	crowding and use conflicts	20 groups encountered per hour
Number of groups encountered	number of groups (hunting and non-hunting) encountered per day more than 1 mile from access points in Backcountry Recreation zone	crowding and use conflicts	10 groups encountered per day more than 1 mile from access points

Indicator Topic	Indicator Measure	What Does It Indicate?	Standard
Number of groups encountered	number of groups (hunting and non-hunting) encountered per day on trails in the Primitive Backcountry zone	crowding and use conflicts	6 groups encountered per day

- The plan identifies the most important indicators that will be monitored and sets standards to determine if desired conditions are not being met due to impacts from visitor use.
- The plan outlines management actions that might be used to avoid or minimize impacts from visitor use, especially ORV use.

Resource Indicators and Standards

The priority *resource* indicators for the Addition are associated with the following issues:

- disturbance of wildlife
- impacts on surface water flow and water quality
- changes to ambient soil conditions and vegetation patterns
- disturbances to cultural resources

The condition of these resources is already being monitored and managed in various ways, but the indicators described below would help the NPS staff track specific influences to these resources as a result of visitor use.

The following information describes the nature of potential impacts to the resource topics mentioned above and discusses some of the management strategies that would be used to reduce or mitigate these impacts. Additional specific management strategies are described in the “ORV Administration and Management” section.

The Addition is home to a number of important prey and game species, as well as threatened and endangered species and species of management concern. These various wildlife species can be sensitive to activities associated with visitor use, particularly ORV use and hunting. Visitor use of the Addition could affect the quality of habitat preferred by these species, directly disturb individual animals, change behavior, and reduce foraging opportunities. These impacts could lead to changes in population trends such as the abundance, distribution, and demographics of individual species. Minimizing the extent and severity of impact on wildlife has been the focus of ongoing management strategies, including educating visitors on low-impact recreation practices and regulating the amount of use permitted. The indicators and standards included in table 7 would encourage the use of adaptive management to help reduce influences from visitor use on wildlife. The goal of these efforts would be to maintain prey species to satisfy sustainable predator needs and maintain game species to support sustainable harvest. In addition, management activities would be focused on ensuring no adverse effects on threatened and endangered species and species of management concern.

Water was named as a prime resource in the Addition’s enabling legislation. Visitor use can affect surface water flow, particularly through the displacement of soils that may change water flow patterns and directions. Also, visitor use, such as ORV use, hiking, biking, horseback riding, and camping, can cause soil erosion and generate contaminants that would affect turbidity and surface water quality. The indicators and standards for surface water flow and water quality would be used to

ensure that management efforts are effectively maintaining natural surface water flow patterns and that changes to water quality stay within the parameters required by the Outstanding Florida Waters designation.

Protecting soils and vegetation is key to maintaining the ecological integrity of the Addition. Several indicators related to potential influences of visitor use on soils and vegetation are included in table 7. Visitor use activities such as hiking, biking, and horseback riding, and particularly ORV use, may lead to some rutting and displacement of soils, as well as soil compaction and erosion. These types of impacts can lead to soil loss and reduced productivity of soils. In addition, visitor use can influence vegetation by changing vegetation composition or causing the loss of vegetation. Indicators and standards related to impacts on soils and vegetation from visitor use include a change in ambient soil conditions, incidences of off-trail travel, trail widening, and the presence and distribution of nonnative or invasive plants. Management efforts would be focused on minimizing both the extent and severity of impacts on soils and vegetation from visitor use. The standard for trail widening varies by type of trail given the desire to maintain nonmotorized trails to a smaller design standard than motorized trails.

Visitor use impacts on cultural resources include unintentional disturbances and vandalism to archeological resources and ethnographic resources. Many cultural resources are nonrenewable, so impacts (especially those resulting from disrespectful behavior) must be minimized to the extent possible. The indicator and standard for disturbance to cultural resources would be used to ensure that cultural resources in the Addition would not be affected by visitor use activities. Management strategies would include visitor education and enforcement of regulations, and closure of particularly vulnerable areas would be considered, if needed.

Visitor Experience Indicators and Standards

The priority *visitor experience* indicators for the Addition are associated with the following issues:

- crowding, measured by encounter rates between visitor groups
- compliance with regulations
- visitor complaints

Similar to the resource indicators, visitors' opportunities and related experiences in the Preserve are already being monitored and managed in various ways, but the indicators described below would help NPS staff track these specific issues more systematically to ensure that desired conditions are being achieved.

Visitors to the Addition would be seeking opportunities for solitude, contemplation of nature, and enjoyment of their chosen recreation activity in a relatively independent manner. Crowding and conflicts can be of particular concern for such visitors. An indicator of the number of other visitor groups encountered was identified as an important measure of crowding. Because visitors expect to see fewer people in a backcountry setting versus the frontcountry, the standard for this indicator was set at a lower level in the primitive backcountry and backcountry recreation zones, with no more than 6 or 10 groups encountered per day, respectively. The frontcountry zone standard would be higher, at 20 groups encountered per hour, because most visitors would expect to see a higher volume of people in these areas and the congregation of people around access points is unavoidable.

Failure to adhere to regulations for trail policies and permit conditions can also lead to crowding or conflict between users. NPS staff would monitor an indicator related to permit compliance. The standard would ensure that most visitors comply with trail policy and

permit conditions to minimize conflicts with other visitors. NPS staff would use management strategies such as education on regulations, encouraging use at less busy times, and regular enforcement to maintain high levels of permit compliance.

NPS staff would also continue to track and evaluate visitor comments that may indicate problems associated with crowding, use conflicts, or violations of regulations. These problems may affect visitors' ability to experience high quality recreation opportunities and could, on occasion, affect visitor health and safety. If complaints exceed the established standard, or trends indicate a problem area, appropriate management actions would be taken to mitigate the problem.

ADAPTIVE MANAGEMENT

Within the context of ORV management at the Addition, the adaptive management framework was first described in the 2000 *Recreational ORV Management Plan*. That plan described a decision-making framework that was based on evaluating impacts, increasing the understanding of resource dynamics, and adjusting management actions to meet objectives. Since that time, the U.S. Department of the Interior (DOI) has developed guidance on adaptive management and how to apply it to federal land management decisions. The *Adaptive Management Technical Guide* (Williams et al. 2007) uses the National Research Council's definition of adaptive management:

[A] decision process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management

also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a "trial and error" process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders.

The *Technical Guide* describes adaptive management as a systematic approach for improving resource management by learning from management outcomes. Figure 1 below illustrates the adaptive management process.

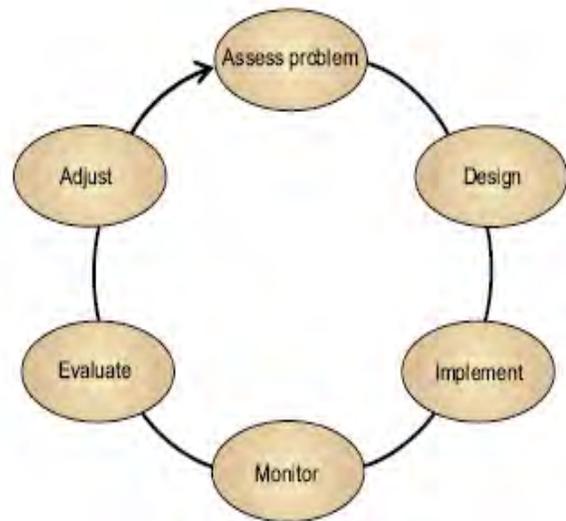


FIGURE 1: DIAGRAM OF THE ADAPTIVE MANAGEMENT PROCESS

The adaptive management framework included in the 2000 *Recreational ORV Management Plan* is compatible with current DOI guidance.

ORV ADMINISTRATION AND MANAGEMENT

ORV Administration

Administration and management of ORV use (the ORV program) for the Addition would be the same as it is in the original Preserve, with a few exceptions.

- Only wheeled mechanized use would be allowed on designated trails in the Addition.
- No public recreational airboat use would be allowed in the Addition because no public access can be provided to areas that would be appropriate for airboat use. Furthermore, this is consistent with other closures in the original Preserve and adjacent Everglades National Park.
- The motorized boating that occurred historically would be allowed to continue in the Everglades City area.

Other exceptions are discussed below, where necessary, and include topics such as the number of vehicle permits.

Vehicle Types and Specifications. It is the intent of the National Park Service to establish vehicle specifications that protect the Addition's resources while providing for reasonable recreational access. Vehicle specifications for the Addition would be the same as what is currently in place for the original Preserve.

The following vehicle types are authorized for use in the Addition: swamp buggies, all-terrain cycles, and street-legal 4x4s. Vehicles are currently required to meet the following specifications.

- Vehicle width and length:
 - Wheeled vehicles could not exceed 8.0 feet in total width, including tires.

- Noise control:
 - All wheeled vehicles would be required to have a muffler in good working condition and in constant operation.
- Other ORV equipment:
 - All ORV mechanical systems important for safe operation must be in good operating condition.
 - Tires on all buggies and street-legal vehicles must have a minimum of 9 inches of tread face.
 - On all-terrain cycles, the minimum tire tread face requirement would be 7 inches in the front and 9 inches in the rear.
 - Any device used to push aside, shear off, or otherwise damage vegetation would be prohibited.
 - Any tire chain, bar grip, or other device affixed to a tire in any way would be prohibited.
 - All tracked vehicles would continue to be prohibited.

These vehicle specifications were established in the *Final Recreational Off-road Vehicle Management Plan / Supplemental Environmental Impact Statement* (NPS 2000). The criteria used to develop these specifications were based on the best available information and the *Code of Federal Regulations* (CFR). Vehicle types are defined in 36 CFR 7. The vehicle specifications contained in the 2000 plan as shown above would be adopted by this *General Management Plan* and would be common to all alternatives except alternatives A and F where ORV use for the general public would not be allowed.

NPS staff would continuously evaluate ORV equipment and its effects on resources and the visitor experience. If it was determined that certain ORV equipment was causing unacceptable impacts, ORV equipment specifications would be modified and the NPS would promulgate regulations accordingly.

NPS staff would continue to research vehicle specifications to refine them to mitigate resource damage. Based on research results, limits could be established in the future for a number of vehicle characteristics, such as overall weight, tire size, tire type, noise, and ground-bearing pressure (measured in weight per unit area, such as pounds per square inch).

Vehicle Inspection Program. The vehicle inspection program for the Addition would be operated the same as it is in the original Preserve. Vehicles would be required to meet specifications for that particular type of vehicle (all-terrain cycle, swamp buggy, or street-legal four-wheel-drive vehicle) before being eligible for a permit. Each vehicle would have to pass an inspection conducted by the National Park Service.

Vehicle inspections would result in a sticker that designated the vehicle as having met vehicle specification and safety requirements. This sticker would identify the vehicle over time. The inspection number would be included in a computer database and would stay with the vehicle for the entire time it was under the same ownership. Possession of an inspection sticker would mean only that the vehicle was eligible for the vehicle permit drawing and would not, by itself, allow for use of the vehicle in the Addition.

ORV owners would be encouraged to have their vehicles inspected between October 1 and November 30, before the drawing. This would allow the ORV owner to be ready to participate in the drawing.

NPS staff would affix inspection stickers as follows:

- swamp buggy — steering column
- street legal — inside the driver's door
- all-terrain cycle — center of steering mechanism

The free inspection sticker would be valid for a three-year period, and then the vehicle

would need to be reinspected and a revalidated sticker would be obtained.

Number of Vehicle Permits. The ORV program for the Addition would be managed much the same as it is in the original Preserve. However, a total of three permits would be required: an ORV permit (specific to the Addition), an ORV operator's permit, and a backcountry use permit. Users who already have a permit for the original Preserve wishing to access the Addition would also be required to have a separate permit for the Addition.

The number of vehicle permits issued for the Addition would depend on the alternative selected. A maximum number of permits has been established for each alternative. The maximum number of permits established under alternative B (660) and the preferred alternative (650) is based on the ratio of vehicle permits to trail miles in the original Preserve (2,000 permits:400 miles or 5:1), where the ORV management program has been successful based on management experience and associated monitoring. Under the preferred alternative, the number of initial permits issued would be based on the initial extent of primary ORV trails included times five. For example, if 20 miles of sustainable trail were designated as part of the initial trail network, then 100 permits (20 miles x 5 permits/mile = 100 permits) would be released. Additional permits would be phased in as monitoring results indicate that resource conditions are acceptable and additional trails are designated.

Allocation of Vehicle Permits. The allocation of vehicle permits would be as it is for the original Preserve. A random drawing would be held each December for the opportunity to obtain a permit. Permits would be valid from January 1 of each year through January 31 of the following year. This 13-month permit would allow for a month grace period to obtain a new permit, should the owner be successful in the drawing the previous year.

Announcement of the drawing would be sent out each October by letter to all permit holders and by press release. For the first year of Addition permits, all holders of permits for the original Preserve would be notified about the drawing. In subsequent years, only holders of permits for the Addition would continue to be notified. Cards for the drawing would be sent with announcement letters and would also be available at the Addition. Cards would also be given to those who had their vehicles inspected during the 13 months from October 1 to November 30. During the first year of implementation, drawing cards would be filled out at the time of inspection. Drawing cards would be due into the permit station or postmarked by November 30.

The system would be designed to provide an opportunity for each vehicle owner, regardless of how many vehicles they may own, to receive at least one ORV permit unless the total number of individual owners exceeded the maximum number of permits available. More than one permit per person would be available if the initial drawing resulted in fewer permit requests than was available. A maximum of five permits would be allowed per individual. A waiting list would be developed to reassign permits not claimed by January 31.

Successful drawing participants would be notified immediately after the drawing and would be required to purchase their permit by mail or in person before January 31. If the individual failed to purchase the permit by that date, the permit would go to the next person on the waiting list.

The owner would have the option of placing the purchased permit on any of the vehicles that were entered in the drawing. However, because the vehicle inspection number would be on the permit, the owner would have to specify the vehicle at the time of permit purchase. Permits would be permanently fixed to the vehicle and would be nontransferable. In each subsequent year, the vehicle owner

would be required to reapply for the drawing, but could do so by mail unless an inspection was due.

Fees. The recreational ORV special use permit for the Addition would initially cost \$50.00 per year — a separate fee from that for the original Preserve. ORV inspections, ORV operator's permits, and backcountry use permits would continue to be free. Funds generated from the vehicle permits would be applied toward such costs as permit printing, administration of the drawing, education program materials, and operating the ORV permit system. Although the cost of the permit is supposed to offset the cost of administering the ORV program, the fee would actually pay only a small portion of the program costs. The fee could be changed.

Special Use Permit for Private Property Owners. Access for owners of private property within the Addition would be permitted, the same as it is in the original Preserve. Legislation, laws, and regulations do not provide right of access via off-road vehicles unless an exempt property owner has legal right-of-way or preexisting access rights.

Owners of improved private property within the Addition would be issued a free special use permit that would allow them reasonable access to and from their private property. The special use permit would authorize them to cross federal lands to access their property via a reasonably direct route. In most cases, the property access trail would be limited to use by the landowner. The property access route would be

- resource-protection based
- described in detail on the permit
- determined by the National Park Service in consultation with the landowner

The special use permit would not be included in the number of recreational ORV permits allocated annually. However, it also would not

allow for recreational ORV use in the Addition. If landowners wanted to recreate with an off-road vehicle within the Addition, they would have to participate in the annual drawing for vehicle permits. If they did not draw vehicle permits, landowners would be restricted to using their off-road vehicles on their private property and on the access route specified on their special use permit.

Owners of private properties would not be allowed to enter the Addition on off-road vehicles from any point along their property boundary. They would have to use a designated access point.

Special use permit holders would have to meet all of the other requirements for ORV use in the Addition. This would include, but not be limited to, holding a valid ORV operator permit for the Addition, meeting all vehicle specifications, completing the education course, and complying with all rules and regulations relating to recreational ORV use in the Addition.

Administrative ORV Use. Administrative ORV use by NPS staff, its agency partners, and cooperators would be the same as it is in the original Preserve except that ORV access into proposed or designated wilderness would be subject to the minimum requirements process. ORV access and use by researchers would be addressed through issuance of a research permit. ORV access and use by oil and gas operators or other contractors would be addressed through an approved operations plan.

ORV Management

Methods for Determining Sustainable Trails. To develop a conceptual ORV trail system for the Addition, NPS staff first mapped the locations of existing roads, trails, and other disturbed areas in the Addition. Staff used available maps, aerial photographs, and global positioning system equipment to

locate roads and trails in the field and produce a map of potentially sustainable ORV trails (see Map 7: Conceptual ORV Trails map).

A sustainable trail is defined as a travel surface that can support currently planned and future uses with minimal impact to the natural systems of the area. Sustainable trails have negligible soil loss or movement and allow naturally occurring plant communities to inhabit the area; however, pruning, removal of certain plants, and stabilization over time may be required to accommodate recreational use. Sustainable trails should not adversely affect the naturally occurring hydrology, flora, and fauna. Sustainable trail design accommodates existing and future uses while only allowing appropriate uses.

The GMP planning team conducted field investigations (see Map 7: Conceptual ORV Trails) to determine which roads and trails could sustain ORV use. The following information was collected to help determine trail sustainability:

- vegetation and soil type
- trail width
- level of use
- the presence of ruts, water, exotic plants, trail improvements, and rare or protected species

The data were then consolidated to produce a map of sustainable trails that served as the basis for the conceptual trail systems that are included in the alternatives.

Of the 244 miles of trail assessed in the Addition, approximately 135 miles of primary ORV trails were considered sustainable and potentially usable as part of a conceptual ORV trail system (see Map 7: Conceptual ORV Trails).

ORV Access Points and Trails.

Access Points — As described earlier in the description of the alternatives, the number and type of designated ORV access points in the Addition varies by alternative. Each alternative includes a description of the locations, parking, types of vehicles allowed, and facilities that would be available at each access point.

ORV Trails — ORV trails would be designated within the Addition, and the location and number of miles of trails would also vary by alternative. Each alternative includes a map that identifies the conceptual location of the primary ORV trails within the Addition as well as the total miles of designated primary trails available. The trail mileage is based on the conceptual alignments of the sustainable trails previously identified. Trails would be designated for specific vehicle types.

Primary trails would be those trails emanating from the designated access points and providing recreational access within the Addition. Primary trails would be maintained at an appropriate width and at grade so that they would not inhibit surface water flow. Trails that require stabilization are typically designed and maintained to be approximately 12 feet wide.

Secondary trails would be identified to provide access to private property or specific destinations such as campsites or other recreational opportunities. Like the primary network, secondary trail alignments would be based on field surveys and GIS analyses. Secondary trails would branch off the primary trails and would receive less use. Secondary trails for accessing features such as designated campsites, hunting areas, or other recreational use areas would extend for a short distance from the primary trail. Trails accessing a private property would be limited to use by

that landowner if no other destination existed along that route.

The ORV trail system would be sited within an approximate 0.5-mile wide corridor (approximately 0.25 mile on either side of the primary trail) that would contain primary trails as well as secondary trails. This corridor would provide enough flexibility for siting the primary and secondary trails, as well as provide for future trail relocation, if necessary.

Closure of Areas. Recreational ORV use would be permitted only on designated trails within the Addition. All other areas of the Addition would be closed to ORV use under the authority of 36 CFR.

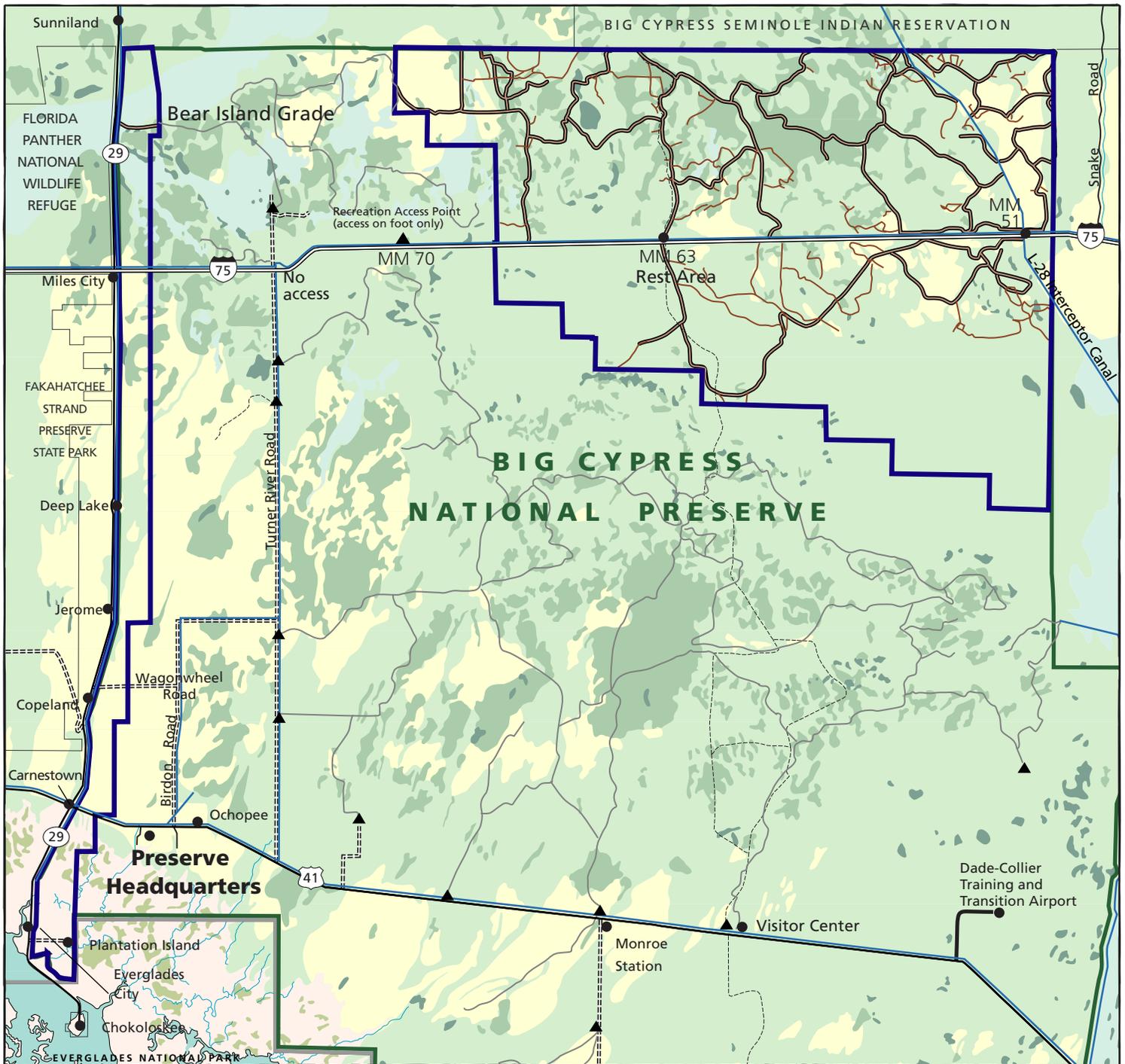
To protect resources and to ensure visitor safety a series of regular closures would be implemented for the Addition. These closures are similar to the actions that have been implemented in the original Preserve and include the following:

Nightly Closures — Recreational ORV use would be prohibited throughout the Addition between 10:00 p.m. and 5:00 a.m.

Seasonal Closures — A seasonal 60-day period would be established to allow resources a time free from any pressures related to ORV use. This moratorium on ORV use would not apply to landowners who hold special use permits to access their private properties via a designated route through the Addition. The optimal time for the seasonal rest period would be determined by research.

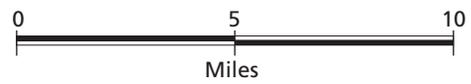
In addition to these regular closures, the National Park Service may need to institute occasional closures of the designated trail system to ORV travel. These would include, but not be limited to, the following:

Safety Closures — Safety closures would be implemented in all or portions of the



Legend

- Preserve Boundary
- Addition Boundary
- Canal
- Existing Access Point
- Designated Primary ORV Trail
- Sustainable Primary ORV Trail
- Assessed Trail
- Unpaved Road
- Existing Hiking Trail



Map 7 • Conceptual ORV Trails

Big Cypress National Preserve—Addition

General Management Plan

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Addition to ensure the protection of visitors. Safety closures primarily would be related to environmental conditions such as high fire danger or threats from hurricanes.

Resource Protection Closures — All or portions of the designated trail system could be closed to ensure protection of Preserve resources. These would include, but not be limited to, the following:

High and Low Water Events.

Closures could be implemented for extreme high- or low-water events. High-water conditions place demands on the Preserve's terrestrial wildlife (Jansen 1996). Low water can also represent high fire danger. Therefore, the National Park Service would use the closure criteria and methodology developed in 2006 ("Criteria for Off-Road Vehicle and Hunting Access within Big Cypress National Preserve in Response to Surface Water Levels") for resource protection in the Addition and would temporarily close areas when those criteria were met. The 2006 document states

High water closures would be implemented within a management unit when a two-week average of daily water levels observed within that unit reaches or exceeds the xeric water level threshold listed in table 1 of that document. Access to the closed management unit would be reopened when a two-week average of daily water levels was less than or equal to the mesic water level threshold for that management unit.

Preservation of Threatened and Endangered Species. Under the Endangered Species Act, the National Park Service has an obligation to

protect federally listed threatened and endangered species. If the National Park Service, in consultation with the U.S. Fish and Wildlife Service, determines that ORV use might result in adverse effects on listed species, area closures might be implemented. Such closures could be seasonal or permanent, depending on the nature of the adverse effects. Under the adaptive management framework, additional closures might be implemented where monitoring shows adverse environmental impacts.

Criteria for closing areas to protect threatened and endangered wildlife would include, but may not be limited to, the following:

- Wood stork — determination that a designated trail was within the distances stated for different habitat types and sites described in the "Habitat Management Guidelines for the Wood Stork in the Southeast Region" (USFWS 1990). The National Park Service will use the most current version of this guideline.
- Red-cockaded woodpecker — determination that a designated trail was within 200 feet of an active cavity tree (Hendry 1989).
- Florida panther — determination that a designated trail was within 0.5 mile of a den. The National Park Service established this buffer distance based on the data and information included in the Janis and Clark (1999) study.

Education and Communication. Education and communication about the ORV management program for the Addition would be the same as it is for the original Preserve. To protect resources and provide a safe operating environment, the following types of information would be given to ORV users:

- an orientation to the Addition, the mission of the National Park Service, and the geography of the area
- a review of the rules and regulations governing ORV use in the Addition
- safety procedures for operating an off-road vehicle in the Addition
- introduction to the designated access points and trails
- resource sensitivity, including staying on designated trails, low-impact camping techniques, and wildlife awareness
- details of the permit process, including how to apply and the privileges and responsibilities of the permit holder
- awareness of previous adverse effects, how they occurred, ways the new ORV management system mitigates past effects, and what is being done to restore areas

This information would be provided through any or all of the following:

- an ORV user's guide, with map
- an operator's orientation that would be required as a prerequisite to obtaining an ORV operator's permit
- an Internet page specifically for ORV users
- posting on the bulletin boards at each access point

All materials would be designed to be easily understood. They would be easily adapted to changing management strategies and flexible enough to incorporate new materials as research revealed additional information on operating techniques. NPS staff, subject-matter experts, and local recreational ORV users would be sources of information for the materials.

Rules and Enforcement. The Secretary of the Interior is authorized to designate, pursu-

ant to standards prescribed in regulations by the secretary,

certain officers or employees of the Department of the Interior whom shall maintain law and order and protect persons and property within areas of the national park system. The Secretary of the Interior shall make and publish such rules and regulations, as he may deem necessary or proper for the use and management of the parks, monuments, and reservations under the jurisdiction of the national park system (16 USC).

ORV rules for the Addition would be the same as those for the original Preserve, which are published in *Code of Federal Regulations* (36 CFR 7.86). In general, these include

- using only designated access points and trails
- staying out of closed areas
- having all required licenses and permits
- meeting all applicable vehicle specifications and training requirements

To facilitate compliance with regulations, the National Park Service would publish and distribute an ORV user's handbook, which would be updated as needed.

Enforcement of ORV rules for the Addition would be the same as in the original Preserve. NPS rangers would regularly conduct ground and aerial patrols of the Addition, visiting the access points, and traveling the designated trails to determine compliance.

As provided by law, a person convicted of violating a provision of the regulations within the Addition could be punished by a fine, by imprisonment, or both, and could be adjudged to pay all costs of the proceedings (36 CFR 1.3). ORV operators who did not comply with Addition rules or permit

requirements could also have their permits suspended or revoked, could be required to pay restitution for damages caused to the resources, could be subject to seizure of their vehicle and other property used during the offense, and could be banned from applying for an ORV permit for a specified period. It would continue to be the responsibility of the user to know and follow all rules and regulations that apply to the Addition.

Monitoring. Monitoring of potential impacts from ORV use in the Addition would be conducted using the indicators and standards included previously in table 7 (page 95). These indicator topics were selected based on their ease of measuring important changes to resource conditions and visitor experiences. Additions and improvements to these indicators would be made based on experience gained in implementing this plan, including revisions to the unit of measurement used for each indicator topic.

Standards would be identified for each of the indicators to define minimum acceptable conditions and establish a trigger mechanism for management action. The standards included in table 7 are a starting point and would be further developed and refined with the assistance of interested federal agencies and the Preserve's ORV Advisory Committee. The scope of the ORV Advisory Committee would be expanded to include the Addition. Once adopted, the indicators and standards would be periodically reevaluated as the National Park Service collects additional data.

The National Park Service would continue to consult with the U.S. Fish and Wildlife Service regarding potential impacts to federally listed species and the Florida Department of Environmental Protection regarding research on water quality impacts from off-road vehicles.

Methods of Monitoring. Monitoring for most of the indicators (including water resources, soils and vegetation, compliance, and cultural resources) would be performed

along or near the trails and access points designated for use by off-road vehicles and would be designed to determine whether management actions were needed. Monitoring for wildlife would cover a larger area and would be part of the Preserve's and Addition's larger wildlife research and monitoring program. The optimal frequency of monitoring would be determined as part of the adaptive management approach. The monitoring results would be used to help NPS managers identify important trends and, along with professional judgment, select appropriate management actions.

Monitoring protocols and techniques would be developed following the approval of this plan. Monitoring would be conducted during routine field activities by NPS staff specifically assigned to carry out the duties and responsibilities of the user capacity monitoring program.

Management Actions

To protect Addition resources, if monitoring indicated that standards had been exceeded based on the indicators and standards described in table 7, the National Park Service would implement management actions. The management actions could include, but would not be limited to, trail closures, trail relocation, trail maintenance, and alteration of the level or type of use on the trail. A description of these management actions is presented below. The course of action would be based on problem analysis, including such factors as the degree of the problem, the location of the trail, experience at other similar sites, consultation with experts, and the professional judgment of NPS staff.

- **trail/area closures** — Closures could be implemented immediately if a trail exceeded the standards for any of the trail-related indicators in table 7. The National Park Service would use problem analysis to evaluate the situation

and to determine if problems could be corrected to allow recreational use to continue. If the trail problem could not be corrected, the closure would be made permanent, and the trail/area would be restored.

- **trail relocation** — This option would be used when trail degradation was occurring and more suitable routes were available that would resolve unsuitable conditions. When trails were relocated, the original trail would be restored. The new trail locations would be based on the geographic information system suitability model and professional judgment of NPS staff.
- **trail maintenance** — Maintenance would be used to stabilize or improve trails that were degrading. Maintenance would be conducted so that any improvements did not cause further adverse impacts on resources (for example, impede sheet flow). Maintenance activities would use methods and materials that were compatible with the surroundings.
- **alter levels or types of trail use** — This option would be used if the National Park Service determined that trail degradation was being caused by a particular type of ORV or by excessive use. As part of this action, the National Park Service may implement a program to further regulate use at access points for resource protection and/or visitor safety.
- **education** — Educate the public on the impacts and effects of their actions and encourage them to alter their behavior. This technique would be used in advance, or in combination with, the other management actions.

It would not be necessary or desirable to bring rough routes up to a filled-roadway standard. Stabilization and improvement methods would be chosen based on their ability to

reverse existing impacts and prevent additional deterioration. For example,

- Existing filled roads or trams (an elevated causeway or travel corridor) would be maintained as roads, where appropriate. Where existing filled trams or roads were used for designated trails, water conveyance structures would be maintained to allow water flow.
- Trails would be improved at the natural grade so that water flow was not compromised. Trails would not be improved to such a standard as to make a trail easy or to encourage a higher level of ORV use than would occur in the absence of such improvements.

Standard trail stabilization would typically include the use of lime rock fill supplemented by geotextile and geowebbing. The goal would be to determine the most appropriate methods of stabilization at each type of site based on site characteristics. Consistent with the adaptive management framework, recommendations for management actions would be continually updated as better information became available.

Whenever management actions involved dredging or filling of wetlands, the National Park Service would consult with the agencies involved in regulating activities in wetlands. Appropriate permits, such as Section 404 permits under the Clean Water Act, would be obtained as necessary.

Restoration. The National Park Service would restore areas that had been impacted by off-road vehicles in the Addition using the same approach and techniques that were developed for the original Preserve in the 2000 *Recreational ORV Management Plan*. NPS staff would seek to return areas impacted by ORV traffic to their desired condition and monitor the success of those recovery activities. This section briefly describes the approach that was included in the 2000 plan.

Restoration is defined as the “return of an ecosystem to a close approximation of its condition prior to disturbance” (National Research Council 1992). The NPS staff would seek to

- remove the scars caused by vehicles and recover a sustainable, self-regulating, self-organizing ecosystem, by restoring the biological, physical, and chemical characteristic of the system to the extent possible
- meet biological, physical, and chemical targets defined by performance measures

Restoration plans would be developed for identified areas and would provide specific guidance for earthwork, revegetation, invasive plant control, and recovery monitoring at each site. Factors that would be considered when selecting the most feasible restoration techniques for a given area include the spatial scale, cost, and environmental impacts or risk associated with the technique. The adaptive management framework would be implemented to meet restoration goals.

Research. The need for research related to ORV impacts would be the same as it is in the original Preserve; therefore, the research framework, goals, and actions included in the 2000 *Recreational ORV Management Plan* would be implemented in the Addition. The following six research goals were included in the 2000 plan:

1. Support the siting, construction, maintenance, and monitoring of the designated trail system.
2. Determine existing levels of recreational use and the types of vehicles best suited for use in the Big Cypress environment.
3. Initially conduct or update inventories of the Addition’s flora, fauna, and soils. The results would be used to establish a baseline to determine future trends in resource condition, identify ecosystem stresses and associated environmental

indicators, and determine if sensitive resources were or had the potential to be adversely affected by the designated trail system.

4. Determine the effects of ORV use on the Addition’s flora, fauna, and soils.
5. Examine recreational interactions to ensure that all visitors to the Addition have an enjoyable and educational experience.
6. Determine the most efficient and effective means of mitigating effects caused by ORVs and establish best management practices for use in the Addition.

The results from this research would be used to make continuous improvements to the ORV management program.

The 2000 *Recreational ORV Management Plan* recommended studies for each of the research goals and the priorities of each. However, as many as 25 of the studies may not have the relevance that they had in 2000. For example, the ground-truthing of University of Georgia mapping data was assigned a high priority in 2000. Those data were based on 1994 and 1995 aerial photography, which has little relevance now that implementation of the original Preserve’s trail system is well underway. Also, evaluation of trail stabilization techniques, given a high priority in 2000, is no longer needed, since the National Park Service has, through experimentation and at least eight years of trail stabilization experience, determined the best and most cost-efficient methods.

Several studies recommended in the 2000 *Recreational ORV Management Plan* and the corresponding U.S. Fish and Wildlife Service’s “Biological Opinion” have been completed or are in progress. Florida-panther-related research includes an ongoing study of levels of ORV use and panther response in Bear Island. This study is first analyzing historical data concerning 25 years of hunting, ORV use, panther telemetry, and backcountry use to

provide baseline information for a more comprehensive examination of ORV use and its impacts on panthers and other natural resources. Completion of this study will determine whether further research is needed to determine carrying capacity, or if that determination can be made immediately. Baseline inventories of reptiles, amphibians, fishes, and vascular plants have been completed, and a small mammal inventory is in progress. Although a research project regarding surface water flow, water quality impacts, or wildlife effects has not been conducted, the Preserve has established 20 permanent water quality and water stage monitoring stations that could alert Preserve staff to changing conditions resulting from not only ORV use but other land uses as well, and monitoring of endangered/threatened species has been constant since before the ORV planning process began.

Implementation Strategy and Schedule

Development of the designated access points and trail system that would provide riding opportunities for the public may take up to five years. Initially, recreational ORV use

would be restricted to those trails requiring little or no treatment and for which access points would already be in place. More trails would be added to the system as the necessary treatment is completed and access points are constructed. It is important for the designated access points and trail system to be in place before opening the area for ORV use so that NPS staff can design and provide quality visitor experiences and minimize resource impacts. NPS staff would strive to provide ORV opportunities to the public as quickly as possible. Table 8 includes the major action items required to provide ORV access, implement the ORV trail network, and develop necessary programs for research, ORV management, and resource management in the Addition.

The implementation of the approved general management plan will depend on future funding. The approval of a plan does not guarantee that the funding needed to implement the plan will be forthcoming. Full implementation of the approved plan could be many years in the future or may not occur if funding is not obtained.

TABLE 8: IMPLEMENTATION SCHEDULE FOR THE ORV PROGRAM

Activity	Phase I	Phase II	Phase III
Trail system			
Design plan for trail designation and construction	X		
Ground-truth and mark trails	X	X	
Establish temporary trails around designated sensitive areas	X		
Stabilize existing trails selected for designation	X	X	X
Maintain trail system	X	X	X
Access points			
Designate	X		
Develop	X	X	
Maintain	X	X	X
Implement spatial closures. Refine the boundaries of sensitive areas and endangered species nesting areas closed under the authority of 36 CFR.	X	X	X

Activity	Phase I	Phase II	Phase III
Implement temporal closures	X	X	X
Hydrologic triggers for resource protection			
Seasonal closure to provide rest period for resources (optimal season to be determined as part of the program's adaptive management)			
Prohibit recreational ORV operation between 10:00 p.m. and 5:00 a.m.			
ORV user map			
Develop	X		
Revise as needed		X	X
Permit program			
Define vehicle specifications	X	X	X
Initiate vehicle inspection program	X		
Issue annual recreational ORV permits	X		
Initiate ORV operator permit program and education requirement	X		
Initiate permit system for all backcountry use	X		
On-going implementation		X	X
Research			
Initiate highest priority research projects	X		
On-going		X	X
Initiate environmental permitting, compliance, and mitigation required for various ORV program components	X		
Expand scope of advisory committee	X		
Restoration			
Establish interdisciplinary team	X		
Initiate implementation	X		
Continue implementation		X	X
Education program			
Initiate ORV operators course	X		
Refine course and other materials		X	X
Trail condition monitoring			
Develop trail standards	X		
Establish techniques for determining baseline conditions	X		
Monitor trail conditions		X	X
Resource recovery monitoring			
Establish and refine monitoring techniques	X	X	
On-going monitoring		X	X
Enforce all NPS legal mandates related to ORV program management	X	X	X
Apply adaptive management to ORV program based on research and feedback from implementation	X	X	X

Activity	Phase I	Phase II	Phase III
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Phase I would start in the first year of implementation. It would include actions that could be completed or initiated immediately, or would be necessary for completion of subsequent actions.

Phase II generally would be started in years 2 through 3 of the program. It would include a continuation of some of the actions started in phase I and the initiation of actions dependent on phase I completion.

Phase III would include long-term and on-going efforts, including monitoring, research, restoration, maintenance, and enforcement. All of these activities would be started before the end of year five.

WILDERNESS

The United States Congress established the national wilderness preservation system to ensure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States. Wilderness designation is intended to preserve and protect certain lands in their natural state and provide for compatible recreational opportunities, education, and scientific study. Wilderness areas are intended to contrast with lands where human activities dominate the landscape. Only Congress may designate areas as wilderness.

The enabling legislation for Big Cypress National Preserve (Public Law 93-440), as amended by the Addition Act (Public Law 100-301), requires that the National Park Service conduct a wilderness study of all lands in the Addition that it finds to be eligible for wilderness designation. The wilderness study must consider a range of alternatives for wilderness designation, including a “no wilderness” alternative. The purpose of the wilderness study is to develop a formal proposal for designating wilderness in the Addition, which will serve as the basis for any wilderness recommendation that the president may submit to Congress, should he choose to do so. The wilderness study is guided by the Wilderness Act of 1964, where wilderness is defined and its values are articulated.

Definition of Wilderness

The Wilderness Act (16 USC 1132) defines wilderness in the following manner:

A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. An area of wilderness is further defined to mean . . . an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions and which (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value.

Uses and Management in Wilderness

NPS Wilderness Policy. *NPS Management Policies 2006* contains the following provisions related to wilderness planning and management:

- All NPS lands will be evaluated for their eligibility for inclusion within the national wilderness preservation system. (6.2.1)
- Lands will be evaluated according to the provisions outlined in the Wilderness Act of 1964. (6.2.1.1)

USES AND MANAGEMENT IN WILDERNESS

Although this study is not examining use or management of wilderness, the Wilderness Act and NPS policies permit and prohibit various uses, developments, and actions. These directions need to be considered in evaluating the impacts of the wilderness proposals.

Various recreational uses, management actions, and facilities are permitted in wilderness areas under the Wilderness Act and NPS policies. Among the uses, management actions, and facilities **permitted** in wilderness are:

- nonmotorized recreational uses (e.g., hiking, backpacking, picnicking, camping)
- hunting, trapping, and fishing
- Native American religious activities and other actions recognized under treaty-reserved rights
- guided interpretive walks and onsite talks and presentation
- use of wheelchairs, service animals, and reasonable accommodations for the disabled that are not in conflict with the Wilderness Act (e.g., barrier-free trails, accessible campsites)
- scientific activities/research
- monitoring programs
- management actions taken to correct past mistakes or impacts of human use, including restoration of extirpated species, controlling invasive alien species, endangered species management, and protection of air and water quality
- fire management activities (including fire suppression)
- protection and maintenance of historic properties eligible for the National Register of Historic Places
- trails
- campsites
- certain administrative facilities if necessary to carry out wilderness management objectives (e.g., storage or support structures, ranger station)
- signs necessary for visitor safety or to protect wilderness resources
- uses and facilities permitted for landowners with valid property rights in a wilderness area

The Wilderness Act also specifically **prohibits** certain uses and developments. Under sections 2(c) and 4(c) of the act, the following uses are not permitted in a wilderness:

- permanent improvements or human habitation
- structures or installations
- permanent roads
- temporary roads
- use of motor vehicles
- use of motorized equipment
- landing of aircraft (except for emergency purposes)
- other forms of mechanical transport (e.g., bicycles)
- commercial enterprises (except for commercial services that are necessary for realizing the recreational or other wilderness purposes of the area, such as guiding and outfitting)

With the exception of permanent roads, the act does recognize that the above uses **may be permitted** if necessary to meet the minimum requirements for the administration of the area as wilderness or for emergency purposes.

In addition to the above prohibitions, NPS policies **also prohibit** some developments:

- new utility lines
- permanent equipment caches
- site markings or improvements for nonemergency use
- borrow pits (except for small quantity use of borrow material for trails)
- new shelters for public use
- picnic tables
- interpretive signs and trails and waysides (unless necessary for visitor safety or to protect wilderness resources)

- Lands that have previously been used for extractive purposes may be found eligible for wilderness designation so long as their wilderness character could be restored through appropriate management action. Furthermore, lands subject to existing rights (e.g., mineral exploration and development) may be considered for designation as wilderness or potential wilderness so long as they have been found to contain wilderness character. Lands containing aboveground or buried utility lines normally will not be considered eligible for wilderness designation, but they can be considered as eligible for “potential” wilderness if there is a long-term intent to remove the lines. The established use of motorboats does not make an area ineligible for wilderness. (6.2.1.2)
- For lands found to possess wilderness characteristics, no action that would diminish their wilderness eligibility will be taken until the legislative process of wilderness designation has been completed. (6.3.1)
- All decisions concerning management activities in proposed or designated wilderness will be based on the minimum requirements concept. This concept is a process that determines (1) if the proposed action is necessary for administration of the area as wilderness, and (2) if so, the techniques and equipment needed to ensure that impacts on wilderness resources and character are minimized. (6.3.5)
- Wilderness considerations will be integrated into all planning documents to guide the preservation, management, and use of a park’s wilderness area and ensure that wilderness is unimpaired for future use and enjoyment as wilderness. (chapter 6, title page)
- The superintendent of each park containing wilderness resources will develop and maintain a wilderness management plan or equivalent planning document. (6.3.4.2)

Wilderness Eligibility Assessment

In 2006 an interdisciplinary NPS team comprised of Preserve, Denver Service Center, Southeast Regional Office, and Washington Office staff conducted an evaluation of the Addition to determine those areas meeting the criteria for wilderness described in the Wilderness Act. Per NPS *Management Policies 2006*, to be eligible for wilderness designation, an area of federal land in the Addition had to have the following characteristics:

1. Generally appear to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable,
2. Be undeveloped and retain its primeval character and influence, without permanent improvements or human habitation,
3. Be untrammeled by man, where man himself is a visitor who does not remain,
4. Offer outstanding opportunities for solitude or a primitive and unconfined type of recreation, and
5. Be protected and managed so as to preserve its natural conditions.

The team first examined data to exclude from wilderness consideration lands clearly not meeting one or more of the above criteria, such as private lands and lands containing permanent improvements, e.g., buildings, roads, and canals. The remaining lands were evaluated against the criteria and visited as necessary. All lands meeting the criteria and at least 5,000 acres or of such size that they could be managed as wilderness were determined to be eligible; all other lands were excluded from further wilderness consideration.

Based on the public comments received on the wilderness study included in the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*, the National Park Service reevaluated the eligibility of the Addition and completed a final wilderness eligibility determination that has been approved by the NPS director (see appendix B).

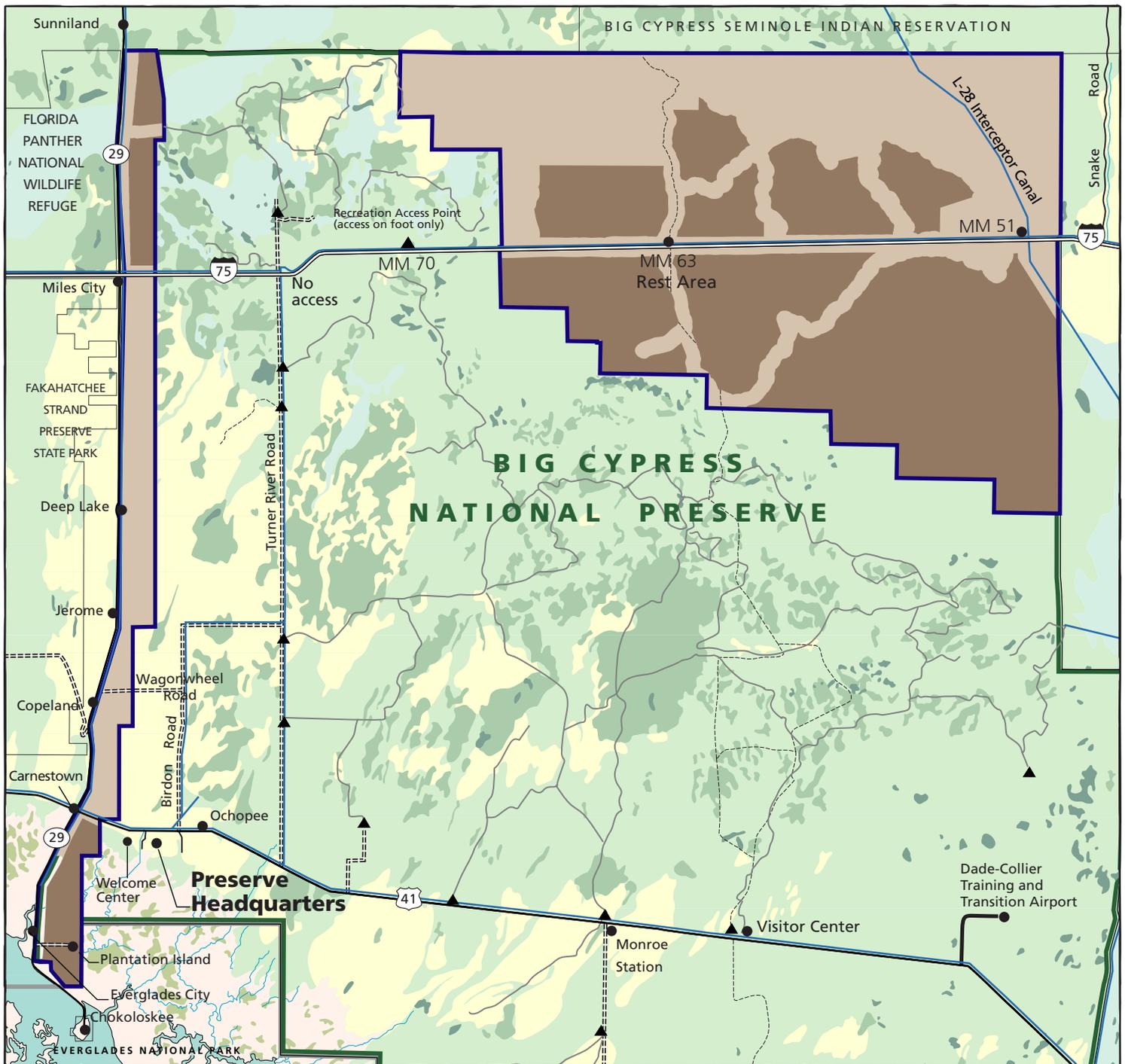
Summary of Findings

The study area contains lands and waters owned by federal and state governments, as well as private owners; however, only federal and state lands (with state permission) were evaluated for wilderness eligibility.

A field evaluation was conducted by NPS staff to determine the suitability of the Addition for

wilderness character. The wilderness study identified about 71,260 acres (approximately 48% of the Addition's total acreage) as meeting the wilderness criteria outlined above and being eligible for wilderness designation (see Map 8: Eligible Wilderness). This land consists of 65,042 acres in the Northeast Addition and 6,218 acres in the Western Addition east of SR 29. Eligible acreage includes federal lands owned by the National Park Service and state lands owned by the Florida Department of Transportation and Florida State Lands.

Areas that were determined not to be eligible (approximately 76,413 acres) did not meet wilderness criteria. For a more detailed description of this analysis and the wilderness eligibility findings, see appendix B.



Legend

- Preserve Boundary
- Addition Boundary
- Canal
- Existing Access Point
- Wilderness Eligible Land
- Wilderness Ineligible Land
- Designated ORV Primary Trail
- Unpaved Road
- Existing Hiking Trail



Map 8 • Eligible Wilderness

Big Cypress National Preserve—Addition

General Management Plan

United States Department of the Interior • National Park Service • DSC • October 2010 • 176 / 20080



MITIGATIVE MEASURES COMMON TO ALL ACTION ALTERNATIVES

Congress charged the National Park Service with managing the lands under its stewardship “in such manner and by such means as will leave them unimpaired for the enjoyment of future generations” (NPS Organic Act, 16 USC 1). As a result, NPS staff routinely evaluate and implement mitigation measures whenever conditions occur that could adversely affect the sustainability of national park system resources.

To ensure that implementation of the action alternatives protects natural and cultural resources that are unimpaired and the quality of the visitor experience, a consistent set of mitigation measures would be applied to actions proposed in this plan. The National Park Service would prepare appropriate environmental compliance (i.e., those required by the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and other relevant legislation) for these future actions. As part of the environmental compliance, the National Park Service would avoid, minimize, and mitigate adverse impacts when practicable. The implementation of a compliance-monitoring program would be within the parameters of NEPA and NHPA compliance documents, U.S. Army Corps of Engineers Section 404 permits, etc. The compliance-monitoring program would oversee these mitigation measures and would include reporting protocols.

The following mitigation measures and best management practices would be applied to avoid or minimize potential impacts from implementation of the action alternatives.

NATURAL RESOURCES

General

The Addition’s resources, including air, water, soils, vegetation, and wildlife, would be

periodically inventoried and monitored to provide information needed to avoid or minimize impacts of future development. Any museum collections related to natural resources generated by such activities would be managed according to NPS policies.

Whenever possible, new facilities would be built in previously disturbed areas or in carefully selected sites with as small a construction footprint as possible and with sustainable design. During design and construction periods, NPS natural and cultural resource staff would identify areas to be avoided and monitor activities.

Fencing or other means would be used to protect sensitive resources adjacent to construction areas.

Construction materials would be kept in work areas, especially if the construction takes place near streams, springs, natural drainages, or other water bodies.

Visitors would be informed of the importance of protecting the Addition’s natural resources and leaving these undisturbed for the enjoyment of future generations.

Air Quality

A dust abatement program would be implemented. Standard dust abatement measures could include watering or otherwise stabilizing soils, covering haul trucks, employing speed limits on unpaved roads, minimizing vegetation clearing, and revegetating after construction.

Soils

New facilities would be built on soils suitable for development. Soil erosion would be

minimized by limiting the time soil is left exposed and by applying other erosion control measures such as erosion matting, silt fencing, and sedimentation basins in construction areas to reduce erosion, surface scouring, and discharge to water bodies. Once work was completed, construction areas would be revegetated with native plants in a timely period.

To minimize soil erosion on new trails, best management practices for trail construction would be used. Examples of best management practices could include installing water bars, check dams and retaining walls; contouring to avoid erosion; and minimizing soil disturbance.

Water Resources

To prevent disruption of natural surface water flows, all trails that would receive ORV, hiking, biking, or horseback riding use (for NPS operations or public use) would be designed, built, and/or maintained so the trail surface is kept at the natural grade of the surrounding landscape. Techniques that would help mitigate trail rutting that could otherwise occur in wet areas of the Addition include “at-grade” maintenance, trail stabilization with aggregate material, the use of culverts, and low-water crossings. This mitigation would help preserve the natural sheet flow through the Addition at a local and regional level. In addition, if trail conditions eventually become degraded in areas and surface flow becomes altered, the indicator and standards monitoring program would be applied to remedy the situation and restore surface water flows (as described in the previous User Capacity section). The use of culverts, low-water crossings, and at-grade trail construction and maintenance are examples of such techniques.

To prevent water pollution during construction, erosion control measures would be used, discharges to water bodies would be minimized, and construction equipment would be

regularly inspected for leaks of petroleum and other chemicals.

Best management practices for water quality protection, such as the use of silt fences, would be followed to ensure that construction-related effects were minimal and to prevent long-term impacts on water quality, wetlands, and aquatic species.

Caution would be exercised to protect water resources from activities with the potential to damage water resources, including damage caused by construction equipment, erosion, and siltation. Measures would be taken to keep fill material from escaping work areas, especially near streams, springs, natural drainages, and wetlands.

For new facilities, and to the extent practicable for existing facilities, stormwater management measures would be implemented to reduce nonpoint source pollution discharge from parking lots and other impervious surfaces. Such actions could include use of oil/sediment separators, street sweeping, infiltration beds, permeable surfaces, and vegetated or natural filters to trap or filter stormwater runoff.

The NPS spill prevention and pollution control program for hazardous materials would be followed and updated on a regular basis. Standard measures could include (1) procedures for hazardous materials storage and handling, spill containment, cleanup, and reporting, and (2) limitation of refueling and other hazardous activities to upland/nonsensitive sites.

Wetlands

Wetlands would be avoided if possible, and protection measures would be applied during construction. Wetlands would be delineated by qualified NPS staff or certified wetland specialists and clearly marked before construction work. Construction activities would

be performed in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.

In addition to the above wetland mitigation measures, NPS staff would conduct additional future wetland impact and mitigation analysis, as per NPS policy and Section 404 of the Clean Water Act (as administered by the Army Corps of Engineers). NPS policy requires the development of a “Wetlands Statement of Findings,” which identifies and analyzes all wetland functions and values affected by NPS actions in a park unit. The “Wetlands Statement of Findings” for this management plan would quantify all wetland impacts from management actions specified in the plan. Although Section 404 of the Clean Water Act pertains only to wetland filling and dredging, the NPS statement of findings policy addresses the impacts on several other wetland values, such as wildlife habitat, soils, vegetation communities, surface hydrology, aesthetics, and cultural values. The detailed functional analysis of wetland impacts and the development of wetland avoidance and mitigative measures would be completed as part of the “Wetlands Statement of Findings.” The effects of ORV use associated with this management plan would likely be the primary focus of the “Wetlands Statement of Findings” for the Addition. No ORV use, ORV trail development, or other actions with wetland impacts would be implemented or allowed until the appropriate wetland policy requirements are met. Also refer to table 29 in chapter 5 entitled, “Future Compliance Required for Implementation of Specific Actions under the Preferred Alternative.”

Vegetation

Areas used by visitors (e.g., trails, developed areas, and designated campsites) would be monitored for signs of native vegetation disturbance. Public education, revegetation of disturbed areas with native plants, erosion control measures, and barriers would be used

to control potential impacts on plants from trail erosion or social trailing.

Proposed sites for new trails and other facilities would be surveyed for sensitive species before construction. If sensitive species were present, new developments would be relocated to avoid impacts.

Revegetation plans would be developed for disturbed areas. Revegetation plans should specify such features as seed/plant source, seed/plant mixes, soil preparation, fertilizers, and mulching. Salvage vegetation, rather than new planting or seeding, would be used to the greatest extent possible. To maintain genetic integrity, native plants that grow in the project area or the region would be used in restoration efforts, whenever possible. Use of non-native species or genetic materials would be considered only where deemed necessary to maintain a cultural landscape or to prevent severe resource damage, and would be approved by the NPS resource management staff. Restoration activities would be instituted immediately after construction was completed. Monitoring would occur to ensure that revegetation was successful, plantings were maintained, and unsuccessful plant materials were replaced.

Nonnative Species

Special attention would be devoted to preventing the spread of exotic and invasive plant and animal species. For exotic invasive plants, standard measures could include the following elements: ensure that construction-related equipment arrives on-site free of mud or seed-bearing material, certify all seeds and straw material as weed-free, identify areas of nonnative plants before construction, treat exotic plants or exotic infested topsoil before construction (e.g., topsoil segregation, storage, herbicide treatment), and revegetate with appropriate native species.

Nonnative animals would be addressed with more direct, species-specific control methods. In many cases, NPS control methods would be in cooperation with other agencies, such as the Florida Fish and Wildlife Conservation Commission. Some examples of exotic animal control efforts include the trapping and removal of the walking catfish (*Clarias batrachus*), the authorized agent python capture program, or the "Partner with Hunters" pilot program that permits game hunters to kill exotic pythons in the Preserve.

Wildlife

To the extent possible, new or rehabilitated facilities would be sited to avoid sensitive wildlife habitats, including feeding and resting areas, major travel corridors, nesting areas, and other sensitive habitats.

Construction activities would be timed to avoid sensitive periods, such as nesting or breeding seasons. Ongoing visitor use and NPS operational activities could be restricted if their potential level of damage or disturbance warranted doing so.

Measures would be taken to reduce the potential for wildlife to get food from humans. Wildlife-proof garbage containers would be required in developed areas (including visitor centers, picnic areas, trails, and interpretive waysides). Signs would continue to educate visitors about the need to refrain from feeding wildlife.

Other visitor impacts on wildlife would be addressed through such techniques as visitor education programs, restrictions on visitor activities, and ranger patrols.

Also, the National Park Service, in partnership with the Florida Fish and Wildlife Conservation Commission, will establish white-tailed deer harvest limits in the Addition via deer population monitoring. The National Park Service would develop a

hunting management plan for the Addition, which would require NEPA compliance. Both the Preserve's hunting management plan and the white-tailed deer harvest limits set by the commission, in partnership with the National Park Service, would be developed in consideration of one another, because other public uses allowed under this general management plan may also affect white-tailed deer behavior and population.

Also, because the endangered Florida panther is dependent on white-tailed deer, both the NPS hunting management plan and the commission's limits would consider the effect of game management and hunting on the panther. The development of the hunting management plan through the required NEPA process would incorporate any new data that identifies correlations between hunting, white-tailed deer populations, and the Florida panther. To ensure informed decision making regarding deer and endangered species protection, the U.S. Fish and Wildlife Service and the commission would work cooperatively with the National Park Service on hunting management issues in the Addition, both through the NEPA compliance process as well as via interim coordination. Also refer to table 29 in chapter 5 entitled, "Future Compliance Required for Implementation of Specific Actions under the Preferred Alternative."

Threatened and Endangered Species and Species of Concern

Conservation measures would occur during normal operations as well as before, during, and after construction to minimize long-term, immediate impacts on rare species and threatened and endangered species where they are identified in the Addition. These mitigation measures would be incorporated, as necessary, into each specific action of this plan as the plan is implemented. These measures may vary slightly for each specific project and for each affected area of the

Addition. Many of the measures listed above for vegetation and wildlife would also benefit rare, threatened, and endangered species by helping to preserve habitat. Conservation measures specific to rare, threatened, and endangered species would include the following actions:

- Surveys would be conducted for special status species, including rare, threatened, and endangered species, before deciding to take any action that might cause harm or disturb habitat value. To provide baseline data, the surveys would be conducted before any introduced action or disturbance, including recreational facilities and uses. In consultation with the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Florida Fish and Wildlife Conservation Commission, appropriate measures would be taken to protect any sensitive species whether identified through surveys or presumed to occur.
- If breeding or nesting areas for threatened and endangered species were observed in the Addition, these areas would be protected from human disturbance to the greatest extent possible, as per the guidelines and recommendations of the U.S. Fish and Wildlife Service, National Marine Fisheries Service, and Florida Fish and Wildlife Conservation Commission.
- New facilities and management actions would be located and designed to avoid adverse effects on habitat for rare, threatened, and endangered species. If avoidance of adverse effects on rare, threatened, and endangered species is not possible, appropriate conservation measures would be taken in consultation with the appropriate resource agencies.
- A special status species education plan that targets all human occupants of the Preserve (including NPS staff, contractors, and the public) would be developed and implemented. The plan would aim at providing important information about the various species in an attempt to

minimize or eliminate avoidable habitat disturbances from human activity.

- Restoration or monitoring plans would be developed and implemented per the recommendation and standards of the appropriate resource agencies. Plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques. The plans would include scheduling future surveys of special status species, which would be used to assess the impact of management actions and public uses on the various species.
- Measures would be taken to reduce adverse effects of nonnative plants and wildlife on habitat for rare, threatened, and endangered species.

In addition to the above mitigation measures, protection of special status species will be maintained through future compliance with Section 7 of the Endangered Species Act for the development of the Addition's recreation access points along Interstate 75. This Section 7 compliance would correlate to the NEPA compliance that was completed in 1991 through the *I-75 Recreational Access Plan Environmental Assessment*. Although, consideration would be given to all special status species during these future actions, particular attention would be given to the endangered Florida panther. Additional research is being conducted that analyzes possible correlations between ORV use, hunting, and panther populations and distribution. The National Park Service would incorporate any new data about recreation impacts on the panther into the future Section 7 compliance for recreation access points. This future compliance would involve the assessment of appropriate ORV levels of use by area (i.e., permit numbers and opened trail locations and mileages) and the effects of these management actions on the Florida panther and its habitat.

To ensure informed decision-making regarding ORV use and endangered species

protection, the U.S. Fish and Wildlife Service and the commission would be consulted through the Endangered Species Act Section 7 compliance processes as well as via interim informal coordination with NPS staff. Also refer to table 29 in chapter 5 entitled “Future Compliance Required for Implementation of Specific Actions under the Preferred Alternative”.

Soundscape

Standard noise abatement measures would be followed during construction. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive resources, the use of the best available noise control techniques wherever feasible, the use of hydraulically or electrically powered tools when feasible, and the location of stationary noise sources as far from sensitive resources as possible. Facilities would be located and designed to minimize objectionable noise.

Scenic Resources

Mitigation measures are designed to minimize visual intrusions. These measures could include the following:

- Where appropriate, facilities such as boardwalks and fences would be used to route people away from sensitive natural and cultural resources while still permitting access to important viewpoints.
- Facilities would be designed, sited, and constructed to avoid or minimize visual intrusion into the natural environment or landscape.
- Vegetative screening would be provided, where appropriate.

CULTURAL RESOURCES

All projects with the potential to affect historic properties and cultural landscapes would be carried out in compliance with Section 106 of the National Historic Preservation Act to ensure that the effects are adequately addressed. All reasonable measures would be taken to avoid, minimize, or mitigate adverse effects in consultation with the Florida State Historic Preservation Officer and, as necessary, the Advisory Council on Historic Preservation and other concerned parties, including American Indian tribes. In addition to adhering to the legal and policy requirements for cultural resources protection and preservation, the National Park Service would also undertake the measures listed below to further protect the Addition’s resources.

All areas selected for construction (including any trail improvements) would be surveyed to ensure that cultural resources (i.e., archeological, historic, ethnographic, and cultural landscape resources) in the area of potential effects are adequately identified and protected by avoidance or, if necessary, mitigation.

Compliance with the Native American Graves Protection and Repatriation Act of 1990 would apply in the unlikely event that human remains believed to be Native American were discovered inadvertently during construction. Prompt notification and consultation with the tribes traditionally associated with Big Cypress National Preserve would occur in accordance with the act. If such human remains were believed to be non-Indian, standard reporting procedures to the proper authorities would be followed, as would all applicable federal, state, and local laws.

Archeological documentation would be done in accordance with the *Secretary of the Interior’s Standards for Archeology and Historic Preservation* (1983, as amended and annotated).

If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources cannot be preserved *in situ*, an appropriate mitigation strategy would be developed in consultation with the state historic preservation officer and, if necessary, associated Indian tribes.

Ethnographic resources would be protected and mitigated by such means as identifying and maintaining access for recognized and affiliated groups to traditional, spiritual/ceremonial, resource gathering, and other activity areas. As practical, new developments would be screened from these areas, and conflicting uses would be relocated or timed to minimize disruptions.

Further background research, resource inventories, and National Register of Historic Places evaluation of historic properties would be carried out where management information is lacking. The surveys and research necessary to determine the eligibility of a structure, district, or landscape for listing in the national register are a prerequisite for understanding the resource's significance, as well as the basis of informed decision-making in the future regarding how the resource should be managed. The results of these efforts would be incorporated into site-specific planning and compliance documents.

No National Register of Historic Places listed or eligible property would be removed or allowed to decay naturally ("molder") without prior review by NPS cultural resource specialists and consultation with the Florida state historic preservation office. Before a national register

listed or eligible property is removed or allowed to molder, appropriate documentation recording the property would be prepared in accordance with Section 110 (b) of the National Historic Preservation Act and the documentation submitted, as appropriate, to the Historic American Buildings Survey/Historic American Engineering Record/ Historic American Landscapes Survey program.

Visitors would be educated on the importance of protecting the Addition's historic properties and leaving these undisturbed for the enjoyment of future visitors.

VISITOR SAFETY AND EXPERIENCES

Measures to reduce adverse effects of construction on visitor safety and experience would be implemented, including project scheduling and best management practices.

Visitor safety concerns would be integrated into Preserve educational programs. Directional signs would continue to orient visitors, and education programs would continue to promote understanding among visitors.

SOCIOECONOMIC ENVIRONMENT

During the future planning and implementation of the approved management plan for the Addition, NPS staff would work with local communities and county governments to further identify potential impacts and mitigation measures that would best serve the interests and concerns of both the National Park Service and the local communities. Partnerships would be pursued to improve the quality and diversity of community amenities and services.

FUTURE STUDIES AND IMPLEMENTATION PLANS NEEDED

After the completion and approval of this *General Management Plan* for the Addition, other more detailed studies and plans will be needed before specific actions can be implemented.

As required, additional environmental compliance (National Environmental Policy Act, National Historic Preservation Act, and other relevant laws and policies) and public involvement would be conducted. These additional studies include the following:

- a restoration plan that provides guidance and implementation details for restoring unsustainable trails and old camps in the Addition
- a resource stewardship strategy that provides comprehensive, long-range direction for natural and cultural resource management (NPS policy now requires that a resource stewardship strategy be completed to replace the resource management plan.)
- a climate change action plan or other implementation plan that outlines the NPS response to global warming and the effects of climate change on Addition resources
- a wilderness management plan (should wilderness be designated in the Addition)
- a hunting management plan for the Addition
- a backcountry management plan (which addresses camping and other recreation)
- an equestrian management plan
- a commercial services plan for the Addition (through an update to the *Commercial Services Plan* for the original Preserve) to guide private businesses (such as tour boat operations and concessioners) as necessary for visitor services
- an air tour management plan as required by the National Parks Air Tour Management Act of 2000
- evaluate the feasibility and cost-effectiveness of creating a combined general management plan, wilderness management plan, and off-road vehicle management plan for the entire Preserve (including the Addition) so that all pertinent information would be in one document

Implementation of these recommended studies/plans will depend on future funding. The approval of this management plan does not guarantee that the funding needed for implementation will be forthcoming. Full implementation could be many years in the future or may not occur if funding is not obtained.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The environmentally preferable alternative is defined as “the alternative that will promote national environmental policy as expressed in Section 101 of the National Environmental Policy Act.” Section 101 states that it is the continuing responsibility of the federal government to

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage; and maintain, wherever possible, an environment which supports diversity, and a variety of individual choices;
5. achieve a balance between population and resource use which would permit high standards of living and a wide sharing of life’s amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

A description of how each alternative would or would not achieve the requirements of sections 101 and 102(1) of the National Environmental Policy Act criteria is provided below and illustrated through a rating system in table 9.

Criteria 1 — The Big Cypress National Preserve Addition is a unit of the national park system, and as the trustee of this area the National Park Service would continue to fulfill its obligation to protect this area for future

generations. The no-action alternative would provide less direction on important issues needed to successfully manage the Addition; consequently it was ranked lower than the action alternatives. Alternative F would provide the greatest level of protection for Preserve resources over time.

Criteria 2 — All the alternatives would ensure safe, healthful, productive, and culturally pleasing surroundings for all Americans.

Criteria 3 — Alternative F includes more emphasis on resource preservation and enhancement; however, it limits the beneficial uses that could be derived from human recreation and learning. Therefore, alternative B and the preferred alternative received equally high ratings. The no-action alternative provides less beneficial uses due to the fact that it would remain closed to public recreational off-road vehicle use.

Criteria 4 — Alternatives A and F do not include the same level of diversity of recreational opportunities and individual choices that are included in the preferred alternative and alternative B. The preferred alternative includes the same level of recreational opportunities as in alternative B. However, the phased implementation of ORV permits and trails under the preferred alternative best protects the natural resources and values of the Addition.

Criteria 5 — All of the alternatives offer environmental protection benefits to society. However, alternative B and the preferred alternative both offer opportunities for resource use and enjoyment that are not available in alternatives A and F.

Criteria 6 — All of the alternatives would result in enhancing the quality of the renewable resources through NPS management.

The environmentally preferable alternative for the Addition’s *General Management Plan* is the preferred alternative. According to the ratings included in table 9, this alternative would surpass the other alternatives in realizing the full range of national environmental policy goals in Section 101. In

particular, the preferred alternative best responds to criteria 4 by providing maximum opportunities for diverse types of recreation while ensuring that resources are not degraded and are protected through sound management.

TABLE 9: ENVIRONMENTALLY PREFERABLE ALTERNATIVE ANALYSIS

CRITERIA	ALTERNATIVES			
	A	B	Preferred	F
1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.	3	4	4	5
2. Ensure safe, healthful, productive, and aesthetically and culturally pleasing surroundings for all Americans.	5	5	5	5
3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.	2	4	5	3
4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and a variety of individual choices.	2	4	5	3
5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities.	2	5	5	3
6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.	5	5	5	5
Total Points*	19	27	29	24

* Five points were given to the alternative if it fully meets the criteria; four points if it meets nearly all of the elements of the criteria; three points if it meets more than one element of the criteria; two points if it meets only one element of the criteria; and one point if the alternative does not meet the criteria.

ALTERNATIVES AND MANAGEMENT ACTIONS CONSIDERED BUT DISMISSED

During the planning process for the Addition, six preliminary alternatives (alternatives A, B, C, D, E, and F) were developed. These six alternatives represented a range of management options that focused on different amounts of ORV trails, visitor use opportunities, facility development, and proposed wilderness.

Upon further analysis, the planning team decided that preliminary alternatives C, D, and E should be eliminated from further consideration because they included goals and actions for environmental protection, visitor use, and ORV opportunities that were the same as those in alternative B, the preferred

alternative, and alternative F. The differences between those alternatives dismissed from consideration were minor and contained only slight iterations along the continuum of motorized recreation and proposed wilderness. Furthermore, public comment and support for alternatives C, D, and E were relatively low.

With the development of the preferred alternative, which includes many of the important elements contained in those preliminary alternatives, a range of reasonable management alternatives is adequately reflected through the four alternatives included in this plan.

TABLE 10: SUMMARY COMPARISON OF THE ALTERNATIVES

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
Concept and General Management Strategies	This alternative would continue current management.	Alternative B would enable participation in a wide variety of outdoor recreational experiences. It would nearly maximize amount of motorized access, the least amount of proposed wilderness, and limited new hiking-only trails. New visitor and operations facilities would be provided along the I-75 corridor.	The preferred alternative would provide diverse frontcountry and backcountry recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. This alternative would provide substantial ORV access and riding opportunities and include a moderate amount of wilderness, nonmotorized trail opportunities, new camping opportunities, and a partnership approach to visitor orientation. New visitor and operations facilities would be provided along the I-75 corridor.	Alternative F would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of wilderness, no ORV use, and minimal new facilities for visitor contact along I-75.
Approximate Acreages and Percentages for Addition Management Zones	No management zones are currently in use for guidance.	Developed <1% of Addition Frontcountry <1% of Addition Backcountry Recreation 94,529 acres (65 % of Addition) Primitive Backcountry 51,294 acres (35% of Addition)	Developed <1% of Addition Frontcountry <1% of Addition Backcountry Recreation 49,449 acres (33 % of Addition) Primitive Backcountry 96,413 acres (65% of Addition)	Developed <1% of Addition Frontcountry <1% of Addition Backcountry Recreation 3,422 acres (2% of Addition) Primitive Backcountry 142,442 acres (98% of Addition)
Motorized Recreational Opportunities	The Addition would continue to be closed to public recreational ORV use. Motorized boating would continue to be permitted in certain areas in canals and waterways adjacent to SR 29.	Motorized recreational opportunities, including ORV use, motorized boating, and hunting, would be nearly maximized. Up to 132 miles would be included as part of the conceptual primary ORV trail network.	Up to 130 miles of motorized trails would be available as part of the conceptual primary ORV trail system. Trails would be phased in over time. This alternative includes a potential connection to existing trails in the Bear Island area.	No ORV use would be available under this alternative. Motorized boating would continue to be permitted in certain areas in the canals and waterways adjacent to SR 29.

Table 10: Summary Comparison of the Alternatives

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
<i>ORV Permits and Trail Mileage</i>	No ORV permits would be granted and no trails would be designated because public recreational ORV use would not be allowed. ORV access to private property by inholders would continue to be allowed by special use permit.	A maximum of 660 ORV permits for the Addition would be issued annually for the Addition, and up to 132 miles of primary ORV trails would be designated.	A maximum of 650 ORV permits for the Addition would be issued annually, and up to 130 miles of primary ORV trails would be designated; number of trail miles completed and number of permits would be accomplished in phases.	Same as alternative A.
Nonmotorized Recreational Opportunities <i>Activities/ Access</i>	New walk-in access points would be developed as a result of the <i>I-75 Recreational Access Plan</i> . Limited opportunities for hiking, paddling, horseback riding, and bicycling would continue to be available. New opportunities for walk-in hunting would be provided.	New access points would be established for hiking, bicycling, horseback riding, and hunting.	Same as alternative B.	New access points would be established, and trails would be developed for hiking, camping, bicycling, horseback riding, and walk-in hunting.

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
<i>Trails</i>	No new trails would be developed.	Some new hiking trails would be developed at frontcountry locations. Hiking, bicycling, and horseback riding would be allowed on the up to 132 miles of primary ORV trails in the Addition. New paddling trails would be developed in the tidal areas south of U.S. 41 in the Western Addition (see “Facilities” below). Conceptual hiking trails would be included — one completing a north-south connection and one completing an east-west connection through the Addition.	Essentially the same as alternative B except that nonmotorized recreation would be available on up to 130 miles of primary ORV trails.	Some new hiking trails would be developed at frontcountry locations. New paddling trails would be developed in the tidal areas south of U.S. 41 in the Western Addition. Conceptual hiking trails would be included — one completing a north-south connection and one completing an east-west connection through the Addition.
<i>Florida National Scenic Trail</i>	Access to the Florida National Scenic Trail would remain at I-75 mile marker 63, and the route would remain temporary and undesignated.	Appropriate access points and routing of the Florida National Scenic Trail would be determined, and the trail would be formally designated.	Same as alternative B.	Same as alternative B.
Visitor Orientation and Education	No new facilities would be developed under this alternative, which means that no visitor contact facilities would exist in the Addition. Visitor orientation to the Addition would continue to occur at the NPS facilities on U.S. 41.	A visitor contact station and outdoor orientation and interpretive panels would be developed along I-75 (see “Facilities” below).	A new visitor contact station and visitor center and some outdoor orientation and interpretive panels would be developed along I-75 (see “Facilities” below).	Visitor information/orientation panels would be developed along I-75 (see “Facilities” below).

Table 10: Summary Comparison of the Alternatives

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
Wilderness	No land would be proposed for wilderness designation; however, those lands in the Addition eligible for wilderness designation would continue to be managed to preserve their wilderness characteristics and values.	About 37,567 acres of land would be proposed for wilderness designation.	About 47,067 acres of land would be proposed for wilderness designation.	About 71,260 acres of land would be proposed for wilderness designation, including the Everglades City area.
Partnerships, Programs, and Activities	No new partnerships, programs, or activities would be initiated for the Addition.	New partnerships to provide visitor services at Carnestown would be explored.	The National Park Service would pursue partnerships to achieve management objectives and consider partnerships that provide a range of commercial services, including boat tours south of U.S. 41. The original Preserve's <i>Commercial Services Plan</i> would be amended to include the Addition.	Same as alternative A.
Facilities				
<i>I-75 Mile Marker 51</i>	No new NPS access would be developed at this location. Access would be provided under the I-75 <i>Recreational Access Plan</i> ; however, access would be for nonmotorized uses only.	A new access point would be developed that includes parking and restrooms. The site would provide access for motorized and nonmotorized activities. Visitor orientation and interpretation panels would also be installed. Also, the National Park Service would establish a partnership to establish other facilities as appropriate, such as a wildlife check station and boat ramp access to the water district canal.	Same as alternative B except no restrooms would be developed.	A new access point (nonmotorized only) would be developed that includes parking and visitor information. Visitor orientation and interpretation panels would also be installed. Also, the National Park Service would establish a partnership to establish other facilities as appropriate, such as a wildlife check station and boat ramp access to the water district canal.

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
<i>I-75 Mile Marker 63</i>	Informal walk-in access would continue to be available via the rest area. Access would be provided under the <i>I-75 Recreational Access Plan</i> ; however, access would be for nonmotorized uses only.	A new access point would be developed that includes parking and trailhead. The site would provide access for motorized and nonmotorized activities. A new visitor contact station and NPS operations facility would also be developed at this location. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.	Same as alternative B except a new visitor center and NPS operations facility would be developed here. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.	A new access point (nonmotorized only) would be developed that includes parking, a trailhead, and visitor information. Visitor orientation and interpretation panels would be installed. A new NPS operations facility would also be developed at this location. The National Park Service would establish a partnership with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission to establish other facilities as appropriate, such as a wildlife check station.
<i>Bear Island Grade at SR 29</i>	This location would remain undeveloped, and informal nonmotorized access would continue.	A new trailhead and parking area would be developed at this location, providing motorized and nonmotorized access to the Bear Island Grade. This new access point would provide a connection to ORV trails in the original Preserve. Visitor orientation and interpretation panels would also be installed.	Same as alternative B.	A new trailhead and parking area would be developed at this location, providing nonmotorized access to the Bear Island Grade. Only hiking, bicycling, and horseback riding would be allowed on the trail in the Western Addition. Visitor orientation and interpretation panels would also be installed at the trailhead.
<i>Nobles and Jones Grades</i>	No new facilities would be developed. Only nonmotorized access would remain along the road grades.	No new facilities would be developed. The road grades would only be used for access.	Primitive backcountry group camping areas would be provided at the terminus of these grades.	These sites would remain undeveloped, and Nobles Grade would be removed and restored. Nonmotorized public access would remain on Jones Grade.

Table 10: Summary Comparison of the Alternatives

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
<i>Miles City (I-75 at SR 29)</i>	This intersection would remain undeveloped.	Same as alternative A.	A new hiking trailhead, information kiosk, and small parking area would be developed outside the interchange area that is closed to development.	Same as alternative A.
<i>Deep Lake (SR 29)</i>	No facility improvements would be made at this location. Parking would remain on the shoulder of SR 29, and site access would remain informal.	The site would be developed into a day use area with parking, restrooms, and a hiking trail/boardwalk to Deep Lake.	Same as alternative B plus picnic shelters.	A new trailhead would be developed, including a hiking trail/boardwalk to Deep Lake.
<i>Copeland (SR 29)</i>	The NPS Fire Operations Center would remain at this location.	Same as alternative A.	The NPS Fire Operations Center would be maintained at this location and expanded as necessary for other NPS operational needs.	Same as preferred alternative.
<i>Carnestown</i>	Facilities at the site would continue to be leased to other government agencies and organizations.	Facilities at the site would be used to support visitor service partnership needs.	Facilities would be used to support commercial services and/or partner organizations that would operate here, including enhancements that would support visitor service needs.	Facilities would be removed and the site would be restored to natural conditions.
STAFFING	No additional staff for the Addition Total staff of 77 full-time-equivalent employees for the Preserve	16 additional full-time-equivalent employees (or 17 positions) for the Addition Total staff of 93 full-time-equivalent employees for the Preserve	16 additional full-time-equivalent employees (or 17 positions) for the Addition Total staff of 93 full-time-equivalent employees for the Preserve	10 additional full-time-equivalent employees/positions for the Addition Total staff of 87 full-time-equivalent employees for the Preserve
Estimated One-Time Construction Costs	N/A	\$6.7 million	\$6.7 million	\$4.9 million

	Alternative A (No Action)	Alternative B	Preferred Alternative	Alternative F
Annual Operating Costs (for the entire Preserve)	\$6.5 million	\$7.9 million	\$7.9 million	\$7.5 million

TABLE 11: SUMMARY OF KEY IMPACTS OF IMPLEMENTING THE ALTERNATIVES

Alternative A – No Action		Alternative B	Preferred Alternative	Alternative F
Impacts on Natural Resources				
Surface Water Flow	<p>Under alternative A, impacts on surface water flow would be long term, adverse, minor to moderate, and localized.</p> <p>There could be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on surface water flow would be long term, moderate, adverse, and mostly localized.</p> <p>There could be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Under alternative F, impacts on surface water flow would be long term, minor, beneficial, and mostly localized.</p> <p>There could be a long-term, moderate, beneficial cumulative impact on surface water flow. The actions contained in alternative F would contribute a small increment to this cumulative impact.</p>
Water Quality	<p>Under alternative A, impacts on water quality would be long term, minor, adverse, and localized.</p> <p>There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative A would contribute a very small adverse increment to this cumulative impact.</p>	<p>Under alternative B, impacts on water quality would be long term, moderate, adverse, and localized.</p> <p>There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative B would contribute a very small increment to this cumulative impact.</p>	Same as alternative B.	Same as alternative A.
Wetlands	<p>Under alternative A, impacts on wetlands would be long term, minor, adverse, and localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on wetlands would be long term, moderate, adverse, and localized.</p> <p>There would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on wetlands would be long term, minor to moderate, adverse, and localized.</p> <p>There would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.</p>	<p>Under alternative F, impacts on wetlands would be long term, minor to moderate, beneficial and localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative F would contribute a small increment to this cumulative impact.</p>
Soils	<p>Under alternative A, impacts on soils would be long term, minor, adverse, and localized.</p> <p>There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on soils would be long term, moderate, adverse, and localized.</p> <p>There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	Same as alternative A.
Floodplains	<p>Under alternative A, impacts on floodplains would continue to be long term, minor, adverse, and localized.</p> <p>There would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Alternative B would have no impact on floodplains. Two facilities located in the 100-year floodplain would be retained, but would cause no additional impacts on floodplains beyond what is accounted for under the no-action alternative.</p> <p>No cumulative impacts on floodplains would occur under alternative B because there would be no impacts on floodplains resulting from actions proposed in alternative B.</p>	Same as alternative B.	<p>Under alternative F, impacts on floodplains would be long term, minor to moderate, beneficial, and localized.</p> <p>There would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative F would contribute a very small increment to this cumulative impact.</p>

	Alternative A – No Action	Alternative B	Preferred Alternative	Alternative F
Vegetation —Cypress Strands and Domes, Mixed Hardwood Swamps, and Sloughs	<p>Under alternative A, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, adverse, minor, and localized.</p> <p>There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, moderate, adverse, and localized.</p> <p>There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Under alternative F, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, minor, adverse, and localized.</p> <p>There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative F would contribute a small increment to this cumulative impact.</p>
Vegetation — Prairies and Marshes	<p>Under alternative A, impacts on prairies and marshes would be long term, adverse, minor, and localized.</p> <p>There could be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on prairies and marshes would be long term, minor, adverse, and localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Under alternative F, impacts on prairies and marshes would be long term, minor, adverse, and localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative B would contribute a very small increment to this cumulative impact.</p>
Vegetation — Mangrove Forests	<p>Under alternative A, impacts on mangrove forests would continue to be long term, minor, adverse, and localized.</p> <p>Cumulative impacts on mangrove forests would be negligible. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Alternative B would have no impact on mangrove forests. Impacts on mangroves would be the same as what was accounted for under the no-action alternative.</p> <p>There would be no cumulative impacts on mangrove forests under alternative B.</p>	Same as alternative B.	Same as alternative B.
Vegetation — Pinelands	<p>Under alternative A, impacts on pinelands would be long term, adverse, minor, and localized.</p> <p>There could be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions in alternative A would contribute a small increment to this cumulative impact.</p>	Same as alternative A.	Same as alternative A.	Same as alternative A.
Vegetation — Hardwood Hammocks	<p>Under alternative A, impacts on hardwood hammocks would be long term, adverse, minor, and localized.</p> <p>There could be a long-term, minor, beneficial cumulative impact on hardwood hammocks. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on hardwood hammocks would be long term, minor, adverse, and localized.</p> <p>There could be a long-term, minor, adverse cumulative impact on hardwood hammocks. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	Same as alternative A.

Table 11: Summary of Key Impacts of Implementing the Alternatives

	Alternative A – No Action	Alternative B	Preferred Alternative	Alternative F
Exotic/Nonnative Plants	<p>Under alternative A, impacts on native vegetation because of the potential for the spread of exotive and nonnative plants would be long term, minor, beneficial, and potentially Addition-wide.</p> <p>There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Under alternative B, impacts on native vegetation because of the potential for the spread of exotive and nonnative plants would be long term, moderate, adverse, and potentially Addition-wide.</p> <p>There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Under alternative F, impacts on native vegetation because of the potential for the spread of exotive and nonnative plants would be long term, minor, adverse, and potentially Addition-wide.</p> <p>There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative F would contribute a small increment to this cumulative impact.</p>
Impacts on Federal Threatened and Endangered Species				
Florida Panther	<p>Continuation of current management under alternative A would result in long-term, minor adverse, mostly localized impacts on the Florida panther across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p>	<p>Impacts on the Florida panther under alternative B would be long term, moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>likely to adversely affect</i>.</p> <p>There would be a long-term, moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative B would contribute a modest increment to this cumulative impact.</p>	Same as alternative B.	Same as alternative A.
West Indian Manatee	<p>Implementation of alternative A would result in localized, long-term, minor adverse impacts on the West Indian manatee. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Impacts on the West Indian manatee under alternative B would be long term, minor, adverse, and localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative B would contribute a very small increment to this cumulative impact.</p>	Same as alternative B.	Same as alternative B.
Red-Cockaded Woodpecker	<p>The continuation of current management (alternative A) would result in long-term, minor to moderate, beneficial impacts across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the red-cockaded woodpecker. The actions contained in alternative A would contribute a small beneficial increment to this cumulative impact.</p>	<p>Impacts on the potential habitat for and thus the red-cockaded woodpecker under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>likely to adversely affect</i>.</p> <p>There would be a long-term, moderate, adverse cumulative impact on the potential habitat for and thus the red-cockaded woodpecker. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Impacts on the potential habitat for and thus the red-cockaded woodpecker under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the potential habitat for and thus the red-cockaded woodpecker. The actions contained in alternative F would contribute a small increment to this cumulative impact.</p>

	Alternative A – No Action	Alternative B	Preferred Alternative	Alternative F
Everglade Snail Kite	<p>Under alternative A, impacts on the Everglade snail kite would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor, adverse cumulative impact on the snail kite. The actions contained in alternative A would add a small increment to this cumulative impact.</p>	<p>Impacts on the Everglade snail kite under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>likely to adversely affect</i>.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the snail kite. The actions contained in alternative B would add a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Impacts on the snail kite under alternative F would be long term, negligible to minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor, adverse cumulative impact on the Everglade snail kite. The actions contained in alternative F would add a small increment to this cumulative impact.</p>
American Crocodile	<p>Implementation of alternative A would result in localized, long-term, minor, adverse impacts on the American crocodile. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	Same as alternative A.	Same as alternative A.	Same as alternative A.
Eastern Indigo Snake	<p>Under alternative A, impacts on the eastern indigo snake would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>However, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo. The actions contained in alternative A would add a small beneficial increment to this cumulative impact.</p>	<p>Impacts on the potential habitat for and thus the eastern indigo snake under alternative B would be short term and long term, minor to moderate, adverse, and localized to Addition-wide. The determination of effect under Section 7 of the Endangered Species Act would be <i>likely to adversely affect</i>.</p> <p>There would be a short-term and long-term, moderate, adverse cumulative impact on the potential habitat for the eastern indigo snake. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Under alternative F, impacts on the eastern indigo snake would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be <i>not likely to adversely affect</i>.</p> <p>However, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo. The actions contained in alternative F would add a small beneficial increment to this cumulative impact.</p>
Major Game Species	<p>Under alternative A, impacts on major game species from the continuation of current management would be long term, beneficial, minor, and Addition-wide.</p> <p>There would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative A would contribute an appreciable beneficial increment to this cumulative impact.</p>	<p>Impacts on major game species under alternative B would be long term, minor to moderate, adverse, and mostly localized.</p> <p>There would be a long-term, minor to moderate, adverse cumulative impact on the major game species. The actions contained in alternative B would contribute a small increment to this cumulative impact.</p>	Same as alternative B.	<p>Impacts on major game species under alternative F would be long term, minor, adverse, and mostly localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative F would contribute an appreciable beneficial increment to this cumulative impact.</p>

Table 11: Summary of Key Impacts of Implementing the Alternatives

	Alternative A – No Action	Alternative B	Preferred Alternative	Alternative F
Wilderness Resources and Values	<p>Under alternative A, impacts on wilderness resources and values from the continuation of current management would be long term, minor, beneficial, and localized.</p> <p>There would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative A would contribute a very small increment to this cumulative impact.</p>	<p>Impacts on wilderness resources and values under alternative B would be long term, moderate, beneficial, and Addition-wide.</p> <p>There would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative B would contribute a modest beneficial increment to this cumulative impact.</p>	<p>Impacts on wilderness resources and values under the preferred alternative would be long term, moderate, beneficial, and Addition-wide.</p> <p>There would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in the preferred alternative would contribute a modest beneficial increment to this cumulative impact.</p>	<p>Impacts on wilderness resources and values under alternative F would be long term, major, beneficial, and Addition-wide.</p> <p>There would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative F would contribute a modest beneficial increment to this cumulative impact.</p>
Impacts on Cultural Resources				
Archeological Resources	<p>Under alternative A, impacts on archeological resources would be permanent, minor, and adverse.</p> <p>There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative A would contribute a small increment to this cumulative impact.</p> <p>Section 106 Summary. Implementation of alternative A would generally result in a no adverse effect on archeological resources.</p>	<p>Under alternative B, impacts on archeological resources would be permanent, minor to moderate, and adverse.</p> <p>There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative B would contribute a smaller increment to this cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.</p> <p>Section 106 Summary. Implementation of alternative B would result in a potential adverse effect on archeological resources.</p>	<p>Under the preferred alternative, impacts on archeological resources would be permanent, adverse, and minor to moderate.</p> <p>There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in the preferred alternative would contribute a smaller increment to this cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.</p> <p>Section 106 Summary. Implementation of the preferred alternative would generally result in a potential adverse effect on archeological resources.</p>	<p>Under alternative F, impacts on archeological resources would be permanent, adverse, and minor.</p> <p>There would be a permanent, negligible, adverse cumulative impact on archeological resources. The actions contained in alternative F would contribute a slightly larger increment to this cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.</p> <p>Section 106 Summary. Implementation of alternative F would generally result in a no adverse effect on archeological resources.</p>
Ethnographic Resources	<p>Under alternative A there would be no impacts on ethnographic resources. Therefore there would be no cumulative impacts. This would not result in impairment of ethnographic resources in the Addition.</p> <p>Section 106 Summary. Implementation of alternative A would generally result in a no adverse effect on ethnographic resources.</p>	<p>Under alternative B, there would be negligible, long-term, impacts on ethnographic resources.</p> <p>Combined with the impacts of past actions, including road construction and agricultural development, there would be a long-term, negligible to minor, adverse cumulative impact. The actions proposed in this alternative would contribute a very small increment to any cumulative impacts.</p> <p>Section 106 Summary. Implementation of alternative B would generally result in a no adverse effect on ethnographic resources.</p>	<p>Same as alternative B.</p>	<p>Under alternative F, there would be no impacts on ethnographic resources. Therefore there would be no cumulative impacts.</p> <p>Section 106 Summary. Implementation of alternative F would generally result in a no adverse effect on ethnographic resources.</p>

Alternative A – No Action		Alternative B	Preferred Alternative	Alternative F
Impacts on Visitor Use and Experience				
Recreational Opportunities	Under the no-action alternative, recreational ORV use would be nonexistent, whereas informal nonmotorized opportunities would continue and walk-in hunting would be allowed. Collectively, the resulting impacts on visitor use and experience would be long term, moderate, and adverse.	Under alternative B, designated access points and abundant trail opportunities would be provided for ORV use, hunting, and nonmotorized uses. Collectively, the resulting impacts on visitor use and experience would be long term, moderate, and beneficial.	Same as alternative B.	Under alternative F recreational ORV riding and ORV hunting opportunities would be unavailable, whereas designated, nonmotorized, access and opportunities would increase. Collectively, the resulting impacts on visitor use and experience would be long term, minor, and beneficial.
Motorized Use (ORVs)				
Nonmotorized Use (including hiking, horseback riding, and bicycling)	The cumulative impact on visitor use and experience in the Addition would be long term, moderate, and adverse. The actions contained in the no-action alternative would contribute an appreciable increment to this cumulative impact.	The cumulative impact on visitor use and experience in the Addition would be long term, moderate, and beneficial. The actions contained in the alternative B would contribute an appreciable increment to this cumulative impact.		The cumulative impact on visitor use and experience in the Addition would be long term, minor, and beneficial. The actions contained in alternative F would contribute an appreciable increment to this cumulative impact.
Hunting (including fishing and frogging)				
Impacts on the Socioeconomic Environment				
Local Economy	Because there would be no changes to visitor spending or construction activity within Collier County under alternative A, long-term and short-term impacts on the socioeconomic environment would be localized, negligible, and neutral. As a result, county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes, would remain constant. In terms of cumulative impacts, long-term and short-term impacts would be localized, moderate, and beneficial. Alternative A would contribute a very small increment to this total cumulative effect.	Because of increased visitor spending under alternative B, long-term and short-term impacts on the socioeconomic environment would be localized, negligible and beneficial. As a result, county employment, housing, and sales, as well as economic activity associated with the Miccosukee and Seminole tribes would realize positive gains, although such increases would be minimal when compared to the county as a whole. In terms of total cumulative effects, long-term and short-term impacts would be localized, moderate, and beneficial. Alternative B would contribute a very small increment to the total cumulative impact.	Because of changes in visitor spending under the preferred alternative, long-term and short-term impacts on the socioeconomic environment would be localized, negligible, and beneficial. As a result, county employment, housing, and sales, as well as economic activity associated with the Miccosukee and Seminole tribes, would realize some positive gains, although such increases would be minimal when compared to the county as a whole. Long-term and short-term cumulative impacts would be localized, moderate to major, and beneficial. The preferred alternative would contribute a very small increment to this total cumulative impact.	Same as preferred alternative.
Impacts on NPS Operations and Management				
	Operational and visitor facilities located in the original Preserve would result in continuing minor to moderate, long-term, adverse impacts on NPS operations. The cumulative impacts of the no-action alternative and other actions would be minor to moderate, long term, and adverse. The actions proposed for implementation in alternative A would contribute a modest increment to these cumulative effects.	Operational efficiencies achieved through development of new facilities in the Addition, along with the increased staffing burdens associated with managing those lands and constructing and maintaining new facilities, would have overall moderate, long-term, adverse and beneficial impacts on NPS operations. The cumulative impacts of alternative B and other actions would be moderate, long term, and beneficial. Alternative B's proposed actions would contribute a modest increment to these cumulative impacts.	Same as alternative B.	Same as alternative B.

CHAPTER 3



AFFECTED ENVIRONMENT

INTRODUCTION

This chapter describes the characteristics of the environmental components identified as impact topics that could be affected by implementing the alternatives. It provides information for “Chapter 4: Environmental Consequences,” which assesses the effects that implementing the alternatives might have on these topics. The description of the affected environment focuses on only those environmental components that are potentially subject to effects from implementing one or more of the alternatives.

The Big Cypress National Preserve *General Management Plan and Environmental Impact*

Statement (NPS 1991) included a comprehensive description of the natural resources of the original Preserve. The *Recreational ORV Management Plan* (NPS 2000) also included detailed descriptions of the affected environment as it related to motorized use in the original Preserve. This *General Management Plan / Wilderness Study / ORV Management Plan / Environmental Impact Statement* for the Addition tiers from those documents, in conformance with the Council on Environmental Quality (1978) guidelines for implementing the National Environmental Policy Act.

NATURAL RESOURCES

Information on the area's natural resources was gathered from several sources, including but not limited to, the following documents:

- *General Management Plan* for the original preserve (NPS 1991)
- *Recreational ORV Management Plan* for the original Preserve (NPS 2000)
- *Draft South Florida and Caribbean Parks Exotic Plant Management Plan* (NPS 2006b)
- *Water Resources Management Plan* (NPS 1996)
- *Draft Hydrology of the Addition Lands Report* (NPS 2002)
- *Fire Management Plan* (NPS 2005)
- *The Big Cypress National Preserve* (Duever et al. 1986)

BOTANICAL RESOURCES

Vegetation, Including Soils

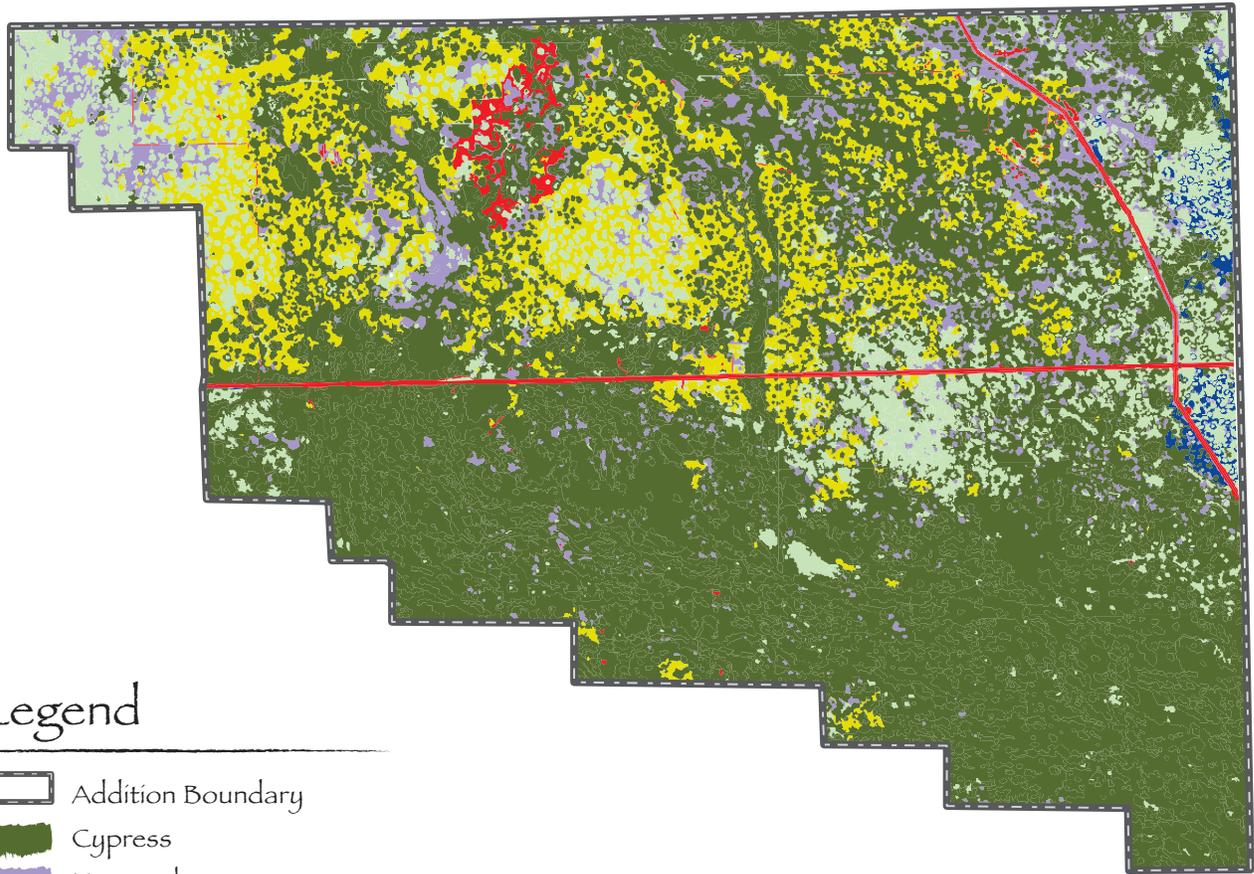
Five major vegetation communities can be found in the Addition: (1) cypress strands and domes, mixed-hardwood swamps, and sloughs, (2) prairies and marshes, (3) mangrove forests, (4) pinelands, and (5) hardwood hammocks. Disturbed areas can also be found throughout the Addition and are intermixed within all of these vegetation communities. Each of these communities is described below and identified in the following vegetation maps (Maps 9 and 10: Vegetation for the Northeast Addition and Western Addition) for the Northeast Addition and Western Addition. The vegetation classes used in this plan are the same as those used in the 2000 *Recreational ORV Management Plan*, with the exception of the addition of "disturbed areas." Disturbed areas were identified and described in the 1991 *General Management Plan / Environmental Impact Statement* for the original Preserve— so collectively, the descriptions provided below

tier to and are compatible with these two plans.

Temperate plants are abundant in Big Cypress, but most species are tropical. Pinelands, cypress strands and domes, and prairies, and marshes are the most prevalent vegetation types in the Addition and are dominated by temperate species. Tropical species primarily occur in hardwood hammocks, but are also found in pinelands, mixed-hardwood swamps, and cypress strands. Endemic plants, native only to the Preserve area, comprise 10 % of the Big Cypress vegetation (Long 1974). NPS staff are active in the NPS Inventory and Monitoring Program and have completed a thorough inventory of the Preserve's vascular plants.

The dominant tree in the preserve is cypress. Two species have been identified — bald (*Taxodium distichum*) and pond (*T. ascendens*) — although the taxonomic distinctions are still in question. Cypress are deciduous trees that can grow to 130 feet tall and reach diameters of 7 to 10 feet. Most of the larger cypress trees have been removed by logging, and only a few large trees remain. Cypress trees are highly resistant to fire and thrive in saturated soils.

Cypress Strands and Domes, Mixed-Hardwood Swamps, and Sloughs. Cypress forests are swamp communities that are dominated by bald cypress trees. These communities assume differences in response to competition and abiotic factors, so that several types of cypress forest can be identified. In southern Florida, cypress strands, cypress domes, mixed-hardwood and cypress swamps, and dwarf (hatrack) cypress communities are common. The Big Cypress Swamp, much of which occurs in Big Cypress National Preserve, is mostly composed of these types of cypress forests. In many situations, the cypress trees here live in conditions that do not support robust growth so that the trees do not attain great size (e. g., dwarf cypress



Legend

-  Addition Boundary
-  Cypress
-  Hammocks
-  Mangrove
-  Pinelands
-  Prairie
-  Disturbed
-  Water

N



0.5 1 2 3 4 5 Miles

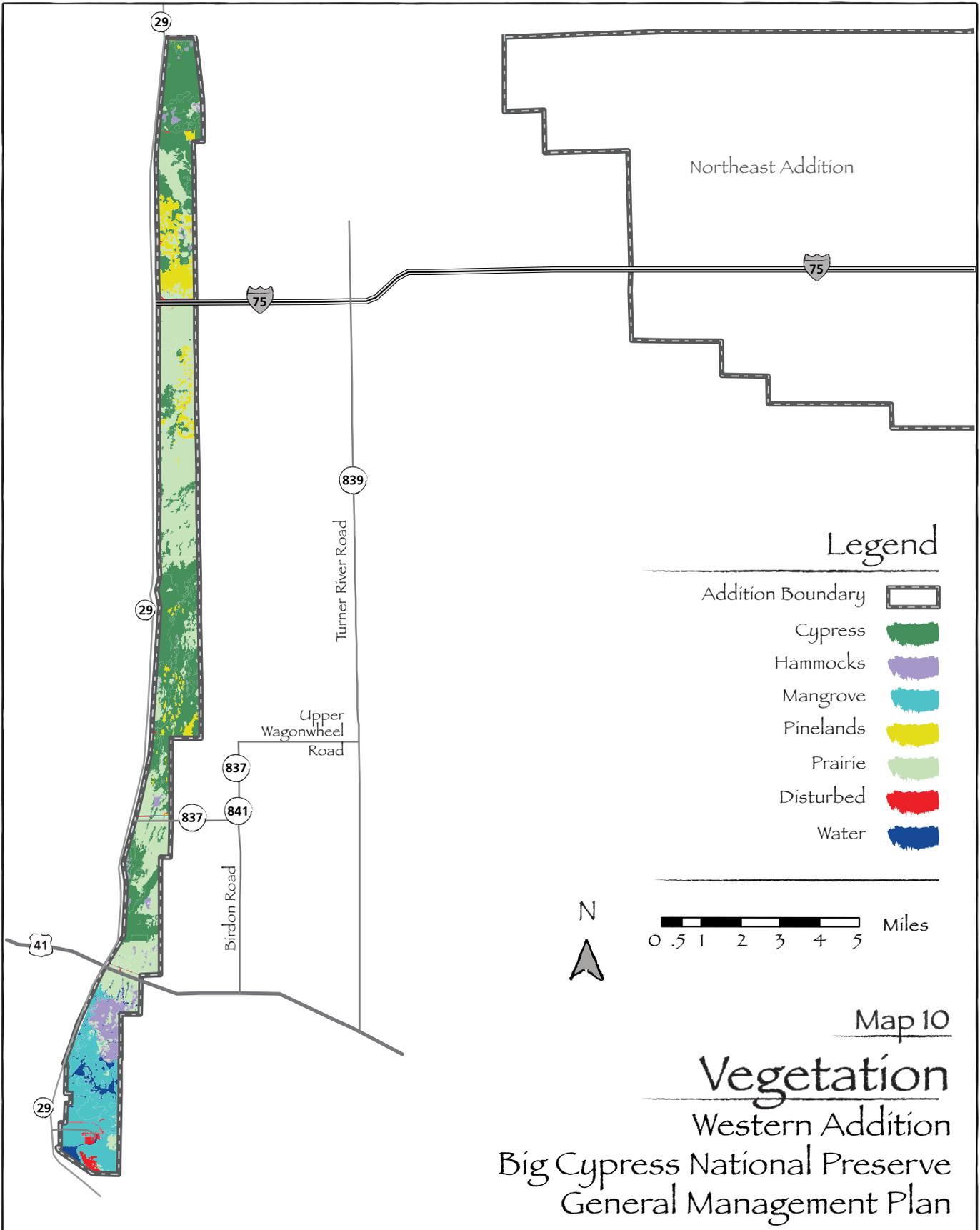
Map 9

Vegetation

Northeast Addition Big Cypress National Preserve General Management Plan

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Map 10

Vegetation

Western Addition

Big Cypress National Preserve General Management Plan

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communities). The name “Big Cypress” is derived from the large area dominated by various cypress communities, rather than the size of the resident trees.

Limestone caprock, which is common throughout much of the Addition, is usually only a few inches beneath the ground surface. The fracturing and rearrangement of the limestone results in a depression of the substrate (the surface on which an organism lives), so that the ground surface in the depression or solution hole is closer to the water table than the surrounding area. Cypress forests typically occur in the areas of the solution holes. The breaks in the limestone also allow the roots of large plants to penetrate well below the soil surface, so trees are able to become established. Because the substrate surface is near to, or below, the water for most of the year (i.e., has a long hydroperiod), trees that are adapted to long hydroperiods survive and dominate these communities. In the region, bald cypress trees are the common dominants in these hydric communities. As cypress and other trees become established, the leaves and branches that are shed from the trees collect in the solution hole depression, which is usually underwater. As a result, organic material in the soils of these communities decomposes slowly and often becomes a thick mantle on the substrate surface.

This slow decomposition and buildup of organic material tends to increase the acidity of the water in these communities. Limestone (calcium carbonate), which is very common in the substrate surrounding the cypress forests, is soluble in acidic solutions and neutralizes acidity as it dissolves. The dissolution of limestone results in a surface water solution that is saturated with calcium. This is important in the formation of marl, a soil component of prairies.

Cypress Strands — Cypress strands are swamps that are dominated by bald cypress trees, similar to cypress domes (see below). The primary difference is that a strand is a

linear feature rather than a small, discrete, dome-shaped community. Strands are generally much larger than domes, and so may be more diverse and biologically complex. Strands often contain hardwood trees that are adapted for hydric conditions, such as pop ash (*Fraxinus caroliniana*) or red maple (*Acer rubrum*). Shrub layers are sparse, but may consist of scattered dahoon holly (*Ilex cassine*), myrsine (*Rapanea punctata*), or swamp dogwood (*Cornus foemina*). Ground cover may be nearly absent because hydroperiods are often long, or it may be ephemeral and appearing during the dry season; swamp fern (*Blechnum serrulatum*) is a common ground cover that is dominant in strands. Knolls within this vegetation type comprise a principal habitat for the rare royal palm (*Roystonea elata*), and older forests serve as homes for many birds, mammals, reptiles, and amphibians (U. S. Forest Service, Wade et al. 1980a). The substrates of these communities are inundated or saturated with water nearly year-round.

Cypress Domes — Cypress domes are small, relatively discrete areas of freshwater swamp dominated by bald cypress trees. These areas are nearly circular and are often surrounded by marl prairies or herbaceous marsh community with few trees. The domed shape of these communities is produced by taller cypress trees growing near the center of the community and progressively shorter trees occurring near the peripheral areas. The centers of the dome communities and their associated solution hole substrates support the growth of cypress trees, with marginal growth conditions in the peripheral areas.

In the margins of cypress domes, the community becomes transitional with the surrounding marl prairies. Limestone usually occurs near the substrate surface in these peripheral areas, and cypress trees are often unable to establish root systems

beneath this layer of rock. The trees that survive in this area are usually smaller than those near the wetter central part of the dome. Also, because the trees in this marginal area are scattered and do not form a complete canopy, sufficient sunlight reaches the ground to support a substantial grass community, similar to that found in the adjacent prairies.

Dry season fires are common in prairie communities, and they are carried into the cypress margins by the grassy ground cover. These fires ordinarily do not kill the cypress trees, but these fires can damage the trees enough to slow their growth. Thus, a difference in habitat conditions occurs, from a moist, nutrient-rich substrate with almost no fires near the center of the dome to a seasonally dry, nutrient-poor substrate with frequent fires at the periphery. The result is a community that supports tall, vigorous trees near the center of the dome with progressively shorter, less vigorous trees toward the margins.

Mixed-Hardwood Swamps — Cypress swamps that contain significant populations of hardwood trees that co-dominate the tree canopy with bald cypress trees are often referenced as mixed hardwood and cypress swamps. Mixed hardwood swamps are essentially wetlands dominated by trees. Red bay (*Persea borbonia*), sabal palm (*Sabal palmetto*), pond apple (*Anona glabra*), or laurel oak (*Quercus laurifolia*) commonly co-dominate these communities. Epiphytes are common in these communities, as greater tree diversities result in greater diversities of substrates available to epiphyte establishment.

Several bromeliads (*Tillandsia* spp., *Guzmania monostachia*) and orchids, such as epidendrums (*Epidendrum* spp.), and ghost orchids (*Polyradicion (Polyporrhiza lindenii)*) are found on the trunks and branches of these trees. Epiphytic ferns, such as shoestring fern (*Vittaria lineata*)

and golden serpent fern (*Phlebodium aureum*), are common on the trunks of sabal palms. Vines, including poison ivy (*Toxicodendron radicans*), several grapes (*Vitis* spp.) and ratan vine (*Berchemia scandens*), are also common components of the tree canopy. These swamp communities are usually diverse, and may represent a stage of community succession later than the bald cypress-dominated community.

Sloughs — Sloughs are sinuous, elongated natural drainage channels that are inundated most of the time. Dominant species are aquatic plants and include white water lily (*Nymphaea odorata*), water hyssop (*Bacopa caroliniana*), and ludwigia (*Ludwigia repens*). Emergent plants are sparse, with spike rush common in some areas. Sloughs are generally a few feet to a few inches below adjacent marshes. Soils are mostly peat or muck, with submerged surface sediments rising and falling with fluctuating water levels. During severe droughts, surface sediments dry out and ground fires may develop, but generally sloughs are wet most of the year and have historically served as fire breaks for communities bordering the sloughs. When fires do occur, depressions are formed in the organic soils, and they fill with water to become ponds. Ponds and sloughs provide important habitat for alligators.

Suitability for ORVs — Cypress strands, cypress domes, mixed hardwood swamps, and sloughs are the wettest of all vegetated communities in the Addition. The interiors of these areas serve as important refuges and concentration points for water-dependent wildlife during the annual dry season. Generally these communities are natural barriers to off-road vehicles. Because these wetlands are associated with topographic depressions, water depth increases substantially from their edges to the center. Most of the areas covered by these wetlands have unstable substrate, water that is too deep, or too many trees to support ORV use.

Deep water and large, closely spaced trees confine off-road vehicles to established, previously cut trails threading along the margins where mineral soil or bedrock provides sufficient traction and water depth is relatively shallow. ORV tracks usually encircle or skirt cypress domes along their outermost perimeter for the same reasons. There are relatively few ORV trails that are perpendicular to the forested drainages. ORV trails crossing strands and swamps are normally on well-established, deeply entrenched routes where the forest narrows and water levels are shallower. In the original Preserve, Duever et al. (1981) found that established ORV trails through strands and swamps had the deepest ruts of all vegetation types, and that typically trails were worn down to bedrock and filled with standing water. Sloughs typically contain deep water and deposits of muck or peat, all of which discourage the use of wheeled off-road vehicles.

Prairies and Marshes.

Prairies — Prairies are treeless areas dominated by grasses and grasslike plants. Herbaceous (wet) prairies and cypress prairies can be found in the Addition. Herbaceous (wet) prairie communities in the region are typically seasonally inundated short-grass communities. Herbaceous broad-leaved plants are common components of these communities, but these plants do not usually dominate them. Graminoids (herbaceous grasses or grasslike plants) such as muhly grass (*Muhlenbergia capillaris*), blue maidencane (*Amphicarpum muhlenbergianum*), or south Florida bluestem (*Schizachyrium rhizomatum*) often dominate these prairies. Prairie communities may occur on many soils, but these communities are often found on frequently flooded fine sands or calcium carbonate marls. Limestone is commonly near the soil surface in prairie areas, which does not support trees; thus

vegetation is limited to ground cover. These areas are inundated for part of the year, and they receive much sunlight.

Prairies will burn during periods of drought and when sufficient fuel is present. Fire maintains prairies by eliminating invading trees and shrubs.

Cypress prairies are communities that transition between short-grass prairies and cypress-dominated swamp communities and typically contain elements of both. Cypress prairies are usually dominated by graminoid ground cover made up of species common in prairies, such as muhly grass (*Muhlenbergia capillaris*), or saw grass (*Cladium jamaicense*). Bald cypress trees are common in these prairies, but seldom attain a large size. This is partly because the limestone caprock that is a common component of substrates in the region is close to the soil surface and inhibits the establishment and growth of cypress trees unless there are fractures in the limestone where the cypress trees can establish limited growth. These trees are called dwarf or hatrack cypress. These areas are inundated (usually less than 1 foot of water depth) through much of the wet season.

Suitability for ORV Use — Prairies appear to be the vegetation community most impacted by ORV use. ORV trails in this community are easily distinguished on aerial photography. The tracks made by off-road vehicles persist and are even visible on small-scale aerial images. Impacts of ORV traffic in prairies include vegetation loss and exposed soils. Duever et al. (1981) and Duever et al. (1986b) described effects of ORV traffic in marl marshes and sand marshes in the original Preserve. Based on the species composition of these areas, these now appear to be classified as prairies. Duever et al. (1986b) observed that sand marshes that were not inundated were less likely to sustain heavy impacts from ORV use. This suggests that

seasonal variation in hydrology may be an important factor in determining ORV effects, and that ORV use in prairies during the wet season should be minimized.

ORV uses have been shown to alter plant community structure. After one year of recovery in the original Preserve, Duever et al. (1981) found that sawgrass and muhly grass were reduced in the tire lanes. Hyssop (*Bacopa* sp.) and bladderwort (*Utricularia* sp.) were common in the rutted areas; this was attributed to an increased hydroperiod in the tire ruts and increased sunlight from tree or shrub canopy removal within ORV use areas. After seven years, Duever et al. (1986b) found that four graminoids were more common in ORV trails than in comparison areas. Sawgrass was less common in the trails used by off-road vehicles than in the undisturbed comparison areas.

Duever et al. (1981) and Duever et al. (1986b) also evaluated effects in “small cypress” communities. Descriptions of these areas in Duever et al. (1981) suggest that they may be similar to that of cypress prairies outlined above. These areas are closely aligned ecologically with marl prairies. Duever et al. (1981) indicated that of all five vegetative communities in the original Preserve tested with wheeled vehicles, the small cypress communities required the lowest amount of use by wheeled off-road vehicles to create “a significant impact.” Duever et al. (1986b) indicated recovery of small cypress communities was less than other communities seven years after intermediate and heavy impacts from wheeled off-road vehicles. Duever et al. (1981) found that small (less than 3 feet tall) cypress trees suffered minor damage in areas used by off-road vehicles, but that cypress trees between 3 feet and 10 feet tall had severe damage. Damage to these trees and associated mortality increased with ORV use. This indicates that cypress trees between 3 and

10 feet tall can be adversely affected in areas used by off-road vehicles, but that after limited ORV use, recovery of very small trees can occur quickly.

Marshes — Since the preparation of the 1991 *General Management Plan*, the classification of marshes in the Preserve has been changed to be consistent with vegetation classification throughout the south Florida region. Under the new classification of Welch et al. (1999), marshes now include many of the areas identified as prairies in 1991.

Freshwater and saline marshes can be found in the Addition. Freshwater marshes are wetland communities that are dominated by herbaceous plants and occasional shrubs. These communities are typically inundated nearly year-round and have substrates with a thick organic mantle on the surface. Marshes are usually dominated by herbaceous species, but a marsh that is dominated by grasses or sedges may be considered a graminoid marsh. Grasses usually occur in areas without standing water during some part of the year, but related graminoids may be common in areas with prolonged hydroperiods. The graminoid that is probably most common in such areas is sawgrass. Sawgrass is a sedge (Cyperaceae) that is commonly found in wetlands with various depths to limestone, often with a significant organic peat layer covering the limestone. This organic layer is usually derived from sawgrass. Other similar communities that are dominated by different grasslike plants may also be graminoid marshes and would be identified by the graminoid that is the dominant ground cover plant.

Freshwater marshes are commonly dominated by broad-leafed plants, such as pickerel weed (*Pontederia cordata*), cattail (*Typha domingensis* or *T. latifolia*), or duck potato (*Sagittaria* spp.). These wetlands have comparatively deep water (1.5–2.0 m)

during the wet season and persist as aquatic communities year-round or well into the dry season. These deeper areas provide refuge for fish during dry seasons, when few places are under water, and also tend to concentrate populations of fish and other aquatic animals as water levels decrease with dry weather. Many wading birds, such as wood storks (*Mycteria americana*) and American egrets (*Casmerodius albus*), depend on these concentrated prey populations to find sufficient food for nesting and brood rearing.

Saline marshes occur in coastal areas and are often affected by marine systems. These communities, influenced by tidal fluctuations, have higher soil salinity than inland freshwater systems. Saline marshes that are far inland may be affected by marine waters only during extreme storm tides, such as those associated with hurricanes. This produces a change in salinity very infrequently, but the effects of this change may remain with the marsh community for several years. These communities are usually populated with plants that are typical of freshwater marshes but that are able to tolerate small increases in salinity. Plants that inhabit these areas include cattail (*Typha domingensis*), pond apple (*Anona glabra*) and cord grass (*Spartina bakeri*). These areas and other communities inland from coastal systems may be dominated by fresh water almost all of the time but may still be frequently influenced by tidal changes in water level. During the dry season, decreased flow of fresh water may allow salt water to flow farther inland than during the wet season.

Nearer the coast, tidal systems are more likely to dominate, so that mixing of fresh water and salt water becomes more common. When salt water becomes diluted by fresh water, brackish water results. Communities that are dominated most of the year by brackish water are likely to be

dominated by saline marsh with occasional mangrove trees. These saline marshes are often populated by black rush (*Juncus roemerianus*) salt marsh cord grass (*Spartina* spp.), or salt grass (*Distichlis spicata*). Fires sweep through salt marshes when weather conditions and fuel loads are conducive. Without fire or frost, trees would eventually replace salt marsh vegetation (Forest Service, Wade et al. 1980a).

Suitability for ORV Use — ORV use has been shown to alter marsh plant composition and structure. Duever et al. (1981 and 1986) described effects of ORV traffic in inundated sand marshes and peat marshes (wheeled vehicles were not tested in peat marshes). These communities appear to include much of the “marshes” category used here. These are open communities with few trees or shrubs, and ground cover is dominated by emergent herbs. Inundation is year-round or nearly year-round. Duever et al. (1981) indicated that off-road vehicles produced heavy impacts in inundated sand prairies, but less impact in noninundated sand prairies with the same amount of ORV use. Continuously inundated marl marshes were not tested with wheeled vehicles but appeared to be more affected when they were inundated than when the water table was below the ground surface. This suggests that marl marshes with extended hydroperiods may be quickly impacted by ORV use.

In marl marsh communities in the original Preserve, Duever et al. (1981) found that panic grass (*Panicum* sp.), sawgrass and muhly grass decreased with increased ORV use. Bladderwort, often a floating aquatic plant, was common in the rutted areas; this was attributed to an increased hydroperiod in the tire ruts. Sand marsh communities showed little difference in plant diversities with comparison areas after one year. After seven years, coinwort (*Centella asiatica*)

was more common in marl marsh areas used by off-road vehicles.

Mangrove Forests. Mangrove forests (mangrove swamps) are intertidal wetlands dominated by hardwood trees that are tolerant of coastal, saline conditions. Three mangrove trees — red mangrove (*Rhizophora mangle*), black mangrove (*Avicennia germinans*), and white mangrove (*Laguncularia racemosa*) — and buttonwood (*Conocarpus erectus*), a mangrove associate, are common in southern Florida. These trees make up a dense forest on much of the coast in southern Florida and form scattered tree islands farther inland, where surface waters become brackish.

Depending on the distance from the coast and seasonal runoff from inland freshwater systems, mangrove forest soils can vary in salinity. These changes in ground water and salt content create adverse conditions for most organisms, so that species richness in mangrove forests is usually low. Catastrophic events such as fires, frosts, hurricanes, and oil spills also limit mangrove productivity. Frosts severely prune mangroves, and hurricanes can destroy them.

The mangrove communities in the Addition are found primarily in the southern part of the narrow strip of the Addition that is east of SR 29 and adjacent to the Barron River and Everglades City. This area is currently open to motorized and nonmotorized boats.

Suitability for ORV Use — Mangrove forests are not suitable for wheeled vehicles. Airboats have also caused damage to mangrove trees when wind generated by propellers damages leaves and small branches of mangrove trees. Florida law prohibits destruction of mangrove trees.

Pinelands. Pinelands occur in areas that are higher than most wetlands, so their substrates are inundated less frequently. In the Addition, slash pine (*Pinus elliottii*) dominates these communities. Slash pine forests are woodland

communities with pine trees that are spaced several yards apart, so that an incomplete tree canopy is formed. Depending on substrate, some of these woodlands form a pine and palmetto community, where scattered pine trees form an open (incomplete) canopy with a dense shrub layer composed mostly of saw palmetto (*Serenoa repens*). The palmetto shrub layer is usually dense so that ground-cover does not become well established.

Slash pine-dominated communities that occur on limestone outcrops are called pine rockland communities. These areas also develop a palmetto shrub layer, but the palmettos are usually not as dense as in the pine and palmetto communities. This allows the establishment of other shrubs and ground cover, so that pine rocklands are often more diverse than pine and palmetto communities living on sandy substrates. Pine rockland communities often contain plants that are associated with the Atlantic coastal ridge communities.

The pine and palmetto and pine rockland communities are typically mesic communities, but frequently include extensive ecotonal (transitional) areas that are adjacent to wetlands. These ecotonal communities have brief or infrequent hydroperiods and contain elements of the adjacent wetlands. Palmettos apparently do not adapt well to hydric conditions and are not common in areas that are saturated or inundated often. Slash pines, however, tolerate some hydric conditions, so that in areas with short hydroperiods, slash pines commonly live without the saw palmetto understory. In these areas, the open pine canopy allows sunlight to penetrate, and graminoids commonly found in prairies are supported.

Several ecotonal communities can be found in pinelands. These ecotonal communities occur in areas with subtle topographic differences, so that differences in the communities may occur because of differences in soil type,

hydrology, small elevation differences, or fire history.

Pine needles, grasses, and other combustible materials accumulate relatively quickly in pinelands, and pinelands burn at frequent intervals. Pinelands are fire-dependent, and prescribed fires by NPS staff maintain the habitat viability by preventing hardwood succession. If fires are suppressed, pinelands eventually succeed to hardwood-dominated stands.

Pinelands provide habitat for the federally listed red-cockaded woodpecker. Red-cockaded woodpeckers form clusters of cavity trees within pinelands. NPS annual surveys of red-cockaded woodpecker clusters have documented no loss of pines due to ORV traffic.

Suitability for ORV Use — Of all the plant communities in the original Preserve tested for ORV impacts by Duever et al. (1981), pinelands were the most resistant to adverse effects from ORV use. Wetter pine communities were more heavily affected. Duever et al. (1986b) found that two of three pineland areas affected by off-road vehicles had recovered after seven years, but that the third, and wettest, pineland had not fully recovered. Amounts of ground cover did not appear to be substantially altered by ORV use. Heights of plants in areas of ORV use were decreased, but the plants recovered in one growing season.

Within the pineland understory, Duever et al. (1981) found few differences in plant communities compared with undisturbed areas after one year. However, they did note slight increases in sawgrass, coinwort, and *Hyptis* sp. compared with undisturbed comparison sites, while panic grass and three-awn grass (*Aristida* sp.) decreased with increased ORV use. After seven years, Duever et al. (1986b) indicated that *Hypericum* sp., *Ludwigia* sp., and yellow-eyed grass (*Xyris* sp.) were more common in ORV trails than in comparison

areas, while fleabane (*Pluchea* sp.) was less common. Sawgrass was less common in the trails used by off-road vehicles than in the undisturbed comparison areas.

Duever (1986) indicated that pinelands recovered more quickly than other areas, so that these areas may be considered favorably for designated trails.

Hardwood Hammocks. Mesic and hydric hardwood hammocks are scattered throughout the Addition. Often appearing as islands of trees, hardwood hammock communities occur on slightly elevated areas, and the soils are generally drier than the surrounding wetlands. Hammocks are usually small areas (1 hectare or about 2.5 acres or less) that are surrounded by other communities; in the Big Cypress region, the surrounding community is typically a wetland swamp or prairie. These slightly elevated areas function as refuges for wildlife during periods of high water. Because soils remain moist most of the year, hardwood hammocks rarely burn, but they are susceptible to fire during extended droughts. Following a fire, the species composition of recolonized hammocks often changes significantly (Duever et al. 1986a).

Hammocks are usually dominated by hardwood trees with sabal palms; saw palmettos frequently occur as part of the shrub layer and often appear to be remnants of an earlier, more open successional stage. Near the coast, these hammocks are protected from frosts by the adjacent Gulf of Mexico, so that tropical hardwoods dominate these hammocks. Many of these hammocks are located on shell mounds that were constructed by the Calusa Indians. These shell mounds support a diversity of tropical hardwoods, including, gumbo limbo (*Bursera simaruba*), mastic (*Mastichodendron foetidissimum*), and poison wood (*Metopium toxiferum*).

Hammocks that occur inland are usually surrounded by freshwater wetlands; these may be swamps (wetlands dominated by trees)

or wet prairies (wetlands dominated by herbaceous ground cover). Inland hammocks are usually dominated by live oak (*Quercus virginiana*) or laurel oak trees with understories made up of cocoplum (*Chrysobalanus icaco*), snowberry (*Chiococca alba*), and beauty berry (*Callicarpa americana*). Ground cover is sparse, usually consisting of tufted grasses such as bluestem (*Andropogon virginicus*). Epiphytes are common, especially on the branches of oak trees, where resurrection fern (*Polypodium polypodioides*), many bromeliads, and several uncommon orchids grow. Many epiphytes also occur on the trunks and bootjacks (leaf bases that remain for some time on the palm trunk) of sabal palms, such as shoestring fern and golden serpent fern. Vines such as poison ivy, several grapes (*Vitis* spp.), and pepper vine (*Ampelopsis arborea*) are common canopy components. Elevated areas with sandy soils and limestone near the substrate surface often support cabbage palm (sabal palm) hammocks. These hammocks are usually not especially diverse, and have few trees other than sabal palms forming the tree canopy. Shrubs are uncommon, and ground cover is sparse. Vines and epiphytes may occur on the palm trunks, but these are also usually sparse.

Suitability for ORV Use — Trees that dominate these hardwood hammock communities are often large, such as oaks, sabal palms, or wild tamarind (*Lysiloma latisiliquum*). As a result, ORV riders usually avoid hardwood hammocks, although the substrate in these areas would support ORV use. Hardwood hammocks are susceptible to invasion by unwanted exotic species, especially Brazilian pepper, when their soils and tree canopies are disturbed.

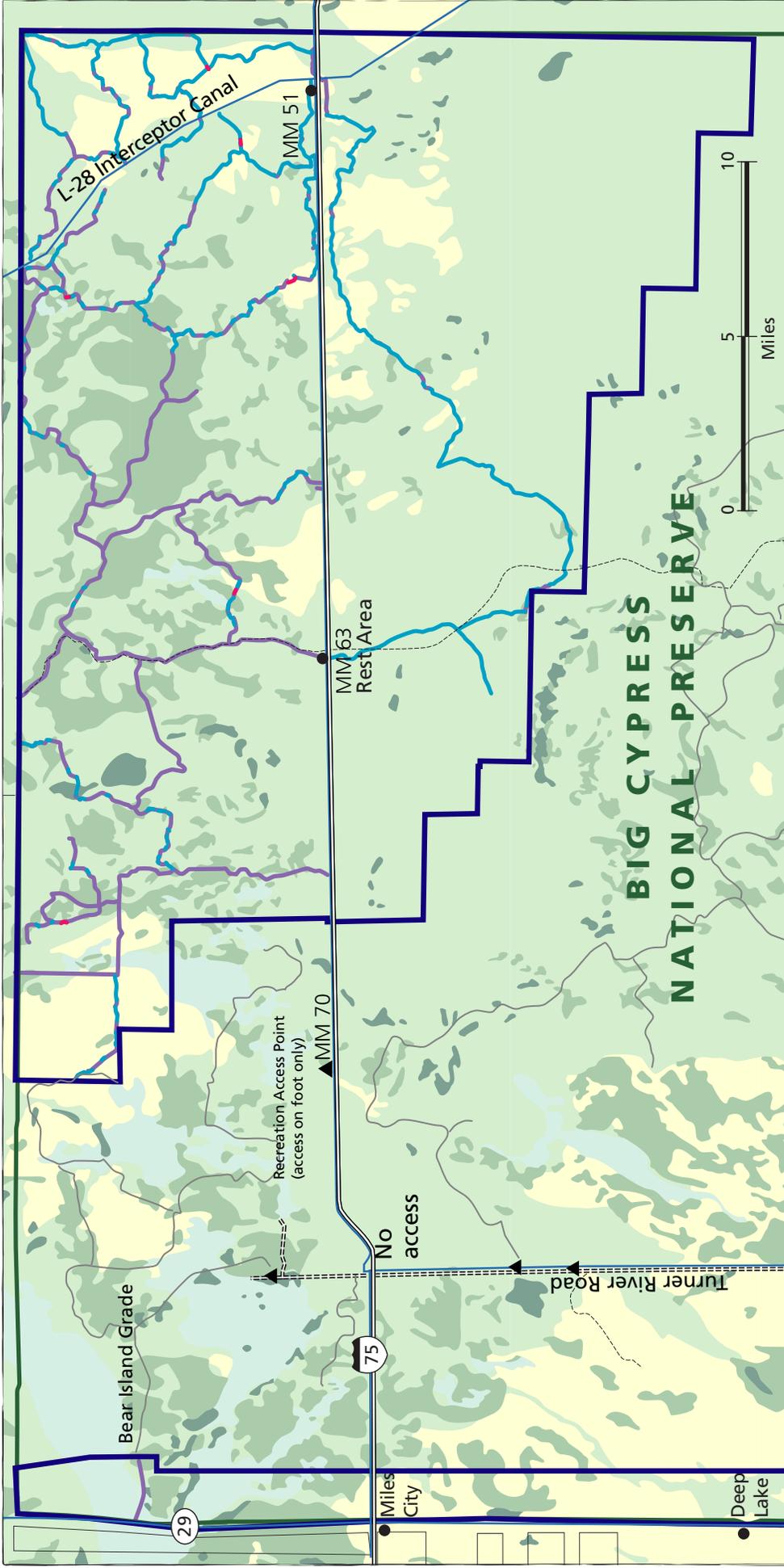
Occasionally, smaller trees and shrubs in the understory may be subject to damage because they can be bent or broken by vehicles. Duever et al. (1986b) stated that abandoned

trails in the original Preserve were vegetated by saltbush (*Baccharis* spp.) after seven years. Saltbush species are opportunistic in disturbed areas. Duever et al. (1986b) speculated that the abandoned trails would eventually succeed to the native understory species, but no further assessment has been conducted to determine if this is occurring.

Hardwood hammock communities are commonly associated with archeological resources, and changes to substrates may affect cultural remnants. These communities are ordinarily small and isolated enough that they can be avoided. To reduce the risk of compromising cultural resources that may be in the hardwood hammock substrates, ORV use should be directed away from hammock communities.

See map 11 for an illustration of the relationship between the location of the preferred alternative's primary ORV trails and the Addition's ecosystem types.

Disturbed Areas. Disturbed areas, found throughout the Addition and intermixed within all of the above vegetation communities, are areas that have been affected by nature (fire, freeze, storms, extreme tides, etc.) or by man's activities such as logging, canal and road construction, farming and grazing, oil extraction, ORV use, fire, introducing exotic species, earth moving, altering drainage, altering the chemistry of water or soils, or facility construction. Community succession has been altered in disturbed areas. Soils in disturbed areas differ with locations and original substrates. The result is a change in the ecosystem that usually allows colonization and recruitment of ruderal (weedy) species. These weeds are often exotic plants that outcompete natives and quickly dominate the disturbed area.

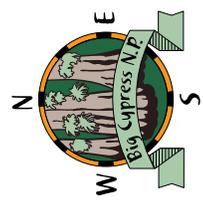


Legend

- Preserve Boundary
- Addition Boundary
- Canal
- Existing Access Point
- Unpaved Road
- Uplands
- Wetlands, No Fill Needed
- Wetlands, Fill Needed
- Existing Hiking Trail
- Designated Primary ORV Trail

Key to Ecosystem

- Cypress
- Hardwood Hammock
- Pineland
- Mangrove
- Freshwater Marl Prairie
- Freshwater Slough
- Coastal Marsh
- Marine and Estuarine



**Map 11 • Preferred Alternative Conceptual Primary ORV Trails and Ecosystem Type
Big Cypress National Preserve--Addition
General Management Plan**

Protected Plant Species

As shown in table 12, two species of plants that reside in the Addition are listed as candidate species for federal listing as endangered or threatened. The state of Florida lists an additional 96 species that occur in the Addition as threatened or endangered, along with

three more that are listed as commercially exploited. Collectively, these species warrant attention because they have had long-term population declines and are vulnerable to exploitation or environmental changes. Table 12 displays the status of all 102 special status plant species that occur in the Addition.

TABLE 12: LISTED PLANT SPECIES FOR BIG CYPRESS NATIONAL PRESERVE ADDITION^a

Common Name	Scientific Name	Designated Status ^b	
		Federal	State
Paurotis palm, Everglades palm	<i>Acoelorrhaphe wrightii</i>		T
Golden leather fern	<i>Acrostichum aureum</i>		T
Brittle maidenhair	<i>Adiantum tenerum</i>		E
Sensitive joint-vetch, meadow joint-vetch	<i>Aeschynomene pratensis</i>		E
White colic-root, bracted colic-root	<i>Aletris bracteata</i>		E
Pineland-allamanda, pineland golden trumpet	<i>Angadenia berteroi</i>		T
Eared spleenwort	<i>Asplenium erosum</i>		E
Bird's-nest fern, wild birdnest fern	<i>Asplenium serratum</i>		E
Pinepink	<i>Bletia purpurea</i>		T
Fakahatchee bluethread	<i>Burmannia flava</i>		E
Manyflowered grasspink	<i>Calopogon multiflorus</i>		E
Spicewood, pale lidflower	<i>Calyptrothrix pallens</i>		T
Leafless bentspur orchid	<i>Campylocentrum pachyrrhizum</i>		E
Narrow strap fern, narrow-leaved strap fern	<i>Campyloneurum angustifolium</i>		E
Tailed strap fern	<i>Campyloneurum costatum</i>		E
Powdery strap airplant	<i>Catopsis berteroniana</i>		E
Florida strap airplant	<i>Catopsis floribunda</i>		E
Southern Florida sandmat	<i>Chamaesyce pergamena</i>		T
Porter's sandmat	<i>Chamaesyce porteriana</i>		E
Satinleaf	<i>Chrysophyllum oliviforme</i>		T
Coffee colubrina, greenheart	<i>Colubrina arborescens</i>		E
Butterflybush, Curacao bush	<i>Cordia globosa</i>		E
Quailberry, Christmasberry	<i>Crossopetalum ilicifolium</i>		T
Pepperbush	<i>Croton humilis</i>		E
Florida tree fern, red-hair comb fern	<i>Ctenitis sloanei</i>		E
Blodgett's swallowwort	<i>Cynanchum blodgettii</i>		T
Cowhorn orchid, cigar orchid	<i>Cyrtopodium punctatum</i>		E
Florida prairieclover	<i>Dalea carthagenensis</i> var. <i>floridana</i>	Candidate	E
Ghost orchid, palmplolly	<i>Dendrophylax lindenii</i>		E
Caribbean crabgrass	<i>Digitaria filiformis</i> var. <i>dolichophylla</i>		T
Florida pineland crabgrass	<i>Digitaria pauciflora</i>	Candidate	E
Guiana-plum	<i>Drypetes lateriflora</i>		T

Common Name	Scientific Name	Designated Status ^b	
		Federal	State
Clamshell orchid, cockleshell orchid	<i>Encyclia cochleata</i>		E
Florida butterfly orchid	<i>Encyclia tampensis</i>		CE
Dingy-flowered star orchid	<i>Epidendrum anceps</i>		E
Acuna's star orchid	<i>Epidendrum blancheanum</i>		E
Umbrella star orchid	<i>Epidendrum floridense</i>		E
Night-blooming epidendrum, night-scented orchid	<i>Epidendrum nocturnum</i>		E
Stiff-flower star orchid	<i>Epidendrum rigidum</i>		E
Sanibel Island love grass	<i>Eragrostis tracyi</i>		E
Beach verbena, coastal mock vervain	<i>Glandularia maritima</i>		E
Wild cotton, upland cotton	<i>Gossypium hirsutum</i>		E
West Indian tufted airplant	<i>Guzmania monostachia</i>		E
Snowy orchid	<i>Habenaria nivea</i>		T
Needleroot airplant orchid	<i>Harrisella porrecta</i>		T
Poeppig's rosemallow	<i>Hibiscus poeppigii</i>		E
Hanging club-moss	<i>Huperzia dichotoma</i>		E
Delicate violet orchid	<i>Ionopsis utricularioides</i>		E
Rockland morningglory	<i>Ipomoea tenuissima</i>		E
Pineland clustervine	<i>Jacquemontia curtisii</i>		T
Skyblue clustervine	<i>Jacquemontia pentanthos</i>		E
West coast lantana, Sanibel shrubverbena	<i>Lantana depressa</i> var. <i>sanibelensis</i>		E
Catesby's lily, pine lily	<i>Lilium catesbaei</i>		T
Small's flax	<i>Linum carteri</i> var. <i>smallii</i>		E
Pantropical widelip orchid	<i>Liparis nervosa</i>		E
Nodding club-moss	<i>Lycopodiella cernua</i>		CE
Hidden orchid	<i>Maxillaria crassifolia</i>		E
Pineland blackanthers	<i>Melanthera parvifolia</i>		T
Climbing vine fern	<i>Microgramma heterophylla</i>		E
Twiberry, Simpson's stopper	<i>Myrcianthes fragrans</i>		T
Giant sword fern	<i>Nephrolepis biserrata</i>		T
Wild basil, wild sweet basil	<i>Ocimum campechianum</i>		E
Florida dancinglady orchid	<i>Oncidium ensatum</i>		E
Hand fern	<i>Ophioglossum palmatum</i>		E
Erect pricklypear	<i>Opuntia stricta</i>		T
Royal fern	<i>Osmunda regalis</i> var. <i>spectabilis</i>		CE
Pineland passionflower	<i>Passiflora pallens</i>		E
Comb polypody	<i>Pecluma ptilodon</i> var. <i>caespitosa</i>		E
Cypress peperomia	<i>Peperomia glabella</i>		E
Florida peperomia, baby rubberplant	<i>Peperomia obtusifolia</i>		E
Yerba linda	<i>Peperomia rotundifolia</i>		E
Southern fogfruit	<i>Phyla stoechadifolia</i>		E
Greater yellowspike orchid	<i>Polystachya concreta</i>		E
Bahama ladder brake	<i>Pteris bahamensis</i>		T
Swartz's snoutbean	<i>Rhynchosia swartzii</i>		E
Royal palm, Florida royal palm	<i>Roystonea regia</i>		E
Leafless beaked lady's-tresses	<i>Sacoila lanceolata</i>		T
Ray fern	<i>Schizaea pennula</i>		E
Florida Keys nutrush	<i>Scleria lithosperma</i>		E

Common Name	Scientific Name	Designated Status ^b	
		Federal	State
Everglades bully	<i>Sideroxylon relinatum subsp. Austrofloridense</i>		E
Mullein nightshade	<i>Solanum verbascifolium</i>		T
Everglades Keys false buttonweed	<i>Spermacoce terminalis</i>		T
Texas ladiestresses	<i>Spiranthes brevibraris</i>		E
Lacelip lady's-tresses	<i>Spiranthes laciniata</i>		T
Longlip lady's-tresses	<i>Spiranthes longilabris</i>		T
Southern lady's-tresses	<i>Spiranthes torta</i>		E
West Indian mahogany	<i>Swietenia mahagoni</i>		T
Broad halbard fern	<i>Tectaria heracleifolia</i>		T
Curtiss' hoarypea	<i>Tephrosia angustissima var. curtissii</i>		E
Lattice-vein fern	<i>Thelypteris reticulata</i>		E
Reflexed wild-pine, northern needleleaf	<i>Tillandsia balbisiana</i>		T
Stiff-leaved wild-pine, cardinal airplant	<i>Tillandsia fasciculata var. densispica</i>		E
Banded wild-pine, twisted airplant	<i>Tillandsia flexuosa</i>		T
Hoary wild-pine, fuzzywuzzy airplant	<i>Tillandsia pruinosa</i>		E
Giant wild-pine, giant airplant	<i>Tillandsia utriculata</i>		E
Soft-leaved wild-pine, leatherleaf airplant	<i>Tillandsia variabilis</i>		T
Chiggery grapes	<i>Tournefortia hirsutissima</i>		E
Entire-winged bristle fern	<i>Trichomanes holopterum</i>		E
Hoopvine	<i>Trichostigma octandrum</i>		E
Florida gamagrass	<i>Tripsacum floridanum</i>		T
Leafy vanilla	<i>Vanilla phaeantha</i>		E
Rain-lily, redmargin zephyrlily	<i>Zephyranthes simpsonii</i>		T

Sources: USFWS 2006; Florida Department of Agriculture, Division of Plant Industry 2006; Florida Natural Areas Inventory 2006.

a Species in this table include those that have been documented in the preserve- it does not include listed species for Collier County that are not present in the preserve.

b E = endangered Candidate= species is a candidate for listing as threatened or endangered
T = threatened CE = commercially exploited

Exotic and Nonnative Plant Species

Thousands of nonnative plant species have been introduced to south Florida for ornamental plantings, agriculture, and other human uses. Because of the relative youth of the south Florida landmass and the semi-tropical climate, it is theorized that the region is particularly susceptible to invasion by exotic plant species (Duever et al. 1986a). Some 297 exotic plants have become established in south

Florida (Duever et al. 1986a). Many of these are reported from Big Cypress National Preserve, but most are restricted to early successional stages on disturbed sites, and only a few pose a long-term threat to native communities. Of these, five species — melaleuca (*Melaleuca quinquenervia*), Brazilian pepper, water hyacinth (*Eichhornia crassipes*), hydrilla (*Hydrilla verticillata*), and Old World climbing fern (*Lygodium microphyllum*) — are fairly common in the

Preserve and the Addition. Australian pine (*Casuarina* spp.) was identified as an exotic species of concern; however, in the last two decades it has been eradicated. Today, except for those on private property, all known Australian pine plants have been eliminated from the Preserve and the Addition. Crested floatingheart (*Nymphoides cristata*), a relatively new exotic for south Florida, was discovered in the Preserve in August 2006. Infestations are restricted to about 4 miles of canal along Tamiami Trail and two strand swamps south of the trail (NPS 2006a). Evidence suggests that this species was introduced to the Preserve through the transfer of propagules attached to a net or other fishing gear. Invasion of the adjacent swamps likely occurred from water flowing through culverts in the area. Water lettuce (*Pistia stratiotes*) and air potato (*Dioscorea bulbifera*) are also known to be present.

Melaleuca and Brazilian pepper are capable of invading native plant communities, and control efforts have been concentrated on these species.

The exotic plant control program is carried out by the NPS contractors and maintenance and resource management staff. NPS staff are active participants in the Florida Exotic Pest Plant Council, an interagency task force organized to share technical information on the control of exotics, monitor the distribution of exotics in south Florida, and collaborate on comprehensive control strategies.

Even though exotics are spread by natural events (such as hurricanes) and animals (such as raccoons and birds), there are indications that off-road vehicles have resulted in the spread of exotic and invasive plants within the Preserve, including Brazilian pepper, melaleuca, and Old World climbing fern. Off-road vehicles transport seed in their tire treads and vehicle beds and distribute it in currently unaffected areas of the Preserve as they travel. Evidence of the spread of invasive plants along ORV trails has been documented

around the Monroe Station trailhead (Pernas 1999).

Melaleuca. Melaleuca, a native of Australia and New Guinea, was introduced to Florida around 1910 for landscaping. Perhaps the first introduction of melaleuca in Big Cypress was at Monroe Station around 1940. Because it grows in pure stands at the expense of native plants and can occupy large areas, melaleuca is considered to be a major threat to the ecological integrity of the Preserve.

Melaleuca has successfully invaded much of south Florida because of its outstanding ability to propagate. A mature tree may contain tens of thousands of small woody seed capsules along its branches, and each capsule contains about 250 seeds. The capsules remain closed as long as they receive moisture from the tree's vascular system. However, if the vascular system fails due to damage by fire, frost, cutting, herbicidal injury, or simply old age, the capsules will slowly dry out, open, and release hundreds of thousands of seeds. The seeds fall within a short distance of the parent tree and germinate best on open, moist soils. Germination is limited on very dry or very wet soils and under dense canopy cover. As a result, melaleuca does well in prairies and open, moist pinelands, but is slower to invade wetter communities such as cypress domes and strands.

Melaleuca is extremely fire tolerant. The spongy inner bark insulates the trunk while the papery outer bark and oil-rich leaves readily carry fire. Following a fire, melaleucas will both release seeds and resprout, and fires create excellent conditions for melaleuca seed germination and seedling survival. Hence, fire in a mature melaleuca stand can encourage the exotic to spread.

Melaleuca is controlled through two primary methods: (1) hand pulling — manually pulling the plants when they are small enough, and (2) cut stump — brushing or

spraying herbicide on freshly cut stump surfaces. Both techniques are labor intensive, and trained personnel are required to handle the herbicides. Once mature, seed-bearing trees have been killed, prescribed fire or cutting may be used to control seedlings and sprouts.

The entire Addition has been inspected for the presence of melaleuca plants, and about 632,000 melaleuca stems have been treated and/or removed. Today, melaleuca is considered to be under control within the Preserve and the Addition. Future treatments of melaleuca in the Addition will focus on re-treating previously treated areas.

Brazilian Pepper. A native of South America, Brazilian pepper was first introduced to south Florida around 1900. It is now widespread in the region, primarily on disturbed, well-drained sites.

Brazilian pepper reproduces by seed. Seeds are produced in bright red berries that are ingested by birds and other wildlife and then spread to other areas. Ingestion appears to improve seed germination potential.

Fire has variable effects on pepper plants. Seedlings are killed by fairly frequent fires; however, in more mature stands trees may be top-killed by fires but can resprout and reoccupy a burned area. Intense fires on upland sites tend to eliminate competing vegetation and prepare good seedbed conditions for a *Schinus* invasion.

Like melaleuca, Brazilian pepper occurs in dense, pure stands, particularly in the Addition. However, unlike melaleuca, dense pepper stands are almost always confined to areas with substrate disturbance (roadsides, canal banks, abandoned homesites, or camps— typically areas in which fill has been placed to create dry land). As some upland areas mature toward hardwood hammock vegetation, Brazilian pepper will decline in importance. However, in most upland areas

the natural fire cycle is likely to maintain Brazilian pepper as a component of the understory indefinitely. Fire and hydrological cycles seem to prevent Brazilian pepper from invading undisturbed prairies, marshes, and other more moist types of environments.

Brazilian pepper occurs in mesic communities nearly throughout the Preserve, especially in the Addition. It is often found on old farm fields, spoil banks, and canal berms. In 2005 NPS staff initiated large-scale treatment of Brazilian pepper in the Addition north of I-75 and west of Nobles Grade. This is an area with perhaps the greatest concentration of Brazilian pepper in the entire Preserve. Much of this area was disturbed by small-scale agriculture and grazing, with several hunting camps and many swamp buggy trails; these changes to the landscape created significant areas for Brazilian pepper establishment. In 2005 about 780 acres were treated for dense infestation, and in 2006 about 10,058 acres of moderate to dense infestation of Brazilian pepper were treated, mostly in the area between Nobles and Bundschu grades (NPS 2006a). Collectively, nearly 11,000 acres in the Addition have been treated. Infestations were heaviest along Nobles Grade and in abandoned hunt camp sites. Treatments of infestations around Deep Lake and in the strip of land along SR 29 are planned for early 2009. The overall goal is for stopping the spread of Brazilian pepper in the entire Preserve, including the Addition, which will likely take about 10 years (NPS 2006a).

Water Hyacinth and Hydrilla. Water hyacinth and hydrilla have invaded the Addition's canal systems and excavated ponds, where they often form dense mats. Neither plant can invade seasonally dry wetlands, and the plants appear to be restricted to permanent water in canals and ponds. For this reason no major control program is currently warranted.

Old World Climbing Fern. This plant is rapidly becoming a significant problem species throughout southern Florida. It

apparently originated in the Palm Beach County area on the east coast of the state and has been spreading rapidly westward and southward. The first recorded treatment of Old World climbing fern in the Preserve occurred in 1998. Since then this exotic species has been found in nearly 100 sites in the Preserve. Infestations have been found throughout the Preserve, with the greatest concentration in the northeast portion of the Addition. Most of these infestations are small (<0.5 acre), although some larger patches have been found. To date all known infestations of this plant in the Addition have been treated. However, further establishment of this fern in the Addition is anticipated, and detailed reconnaissance to locate infestations will occur annually. All of the known Old World climbing fern in the Addition, about 150 acres, has been treated. In 2006 treatments were focused on infestations in the Kissimmee Billy and Cow Bell Strands. The overall goal is to prevent incipient infestations of Old World climbing fern from becoming major eradication problems.

Another, similar exotic climbing fern (*Lygodium japonicum*) is causing similar problems with native communities, but this plant is more common to the north. Although *Lygodium japonicum* has been recorded in the Addition, it is not common.

FIRE ECOLOGY AND MANAGEMENT

The natural vegetation communities of Big Cypress are dynamic, and boundaries of the communities shift over time. The two major influences on vegetation distribution are hydroperiods and fires; other significant factors are frost and hurricane damage, although they are somewhat less important because they occur infrequently. Of these influences, only fire can be used as a practical management application in natural areas.

The importance of fire in the natural environment of south Florida is well documented

(Forest Service, Wade et al. 1980a; NPS 1953; Davis 1943). All natural communities in the region are affected by fire, and many not only survive periodic burning but are ultimately dependent on fire for their perpetuation. Many plants in fire-dependent communities, such as prairies and pinelands, are highly flammable, and fires spread rapidly in these communities. Ignition sources are plentiful. south Florida has the highest incidence of lightning of any region in the nation, and there is also a long history of human-caused fire (Forest Service, Wade et al. 1980a). Lightning-caused fires can occur year-round, but are more typical during the latter part of the dry season just before the summer rains begin. Human-caused fires can also occur any time but tend to be more frequent in the dry winter months. Human-caused fires have probably been an influence on the regional vegetation for several thousand years (Duever et al. 1986a). Frequent ignition and high flammability, particularly in combination with annual dry seasons, create an extraordinarily high fire frequency, and fires in south Florida tend to be large.

The effects of fires in Big Cypress are extremely complex and depend on factors such as the season, intensity, extent, and duration of burning and the susceptibility and responsiveness of vegetation to fire damage. The flammability of vegetation types varies through the annual wet and dry seasons and from year to year. For example, drier, more upland types such as pinelands and some prairies are susceptible to fire earlier in the year than most wet prairies and marshlands, which dry out as the season progresses. However, hardwood hammocks, mixed-hardwood swamps, and cypress strands are rarely dry enough to burn except during extended droughts.

Roughly 90% of the Addition consists of plant communities (cypress and mixed hardwood swamps, marl prairies and marshes, and pinelands) that require periodic fire for perpetuation (Burch 2003). In such com-

munities, surface fires tend to eliminate competing vegetation, stimulate sprouting or seed production, create seedbed conditions, and release nutrients. Without cyclic fire, fire-tolerant species decrease in reproduction as a site is invaded and eventually dominated by fire-intolerant plants. Natural fire intervals range from as frequent as every 3 to 5 years in prairies to as long as every 50 to 100 years in mixed hardwood swamps (Burch 2003).

Although periodic surface fires tend to maintain certain communities, extreme fire conditions can dramatically alter plant, and consequently animal, distribution. When the fire cycle is retarded, organic materials accumulate and create hazardous fuel levels that can threaten even fire-tolerant species. Prolonged droughts or human-caused drainage can dry out the organic soils of many plant communities and, when coupled with hazardous fuel accumulations, can result in intense fires that consume organic soil materials. Peat fires, as such fires are called, can literally burn the soil out from under established vegetation, radically changing the plant composition. Peat fires tend to lower the surface level of the burned area, thereby extending the hydroperiod and affecting the replacement vegetation. The pond in the middle of a cypress dome, for instance, may be enlarged by a peat fire. In an extreme example, a hardwood hammock on deep organic soil may be completely burned and replaced by an open pond.

It would not be possible to exclude fire from the Addition, nor would it be desirable to do so. It is the job of resource managers not simply to stop fires, but rather to attempt to control where, when, and how intensely they burn.

Recent fire activity in the Addition has affected many of its vegetation communities. During May and June 2007 a lightning-caused fire burned about 64,000 acres east of SR 29 on both sides of I-75. Two fires that burned

on the north side of I-75 came together and created 24 miles of fire line (from mile markers 52 to 76).

The NPS fire management program covers the Addition and is guided by the *Fire Management Plan* (NPS 2005). The NPS staff uses an integrated program of wildland fire suppression and prescribed fire. The *Fire Management Plan* is being amended to include the management of naturally ignited wildland fires to accomplish specific, pre-stated resource management objectives in predefined geographic areas outlined in the *Fire Management Plan*. The NPS prescribed fire management program at Big Cypress is the largest in the national park system in terms of the amount of burning accomplished — about 40,000 acres annually to reduce accumulated fuels in plant communities. This program has about 20 full-time employees. NPS fire management staff work closely with property owners in the area as well as the state's Division of Forestry because state restrictions often constrain fire operations.

Management-ignited fires (prescribed fires) have been used in the Addition to reduce hazardous fuel accumulations around property and in historically high arson areas, to improve pastures on grazing allotments (this was a historic land use practice; no grazing is currently allowed in the Addition), to maintain habitat for the Cape Sable seaside sparrow and red-cockaded woodpecker, to aid in the removal of exotic plants, and to research the effects of fire on prairie vegetation. Burning is also used to reduce the debris from demolished structures — but only at sites that are tolerant of prescribed burning. All prescribed fires are conducted in compliance with state and federal fire management regulations.

WATER RESOURCES

Hydrologic Cycle

The Big Cypress Swamp is a recognized physiographic province in southwestern Florida. It is a source of recharge for the shallow aquifers of south Florida and is important to the integrity of the water resources in the western part of Everglades National Park. The hydrological features of the swamp were recognized by Congress when it established Big Cypress National Preserve and the Addition.

The original Preserve is essentially a rain-driven hydrologic unit, and for the most part it is not dependent on adjacent land for water flow. However, the Addition is more prominently influenced by upstream inputs from external drainages (Map 12: Hydrology of the Addition).

Like the original Preserve, the Addition is flooded with a shallow sheet of surface water starting shortly after the onset of the rainy season (usually in June) and ending in the winter dry season after surface waters recede. Rainfall averages 54 inches per year, but it has ranged from 35 inches to 80 inches per year. Summer rains are usually short, intense, and frequent. Winter rains are a result of frontal systems, and they last longer and have less intensity. Tropical systems, including hurricanes, occur most frequently in September and October and can sometimes bring significant and torrential rainfall.

During the rainy season, shallow depressions fill with water. Because of the poor drainage, water stands on the land until it evaporates, infiltrates to the underlying aquifer, or slowly drains off through sloughs or strands. Thus, at the peak of the rainy season as much as 90% of the Addition is inundated to depths ranging from a few inches to more than 3 feet. When the dry season begins, the water level starts to recede. The recession normally continues into May, when perhaps only 10% of the Addition

is covered by water in ponds, cypress domes, and sloughs. The water regimen of the area largely determines the patterns in which temperate and tropical vegetative communities and their related wildlife species occur.

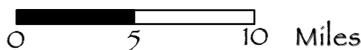
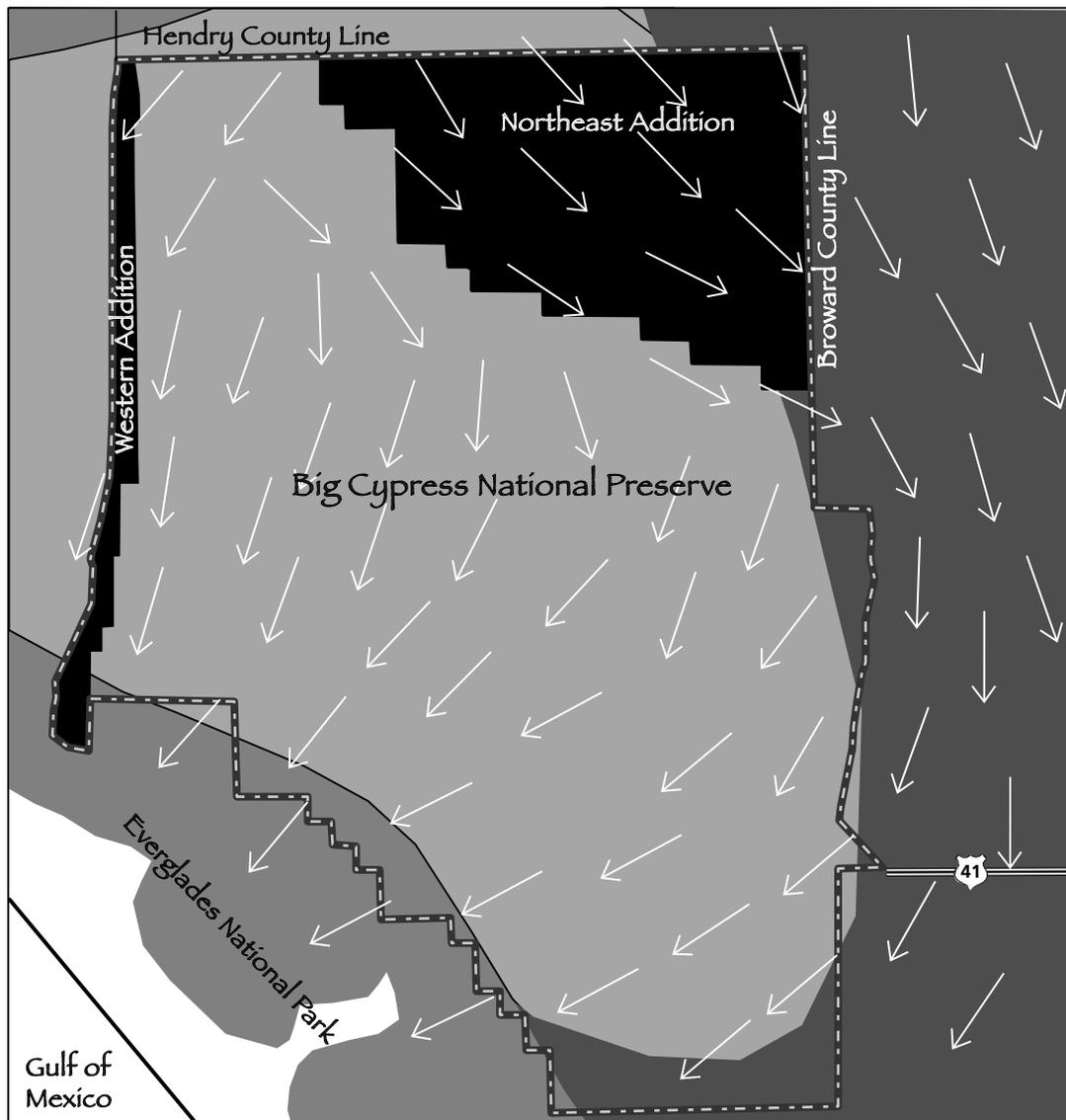
Surface Water Flows

The Addition lies within a large interconnected freshwater system called the Kissimmee-Lake Okeechobee-Everglades Watershed. This watershed covers almost 11,000 square miles in south-central Florida and is the dominant freshwater supply for the region's population centers.

The Addition is exceptionally flat, with a typical gradient of only 5 to 10 inches per mile. Surface water hydrology of the Addition is typically characterized as a "sheet flow" flooding regime. During the wet season, the landscape becomes covered with a shallow, continuous expanse of water that flows slowly toward the coast. Water movement is almost imperceptible in the interior of the original Preserve, where the terrain slopes an average of less than a foot per mile. However, flows are easily observable where the expanse of sheet flow is constricted to pass under a roadway or is channeled into a canal. Typically, marsh, prairie, and cypress areas will have water depths of 1 to 3 feet, while pinelands and hammock habitats will have little or no water.

After surface flows have ceased, water losses continue through evapotranspiration and groundwater seepage. The Addition typically has an almost full drydown condition during the late spring, before the onset of summer rainfall. During drydown condition, standing water is retained only in the deepest depressions and canals.

Flows tend to follow bedrock undulations, which are generally oriented in a northeast-southwesterly direction and range in relief from approximately 1 foot to as much as 10



N



Legend

-  Addition Lands
-  Big Cypress Swamp
-  Mangroves
-  Everglades
-  General direction of surface-water flow

Map 12

Hydrology of the Addition

Big Cypress National Preserve – Addition General Management Plan

United States Department of the Interior • National Park Service
DSC • October 2010 • 176/20083

feet. These low areas control surface water flows because the water table is below the crests of the undulations most of the time.

Surface flows in the Addition are influenced by upstream management practices and internal barriers to flow. Major physical alterations of the landscape and associated water management practices have greatly modified the volume, timing, distribution, and quality of surface water in south Florida. Since the 1880s, development was assisted by large-scale drainage of wetlands, canal and levee building, road construction, agriculture, residential and commercial development, and operation of pumps and flood gates. Today, many portions of the watershed are drier or wetter for longer periods than before such development and have poorer water quality related to agricultural and urban runoff.

Investigators have documented that surface water in the Big Cypress vicinity preferentially flows in channels rather than in adjacent wetlands (Duever et al. 1981; Pernas et al. 1995). However, Duever et al. (1986a) also observed that topographic irregularities interrupted excessive drainage. Channelization is of particular concern at the southern boundary of the original Preserve and the Addition where fresh water and salt water mix and where changes in salinity can change the vegetation composition.

A recent review of historical water-level information by NPS staff showed an increase in the duration of surface water inundation in the 1990s relative to the two previous decades (Sobczak and Pernas 2000). It is thought that the wetter condition in the 1990s was caused by increased rainfall amounts, but upstream water releases, gate operations in adjacent areas, and features within the Preserve that block and channelize flow also contributed to the condition. Because the relatively dry conditions that prevailed in the 1970s and 1980s also were influenced by water management practices, there is uncertainty regarding future hydrologic conditions, both in terms of

the weather patterns and the *Comprehensive Everglades Restoration Plan* (U.S. Army Corps of Engineers 1999).

Major physical and operational alterations that will directly impact the Addition during the next 50 years include removal of part or all of the L-28 canal and levee, partial modification of the L-28 Tie Back, alteration of flows at the northern boundary of the Addition, and changes in the operational rules for regulating flows in adjacent and upstream areas. As shown in Map 12: Hydrology of the Addition, the L-28 canal system is directly east of the Addition boundary and interrupts the generally northeast to southwest flow of water across the Addition. Water management practices from upstream citrus expansion may influence high-water conditions along the northeast portion of the Addition, but the extent of this impact (if any) is unclear.

Surface Water Flows and ORV Use.

Flattened vegetation and tire tracks at roadside entry points are generally the extent of ORV effects seen by most observers. However, aerial views of the Addition show a vast network of ORV trails and travel corridors. This network of tire ruts and ridges could be influencing the volume, timing, and distribution of surface water flows.

The extent, occurrence, and severity of effects that off-road vehicles have had on surface water flows of the Addition are largely unknown. However, ORV ruts, which can be two or more feet deep, can channel water and potentially alter natural water flow patterns and timing. Two studies have documented greater water flow rates within ORV ruts than in adjacent undisturbed areas. Duever et al. (1981) found that over wet and dry seasons, water flows accelerated from two to four times in trails oriented parallel to the direction of water flows. Flows in some trails continued after water had ceased flowing in surrounding areas, possibly leading to a shortened natural hydroperiod in a localized area. Pernas et al. (1995) found that surface water flow always

followed airboat trails, regardless of the trail orientation. Within the study area, these flow rates were accelerated approximately five times faster within the airboat trails than in adjacent undisturbed areas.

Duever et al. (1986a) hypothesized that trails that were extensively rutted and oriented parallel to flow could drain surface water from an adjacent wetland, particularly in low-lying areas. However, they also observed that topographic irregularities interrupted excessive drainage effects, so that impacts tended to be localized.

Groundwater

The Addition is underlain by an extensive, shallow, surficial aquifer, which serves as the main source of fresh water in Collier County. The aquifer lies in a porous limestone formation that is approximately 50-100 feet thick on the Addition's western boundary and generally diminishes in thickness to the east. Throughout much of the Addition, the limestone of this shallow, unconfined aquifer is within 10 feet of the surface. Groundwater travels relatively quickly through the formation and is recharged quickly by fresh surface water flows. Where limestone or other porous aquifers are near the coast, salty seawater can begin to move inward and infiltrate freshwater aquifers. This is particularly problematic where fresh groundwater is pumped to provide urban water supplies. Rapid development in south Florida has resulted in saline marine groundwater moving inward more than 15 miles in some places (USGS 2001). During the rainy season, groundwater levels are high. By April, the usual end of the dry season, water levels normally reach their annual lows.

Water Quality

The water in Big Cypress is relatively unpolluted. The fresh surface waters of Big Cypress National Preserve are designated as Outstand-

ing Florida Waters. This is a state designation, delegated by the U.S. Environmental Protection Agency (EPA) under the Clean Water Act, and it is intended to protect existing, high-quality waters. The Big Cypress Swamp is also designated as an Area of Critical State Concern by Florida state statute (Chapter 380.05). This designation provides the state's Division of Community Planning with oversight on local development projects and comprehensive planning within the designated area (Collier County).

Concentrations of nitrogen, phosphorus, total organic carbon, and persistent pesticides, which often serve as indicators of pollution, are generally similar to concentrations in nearby, relatively uninhabited areas, and concentrations are considerably less than those of nearby urbanized areas. Water quality changes occur seasonally and diurnally in Big Cypress and are related to the natural hydrologic and biologic regimes. The seasonal recession of water levels triggers physical, chemical, and biological changes in water quality. During low water, diurnal fluctuations in dissolved oxygen are greatest as a result of the high concentration of organisms in the remaining water. During the day plants produce excess oxygen by photosynthesis. At night dissolved oxygen decreases as photosynthesis ceases and respiration demands are met. Fish kills sometimes occur during periods of low dissolved oxygen; they have been observed in the spring in the Tamiami Canal about 10 miles west of Forty-Mile Bend, and often they spread both east and west for several miles.

The low-nutrient, high-quality water in the Addition is vulnerable to degradation from contaminants. Because the water is of such high quality, even small amounts of contaminants can result in relatively large adverse effects. External sources of pollution primarily include nutrient-enriched runoff from upstream agricultural and urban activities, especially in the north. Internal contaminant sources include NPS development, operation of boats and vehicles within the original

Preserve, and oil and gas leakage in the Preserve. Today, water quality in some locations is dramatically different than before 1900. Surface water entering the Addition is nearly completely controlled, and having drained from agricultural and developed areas is laden with nutrients, dissolved solids, and trace amounts of pesticides and herbicides (SFWMD 1992).

The National Park Service established a long-term water monitoring program for measuring surface water stage and quality in the original Preserve in 1988. Water quality samples currently are collected every other month at 20 stations located throughout the original Preserve and the Addition. The objective of this water monitoring program is to provide a long-term record for assessing ambient water quality conditions and contamination threats. The South Florida Water Management District (SFWMD) maintains water-quality monitoring programs in lands upstream and adjacent to the Addition. The most important parameters of interest for tracking long-term water quality conditions include total phosphorus, nitrate, sulfate, and pesticides.

Water Quality and ORV Use. The use of off-road vehicles in the original Preserve generates visible, localized turbidity in the upper portion of the water column. This effect is most pronounced in areas where ruts are deepest and vegetation has thinned. However, a study by Duever et al. (1986b) determined that the effects of ORV use on water quality were negligible, localized, and produced no threat to regional water quality. Localized impacts included hydroperiod alteration, temperature variation, introduction of sediment into the water, chemical pollution, and salinity changes. The turbidity that resulted from ORV operation was found to decrease sunlight penetration, thereby decreasing plant productivity.

According to Beardsley (1995), extensive vegetation impacts from ORV use may inhibit nutrient uptake, causing greater levels of

nutrients to remain in the water. Beardsley also stated that loss of vegetation cover reduces water filtration and removes frictional forces that reduce retention of water in the wetland. In some cases, subtle modification to water quality can impact other biological, vegetative, and wildlife components of the environment, and the existence of many localized impacts can translate into regional-scale and long-term impacts if the processes that cause them occur regularly and are permanent. Regional water quality effects would be most likely during times of heavy ORV use and when ORV trails are heavily rutted and oriented in the direction of sheet flow.

Water quality is not a primary parameter used to evaluate ORV impacts because ORV impacts on waters tend to be localized and ephemeral. However, areas of high ORV use show persistent alteration of the local vegetative community that is likely related to disturbance of soil structure and chemistry.

Wetlands

The Addition has been mapped by the U.S. Fish and Wildlife Service (USFWS) as part of the *National Wetlands Inventory*. Most of the Addition is classified as wetlands; exceptions are scattered hardwood hammocks, some pinelands, and artificially filled areas. Twenty-seven different types of wetlands occur in the Addition, with the majority of them being seasonal wetlands. Cowardin classifications present in the Addition include periphyton communities, marshes, sloughs, prairies, open cypress domes, lakes, lake shorelines, and drainage canals/ditches. Most of the wetland area is seasonal, except for the lacustrine and riverine areas. The lacustrine, littoral, and riverine systems make up a much smaller area, but have more diverse classifications because many of these bodies of water and associated biological systems result from excavation of substrates.

Floodplains

The southwestern corner of the original Preserve, including Ochopee, was mapped for floodplains by the Federal Emergency Management Agency (FEMA). This area is located along U.S. 41, east of the Western Addition. According to FEMA, the headquarters and residential area at Ochopee are within the 100-year floodplain. A 100-year storm or hurricane storm surge could flood the Ochopee area to a depth of 8 feet above mean sea level. There are no areas within the Preserve in the coastal high hazard area, and no areas are subject to flash flooding (NPS 1991). No additional data are available that are specific to the Addition.

Estuarine Resources

The estuarine habitats of the Addition are concentrated in the coastal interface zone south of Everglades City. They are influenced by freshwater inflows and result in waters of mixed salinity that provide unique and highly productive wildlife habitat.

WILDLIFE

Protected Wildlife Species

A total of 31 animal species that could occur in the Addition receive some level of special protection or are recognized as rare species by the state of Florida or the federal government. Most of these species are limited to south Florida, and they are endangered as a result of habitat reduction caused by water management projects, urbanization, and agricultural expansion.

Nine of the 31 species mentioned above are listed as either federally endangered or threatened and reside in the preserve — 8 of those 9 are known to be present in the Addition. The state lists 14 species as species of special concern. Collectively, these species warrant attention because they have

experienced long-term population declines and are vulnerable to exploitation or environmental changes. Table 13 displays the status of all 31 special status wildlife species that are known to occur in the Preserve.

Descriptions of those federally listed species that will be analyzed in detail in “Chapter 4, Environmental Consequences” are provided below.

Florida Panther. The Florida panther (*Puma concolor coryi*) was listed as endangered under the federal Endangered Species Act in 1967. Critical habitat for the Florida panther has not been designated by the U.S. Fish and Wildlife Service. Lands in the Addition contain suitable habitat for the Florida panther.

Florida panthers once lived throughout most of the southeastern United States, but intensive hunting of these animals as a pest species and the conversion of wildlands to agriculture have severely reduced the population. Today, the only confirmed breeding population is in south Florida. The population is centered in and around Big Cypress, including Everglades National Park, Fakahatchee Strand Preserve State Park, the Florida Panther National Wildlife Refuge, and privately owned lands north of the preserve in Collier and Hendry counties. The panther population has been steadily increasing in recent years. In 2000, the estimated population was 62 individuals, with a population density of one panther per 31,923 acres (112,919 hectares) (McBride 2000). In 2003 the population was estimated at 83 panthers (117 minus 21 mortalities) (FFWCC 2008). The 2008 population estimate was 84 panthers (104 minus 20 mortalities) (FFWCC 2008).

In general, panther population centers appear to indicate a preference toward large, remote tracts with adequate prey, cover, and reduced levels of human disturbance. A study conducted by Kautz et al. (2006) confirmed that forest patches comprised an important component of Florida panther habitat in

TABLE 13: LISTED WILDLIFE SPECIES FOR BIG CYPRESS NATIONAL PRESERVE^a

Common Name	Scientific Name	Designated Status ^b	
		Federal	State
Mammals			
Everglades mink	<i>Mustela vison evergladensis</i>		T
Florida panther	<i>Puma concolor coryi</i>	E	E
Mountain lion	<i>Puma concolor</i>		S/A
Big Cypress fox squirrel	<i>Sciurus niger avicennia</i>		T
West Indian manatee	<i>Trichechus manatus</i>	E	E
Florida black bear	<i>Ursus americanus floridanus</i>		T
Florida bonneted bat	<i>Eumops floridanus</i>		E
Birds			
Cape Sable seaside sparrow	<i>Ammodramus maritimus mirabilis</i>	E	E
Limpkin	<i>Aramus guarauna</i>		SSC
White-crowned pigeon	<i>Columba leucocephala</i>		T
Little blue heron	<i>Egretta caerulea</i>		SSC
Reddish egret	<i>Egretta rufescens</i>		SSC
Snowy egret	<i>Egretta thula</i>		SSC
Tricolored heron	<i>Egretta tricolor</i>		SSC
White ibis	<i>Eudocimus albus</i>		SSC
Peregrine falcon	<i>Falco peregrinus</i>		E
Florida sandhill crane	<i>Grus canadensis pratensis</i>		T
American oystercatcher	<i>Haematopus palliatus</i>		SSC
Bald eagle	<i>Haliaeetus leucocephalus</i>		T
Wood stork	<i>Mycteria americana</i>	E	E
Osprey	<i>Pandion haliaetus</i>		SSC
Brown pelican	<i>Pelecanus occidentalis</i>		SSC
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	SSC
Roseate spoonbill	<i>Platalea ajaja</i>		SSC
Black skimmer	<i>Rhynchops niger</i>		SSC
Everglade snail kite	<i>Rostrhamus sociabilis plumbeus</i>	E	E
Least tern	<i>Sterna antillarum</i>		T
Reptiles			
American alligator	<i>Alligator mississippiensis</i>	T(S/A)	SSC
American crocodile	<i>Crocodylus acutus</i>	T	E
Eastern indigo snake	<i>Drymarchon corais couperi</i>	T	T
Mollusks			
Florida tree snail	<i>Liguus fasciatus</i>		SSC

SOURCES: USFWS 2006; USFWS 2007; Florida Fish and Wildlife Conservation Commission 2006c; Florida Natural Areas Inventory 2006.

a Species in this table include those that have been documented in the Preserve; it does not include listed species for Collier County that are not present in the Preserve. Not all species listed in this table have been documented in the Addition.

b E = Endangered S/A = Similarity of appearance to a threatened or endangered species
T = Threatened SSC= Species of special concern (no regulatory authority)

south Florida. According to the Kautz study, the three most frequently used habitat types found within panther home ranges included upland hardwood forest, hardwood swamp, and pinelands, respectively. The hammocks are important foraging areas, and the pine flatwoods, with a dense understory, are important for denning and resting. Panthers prefer to move through vegetated areas, and rarely move through open areas except at night. It is important to maintain vegetated corridors between habitats to allow for panther movement.

Only preliminary data are available on Florida panther reproduction. Existing data indicate that breeding may occur throughout the year, with a peak during winter and spring, a gestation period of around 90 to 95 days, litter sizes of one to four kittens, and a breeding cycle of two years for females successfully raising young to dispersal, which typically occurs at 18 months (USFWS 2008).

According to NPS staff, dispersal of young in the Preserve typically occurs around 15 to 18 months. Most panther births occur between March and July, and the den sites are used for two months after birth.

The panther's preferred prey is white-tailed deer (*Odocoileus virginianus*). Reports show that while subadults and nonbreeding female panthers feed almost exclusively on small prey, such as raccoon, marsh rabbit, and alligator, breeding females prey primarily on white-tailed deer. If deer populations decline, the panther population declines.

The Florida Panther Habitat Preservation Plan (Logan et al. 1993) identified about 926,000 acres of habitat considered essential to maintaining a minimum viable population of panthers in south Florida. About 582,000 of these acres are within Big Cypress National Preserve, representing approximately 63% of the essential habitat.

Radio-tracking data and surveys of panther sign (e.g., tracks, droppings, and other physical

evidence) conducted by the National Park Service and the Florida Fish and Wildlife Conservation Commission (FFWCC) indicate two population centers in the Big Cypress area. One includes the Fakahatchee Strand/northern Big Cypress swamp area (including the Deep Lake and Bear Island units of the original Preserve, the Addition, Fakahatchee Strand Preserve State Park, the Florida Panther National Wildlife Refuge, and private lands to the north), and the other center includes the eastern half of the original Preserve (including all or portions of the Corn Dance, Loop, and Stairsteps units). Evidence of panthers has been occasionally found in other areas of the original Preserve and the Addition, but these areas appear to be the most regularly inhabited.

The panther population centers exist relatively close to each other, but there are some striking differences in the condition of the panthers. In 1985, panthers in the Bear Island unit and adjoining private lands north of I-75 were more abundant, heavier, and healthier than their counterparts south of I-75 (Roelke et al. 1985). In fact, one male panther weighed by researchers gained 20 pounds when he moved to the north side of I-75 from Fakahatchee Strand. From 1982 to 1985 panther sign declined noticeably in Fakahatchee Strand and the Corn Dance unit of the original Preserve, but sign did not decline in the Bear Island unit or on adjacent private lands. The condition of the current population is believed to be in better condition than what it was in 1985. During the past 25 years, radio telemetry data on collared panthers indicates that 1–3 collared panthers have been using the Addition each year. These data represent collared panthers only, and it is fair to presume that more panthers than those with collars are using the area.

Recruitment — the number of young panthers surviving to adulthood — is also higher in the Bear Island area. Possible reasons for the better condition of panthers north of I-75 are that (1) the area may contain a better mix of

vegetation types supporting deer, (2) that past range management for cattle grazing in the area may have supported more deer, and (3) that low hunting pressure on private lands may provide a refuge for both deer and panthers.

The automobile is the most frequent direct cause of panther deaths. Between 1981 and 1986 there were 12 documented panther deaths or injuries in south Florida, and half were road kills. Of these, four panthers were struck by cars on Florida 84 (now I-75) between mile-markers 16 and 18; one was hit on SR 29 near Copeland; and one was hit on U.S. 41 near Turner River Road. Because of the threat to panthers from automobiles, the state installed special underpasses while constructing I-75 across Big Cypress in order to provide for safer panther movements. Road kills are still frequent despite the mitigation measures that were put into place to avoid conflict with vehicles — in 2007, 14 panthers were killed in the first six months of the year (Schulze 2007). Fifteen panthers were killed on roads in 2007 (FFWCC 2008). Additionally, there were 10 highway mortalities in 2008 (FFWCC 2008). The number of panthers dying from disease or parasites is unknown. More recent data indicates that intra-specific aggression (panthers killing panthers) is also a factor in panther mortality rates.

In 1995, eight female Texas cougars were released into the Florida panther population, including four introduced into the Big Cypress, to offset the negative effects of inbreeding documented in panthers.

Several government agencies and advisory groups are involved in panther management and research in south Florida and Big Cypress. Under the Endangered Species Act, the U.S. Fish and Wildlife Service (USFWS) has oversight responsibility to review the actions of other agencies in relation to federally protected species and to establish species recovery programs. The National Park Service has the primary responsibility for protecting the Florida panther (as well as other listed

species) on lands under its jurisdiction. The Florida Fish and Wildlife Conservation Commission is responsible for implementing the USFWS panther recovery plan, and the National Park Service and the commission cooperate for overall wildlife management in Big Cypress.

The survival and recovery of the Florida panther is dependent on : (1) protection and enhancement of the extant population, associated habitats, and prey resources; (2) improving genetic health and population viability; and (3) reestablishment of at least two additional populations within the panther’s historic range (USFWS 1999). Accordingly, the agencies involved in panther management in south Florida have agreed that implementing the following management actions will improve panther recruitment:

- Reduce hunting pressure on panther prey species, especially deer and hogs.
- Improve habitat by using prescribed burns and habitat manipulation to increase deer browse.
- Regulate ORV use and other human activities more closely because of potential disturbance to panther habitat.
- Consider reintroducing panthers bred in captivity or translocating other Florida panthers to improve the genetic viability of the wild population.
- Continue and expand research on panther distribution, behavior, and health and on prey species status.

These actions are consistent with the “Florida Panther Revised Recovery Plan” (USFWS 1987a).

In 2008 the *Panther Recovery Plan* was updated with a third revision and released by the U.S. Fish and Wildlife Service (USFWS 2008). This 2008 plan includes the following recovery objectives:

- To maintain, restore, and expand the panther population and its habitat in south Florida and expand the breeding portion of the population in south Florida to areas north of the Caloosahatchee River.
- To identify, secure, maintain, and restore panther habitat in potential reintroduction areas within the historic range, and to establish viable populations of the panther outside south and south-central Florida.
- To facilitate panther recovery through public awareness and education.

The plan also identifies criteria for recovery and reclassification under the Endangered Species Act. The long-term criteria would require two separate, viable populations of at least 240 individual panthers (adults and subadults) that have been established and maintained for a minimum of 12 years. And, sufficient habitat quality, quantity, and spatial configuration to support these populations would need to be secured.

To work toward this long-term goal, the 2008 recovery plan identifies an interim goal to achieve and maintain a minimum of 80 panthers in each of two reintroduction areas within the historic range and to maintain, restore, and expand the south/south-central Florida subpopulation. The actions needed to achieve this interim goal are as follows:

1. Maintain, restore, and expand the panther population and its habitat in south Florida.
2. Expand the breeding portion of the population in south Florida to areas north of the Caloosahatchee River.
3. Identify potential reintroduction areas within the historic range of the panther.
4. Reestablish viable panther populations outside of south and south-central Florida within the historic range.

5. Secure, maintain, and restore habitat in reintroduction areas.
6. Facilitate panther conservation and recovery through public awareness and education.

As mentioned earlier, the National Park Service, the U.S. Fish and Wildlife Service, and the Florida Fish and Wildlife Conservation Commission are involved in panther research in Big Cypress. NPS efforts have concentrated on the distribution of panthers on NPS lands in the original Preserve south of I-75 and east of SR 29 and in Everglades National Park. The panther recovery program, under the auspices of the game commission and supported by the U.S. Fish and Wildlife Service, has focused on panther home ranges and movement patterns, physical condition and health, and breeding in captivity. In addition, the game commission has also been involved in studies of the condition and health of deer in Big Cypress as the panthers' main prey.

The Florida Fish and Wildlife Conservation Commission and the National Park Service have taken steps to reduce hunting pressure in Big Cypress and to enforce speed limits to reduce panther road kills. Hunting regulations have since been implemented, partially out of concern for panther protection. Several FFWCC commission enforcement personnel have been trained in the use of radar equipment and have been involved in speed limit enforcement on I-75 and U.S. 41.

The discovery of mercury contamination in some Florida panthers is a relatively new concern. In 1989 a dead panther was found in the East Everglades. A tissue analysis revealed that the dead animal had extremely high levels of mercury and might have died from mercury poisoning. Further blood and tissue analysis of live Florida panthers, as well as fish and raccoons in the region, showed a pattern of elevated mercury contamination. Release of mercury from organic soils into surface waters is the apparent source of the toxins. Mercury bioaccumulates through the aquatic food

chain into fish and then raccoons. All panthers with higher mercury levels primarily preyed on raccoons, rather than deer or hogs, which were scarcer in the panthers' home range. As a result of these studies, the Florida Panther Inter-agency Committee recommends that agencies manage habitat and public use to increase deer and, where appropriate, hogs or other non-contaminated prey. The intent is to shift panther predation away from contaminated prey species (Florida Panther Interagency Committee 1989).

Panthers are typically shy, secretive animals that normally avoid human interaction. Interactions with humans can affect panther behavior. A study was conducted between 1994 and 1998 by Janis and Clark to study the effects of hunting on panthers (*The Effects of Recreational Deer and Hog Hunting on the Behavior of Florida Panthers*, 1999). It centered on the panther population north of I-75, including the Bear Island Unit in the original Preserve. The U.S. Fish and Wildlife Service's "Biological Opinion" for the 2000 *Final Recreational ORV Management Plan* states the following on page 562 of the plan:

Janis and Clark (1999) surmise that the increase in the distance of panther locations from trails is "biologically minor" and probably related to prey behavior; i.e. white-tailed deer moving deeper into the forest to avoid ORV users. The decrease in panther use of the Bear Island Unit is balanced by an increase in use of private lands north of BICY [Big Cypress National Preserve] as "refugia." The authors assert that this pattern would be of serious concern if panther habitat on private lands were lost.

West Indian Manatee. The West Indian manatee (*Trichechus manatus*) was listed as federally endangered under the Endangered Species Act in 1967. Critical habitat for the West Indian manatee was designated by the U.S. Fish and Wildlife Service in 1976 (41 FR 41914), and corrected and augmented in 1977

(42 FR 47840-47845). As published in the *Federal Register* (50 CFR Part 17.95), critical habitat, as it applies to the Addition, is defined as

all U.S territorial waters adjoining the coast and islands and all connected bays, estuaries, and rivers from Gordon's Pass, near Naples, Collier County, southward to and including Whitewater Bay, Monroe County.

No specific primary or secondary constituent elements were included in the designation. Critical habitat for the manatee identifies specific areas occupied by the manatee that have those physical or biological features that are essential to the conservation of the manatee and/or may require special management considerations.

Interpretations of the critical habitat criteria contained in the *Federal Register* have led biologists to conclude that critical habitat in Big Cypress National Preserve is generally limited to open water creeks, canals, and estuarine areas south of U.S. 41. Within the Addition, critical habitat includes near-shore mangrove estuaries and creeks, as well as the canals along U.S. 41 and SR 29. Occupied critical habitat in the SR 29 canal (aka Barron River Canal) extends to the north beyond U.S. 41 as far as the first water control structure.

The West Indian manatee is one of the largest coastal mammals in North America. The West Indian manatee is an aquatic mammal with grey to grey-brown, thick, tough skin that is sparsely covered with small, thick hairs and is sometimes covered with barnacles and algae. The rounded body of the manatee has no hind limbs, but it has paddle-like forelimbs or flippers with three to four nails present on the dorsal surface of each flipper. The body tapers to a flattened tail.

This unusual marine mammal with its massive, seal-like body has been able to adapt well to its marine environment. Exact estimates of the historic manatee population are uncertain, but

overhunting during the 1700s to 1900s is believed to be responsible for reducing the manatee population to only a few relict groups (Hartman 1979). Manatees migrate seasonally to adapt to changing water temperatures. West Indian manatees roam in fresh, brackish, and marine waters throughout Florida, the Greater Antilles, Central America, and South America. Waters colder than 20 degrees Celsius increase the manatees' susceptibility to cold stress and cold-induced mortality. Because of this temperature restriction, manatees seek out warm water refuges to help reduce energetic maintenance costs. The West Indian manatee is one of the most endangered marine mammals in coastal waters of the United States.

The manatee occurs throughout the southeastern United States. The only year-round populations of manatees occur throughout the coastal and inland waterways of peninsular Florida and Georgia (Hartman 1974). During the summer, manatees may range as far north along the East Coast of the U.S. as Rhode Island, west to Texas, and, rarely, east to the Bahamas (USFWS 1996, Lefebvre et al. 1989). There are reports of occasional manatee sightings from Louisiana, southeastern Texas, and the Rio Grande River mouth (Gunter 1941, Lowery 1974).

Manatees frequently migrate throughout the waterways in south Florida. The south Florida ecosystem region is home to the most resident manatee populations and transient migrants in Florida. In south Florida, manatees are most prominent year-round in the following areas: Indian River, Biscayne Bay, Everglades and Ten Thousand Island area, Estero Bay and Caloosahatchee River area, and Charlotte Harbor area. Some of the largest winter aggregations (50 or more manatees) occur in south and central Florida (USFWS 1996). See Map 13: West Indian Manatee Habitat, Western Addition.

Manatees occur in both fresh- and saltwater habitats within tropical and subtropical regions. They depend on areas with access to natural springs or manmade warm water refugia and access to areas with vascular plants and freshwater sources (Humphrey 1992). Several factors contribute to the distribution of manatees in Florida. Between October and April, Florida manatees concentrate in areas of warmer water. When water temperatures drop below 21 to 22 degrees Celsius, they migrate to south Florida or form large aggregations in natural springs and industrial outfalls. Severe cold fronts have been known to kill manatees when the animals did not have access to warm water refuges.

During warmer months they appear to choose areas based on food supply, water depth, and proximity to fresh water. Manatees may not need fresh water, but they are frequently observed drinking fresh water from sewage outfalls and culverts.

The manatee occupies a prominent position in marine and estuarine systems as a prodigious grazer of submerged aquatic vegetation. It spends about five hours a day feeding, and in that time, it consumes about 4%–9% of its body weight (44 to 99 pounds or 20 to 45 kilograms /day) (Bengston 1983). Submerged aquatic vegetation, such as seagrasses, is a major component of the diet of manatees, and although manatees appear to tolerate marine and hyper saline conditions, they are most frequently found in fresh or brackish waters. Manatees inhabit both salt and fresh water of sufficient depth (4 feet 11 inches to usually less than 19 feet 8 inches or 1.5 meters to usually less than 6 meters) and may be encountered in canals, rivers, estuarine habitats, saltwater bays, and, on occasion, have been observed as much as 3.7 miles off the Florida gulf coast (USFWS 2005).

Map 13

West Indian Manatee Habitat

Western Addition Big Cypress National Preserve General Management Plan

National Park Service
United States Department of the Interior
DSC • October 2010 • 176/2008+

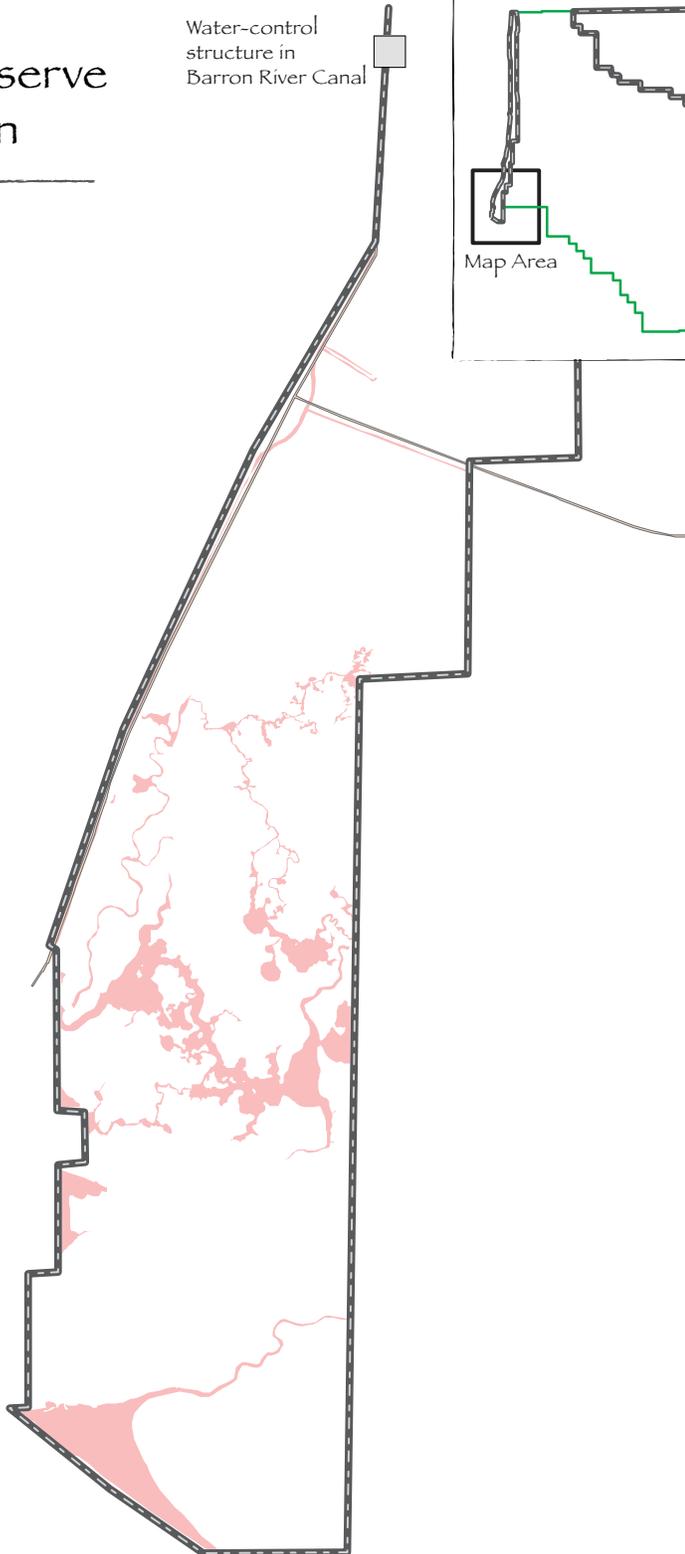
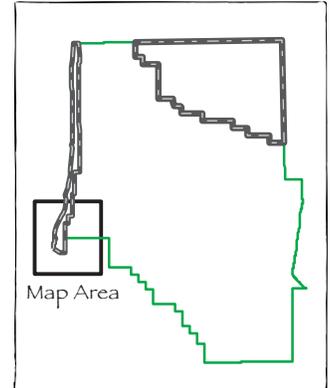
Legend

-  Addition Boundary
-  Addition Manatee Habitat



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Water-control structure in Barron River Canal



Although there are no accurate estimates of manatee population size, the state Department of Environmental Protection aerial surveys determined that there were at least 2,639 manatees in Florida's waters in 1996, and a minimum of 1,709 in 1997. The synoptic (general) aerial survey for 2007 reported 2,817 manatees in Florida waters, and 3,807 manatees in 2009 (Fish and Wildlife Research Institute 2009). Although this has been the highest estimate of manatees since the surveys were started, the results of these surveys may vary because of such factors as sampling methodology, manatee behavior, and weather conditions.

The National Park Service, U.S. Fish and Wildlife Service, and the U.S. Geologic Survey are collaborators in manatee research and management in the Big Cypress. Winter aerial surveys have been conducted during the past five years; however, they have not been systematic surveys. Aerial surveys have not been very successful in observing manatees in the mangrove area between the Preserve headquarters and Everglades City. However, surveys are conducted in the canals near NPS headquarters and Wooten's Airboat Tours in Ochopee. Everglades National Park and the U.S. Fish and Wildlife Service have also counted manatees in the Addition between headquarters and Everglades City during their surveys. These data confirm that the SR 29 strip of the Addition is used by manatees.

Human activities have significantly affected manatees by eliminating or modifying suitable habitat, altering migratory access routes, increasing mortality, and decreasing abundance, all of which can affect manatee reproduction, recruitment, distribution, and behavior. The greatest current threat to manatees is the high rate of manatee mortalities caused by watercraft or propeller collisions. In addition to direct collisions with boats, secondary effects from boating activity include such stresses as disruption of normal breeding behavior, disruption of cow-calf bonding, interference with migration routes

and patterns, and the loss of feeding areas. The second most significant threat to manatees is the loss and degradation of habitat, due primarily to direct damage by aquatic recreational and commercial boating activity, coastal construction, and pollution from sewage discharge and stormwater runoff (Marine Mammal Commission 1992, Smith 1993). Other human-related threats include manatee death or injury from flood-control structures and navigational locks, entanglement in fishing line, entrapment in culverts, and poaching. These other threats accounted for 162 known mortalities between 1974 and 1993.

The U.S. Fish and Wildlife Service's recovery plan for the manatee established four objectives: (1) identify and minimize causes of manatee disturbance, injury, and mortality, (2) protect essential manatee habitat, (3) determine and monitor the status of manatee populations and essential habitat, and (4) coordinate recovery activities, monitor and evaluate progress, and update and/or revise the recovery plan (USFWS 1996).

Red-cockaded Woodpecker. The red-cockaded woodpecker (*Picoides borealis*) was listed as federally endangered under the Endangered Species Act in 1970. Critical habitat for the red-cockaded woodpecker has not been designated by the U.S. Fish and Wildlife Service. Lands in the Addition contain suitable habitat for the red-cockaded woodpecker.

The red-cockaded woodpecker is one of 22 species of woodpeckers native to North America. Adult red-cockaded woodpeckers are approximately 7 to 8 inches (18 to 20 centimeters) in length and have a wingspan that ranges between 1 foot 1 inch to 1 foot 3 inches (35 to 38 centimeters). The red-cockaded woodpecker is easily distinguished by its large, conspicuous white cheek patches, black cap and neck, and black-and-white barred back and wings (Jackson 1994).

The red-cockaded woodpecker's historic range encompassed the southeastern U.S. from eastern Texas and Oklahoma to New Jersey, and the bird was characterized as abundant in 19th-century literature. Throughout the 20th century, however, the species distribution within its historic range has become fragmented, and its total population numbers have decreased drastically due to the destruction of its habitat. The woodpecker is still widely distributed in the southeastern United States, but the few remaining colonies (a particular group of woodpeckers that use a set of cavity trees) are confined to scattered refuges.

The population in the Preserve is the southernmost and perhaps the largest in south Florida (NPS, 1981). The red-cockaded woodpecker can only survive in mature pine stands, usually 60 years old or more, that are infected with red-heart disease, a fungus that weakens the interior "heartwood" of a pine. This allows the birds to excavate cavities for roosting and nesting. The red-cockaded woodpecker typically nests between April and August in tree cavities located 20 to 50 feet above the ground. In the Preserve, nesting is usually over by mid-June (Schulze 2007).

The pine trees must be widely spaced and preferably have an open understory. Such stands are uneconomical from a forest products perspective, and most mature pinelands in the Southeast have been converted to plantations of young pines for the pulp and lumber industries, thus removing most woodpecker habitat (Lennartz et al. 1983) and causing population decline.

Beyond direct removal of mature pinelands, the woodpecker may also decline if remaining mature pinelands are not properly managed. The open understory is commonly maintained by periodic fire. However, if fires are too frequent, then the pine reproduction necessary to perpetuate the stand may be suppressed; if fires are not frequent enough, the understory may become too dense to maintain

the colony, or the fuel build-up may cause an intense fire that could destroy cavity trees (NPS 1981).

Red-cockaded woodpeckers forage in a wide variety of pine species and especially favor areas that contain large trees, which have a large surface area and loose bark. They feed on adults, larvae, and eggs of arthropods, especially ants and termites that they find by flaking bark from the tree. In prime habitat the forage area for the red-cockaded woodpecker surrounds the colony and consists of pine forests. But in Big Cypress, where pine forests are patchy, the forage area is large and includes prairies, swamps, and other vegetation communities. Recent studies show that forage areas in south Florida average more than 360 acres rather than 200 acres typical for most of the woodpecker's range (Nesbitt et al. 1983).

The red-cockaded woodpecker appears to be fairly tolerant of human activities as long as the colony is maintained. For instance, several active colonies in the original Preserve are near ORV trails, oil pads, and backcountry camps. There appears to be a limit, however, on the amount or types of activities that woodpeckers will tolerate; in other parts of the South, nesting failures have been attributed to noise from loud radio music and house construction, continuous chainsaw operation, and heavy interstate traffic (Jackson 1983).

In the 1990s there were 30–40 active red-cockaded woodpecker colonies in the original Preserve (NPS 1990c, NPS 2000). Currently, there are between 70 and 80 active colonies (Schulze 2007). A sample of the known colony sites is monitored each year during the breeding season by NPS staff to determine the status of the colonies.

There are no known colonies in the Addition, although red-cockaded woodpeckers have historically colonized the Addition. There are a few colonies near the southern boundary of the northeast Addition. The habitat in the Addition, especially in the Northeast Addition, is suitable for woodpeckers. Recent

management activities in this area have improved the quality of woodpecker habitat. These areas could be recolonized by the red-cockaded woodpecker in the future.

Management of the red-cockaded woodpecker in the original Preserve currently consists of prescribed burning, or allowing prescribed natural fire in mature pine stands known to support colonies, and restricting oil and gas activity to avoid disturbing these colonies. NPS staff from the Resource Management and Fire programs meet annually to determine prescribed fire needs. Oil and gas activity is prohibited near a colony to provide an undisturbed forage area around the colony. Management actions for this species within the Preserve include mechanical removal of fuel loads under cavity trees and reduction in midstory vegetation through prescribed fire. Annual work includes determining cluster status, observing nesting activity, making nesting cavities in trees, and banding nestlings.

Habitat fragmentation and/or loss are the primary threats to this species. Other range-wide threats to the red-cockaded woodpecker include cluster abandonment due to encroachment of mid-story vegetation. Genetic isolation may be a problem with the woodpecker throughout its range. Even though genetic problems have not been documented within the Preserve, the widely scattered habitat may preclude adequate genetic mixing. Environmental events such as wildfires, hurricanes, and inundation by water for extended periods have also affected pinelands that host woodpeckers.

There has been no documentation of the loss of trees used by the red-cockaded woodpecker due to compaction or injury along ORV trails. Abandonment of clusters due to disturbance by off-road vehicles also has not been observed.

Wood Stork. The wood stork (*Mycteria americana*) was listed as federally endangered under the Endangered Species Act in 1984.

Critical habitat for the wood stork has not been designated by the U.S. Fish and Wildlife Service. Lands within the Addition contain potential rookery habitat for the wood stork (Maps 14 and 15: Potential Wood Stork Rookery Habitat, Northeast and Western Addition). A large portion of the northeastern portion of the Addition contains the habitat parameters required to support nesting.

The wood stork is a large, long-legged wading bird, with a body length (head to tail) of 2 feet 9 inches to 3 feet 3 inches (85 to 115 centimeters) and a wingspan of 4 feet 11 inches to 5 feet 5 inches (150 to 165 centimeters). Their plumage is white, except for iridescent black primary and secondary feathers and a short black tail. On adult wood storks, the rough scaly skin of the head and neck is unfeathered and blackish in color. Their legs are dark with dull pink toes. The bill color is blackish.

Wood storks are birds of fresh water and brackish wetlands, primarily nesting in cypress or mangrove swamps. In the United States, wood storks historically nested in all coastal states between Texas and South Carolina (Wayne 1910, Bent 1926, Howell 1932, Oberholser 1938, Dusi and Dusi 1968, Cone and Hall 1970, Oberholser and Kincaid 1974). Currently, wood storks breed in Florida, Georgia, and coastal South Carolina. Wood storks usually construct their nests in medium to tall trees that are usually standing in water or in trees that are on dry land if the land is a small island surrounded by water. Their nests are large rigid structures usually found in the forks of large branches or limbs. Storks may add guano to the nest to stabilize the twigs (Rodgers et al. 1988). The nest may be constructed in branches that are only 3 feet 3+ inches (a meter) above the water or in the tops of tall trees.

The nesting season of wood storks varies geographically, but in Florida egg laying begins in October, and fledging of young birds occurs in February or March. The U.S. breeding population of the wood stork

declined from an estimated 20,000 pairs in the 1930s to about 10,000 pairs by 1960. Since 1978, fewer than 5,000 pairs have bred each year. The decline is believed to be due primarily to the loss of suitable feeding habitat, especially in south Florida rookeries, where repeated nesting failures have occurred despite protection of the rookeries. According to the *South Florida Multi-Species Recovery Plan*, under pre-drainage conditions wood storks formed colonies between November and January (December in most years regardless of annual rainfall and water level conditions). In response to deteriorating habitat conditions in south Florida, wood storks in the Everglades and Big Cypress basins have delayed the initiation of nesting to February or March in most years since the 1970s. This shift in timing is believed to be responsible for the increased frequency of nest failures and colony abandonment.

Wood storks feed in freshwater marshes, narrow tidal creeks, or flooded tidal pools, primarily on fish between 7.8 inches and 9.8 inches (2 and 25 centimeters) in length. Particularly attractive feeding sites are depressions in marshes or swamps where fish become concentrated during periods of falling water levels. Feeding areas in south Florida have decreased by about 35% since 1900 because of human alteration of wetlands. Additionally, levees, canals, and floodgates have greatly changed natural water regimes in south Florida.

The wood stork forages annually in Big Cypress when water levels provide concentrations of fish. Documented nesting in the Big Cypress was rare until 1996 when 45 colonies were reported (Jansen and Brooks 1996). The previous two consecutive years of high water and subsequent buildup of the prey base apparently provided ideal conditions in which to raise young. Wood stork nests have been found only sporadically in the Big Cypress since 1996. Observations since that time have not been systematic and have generally been conducted in conjunction with overflights and

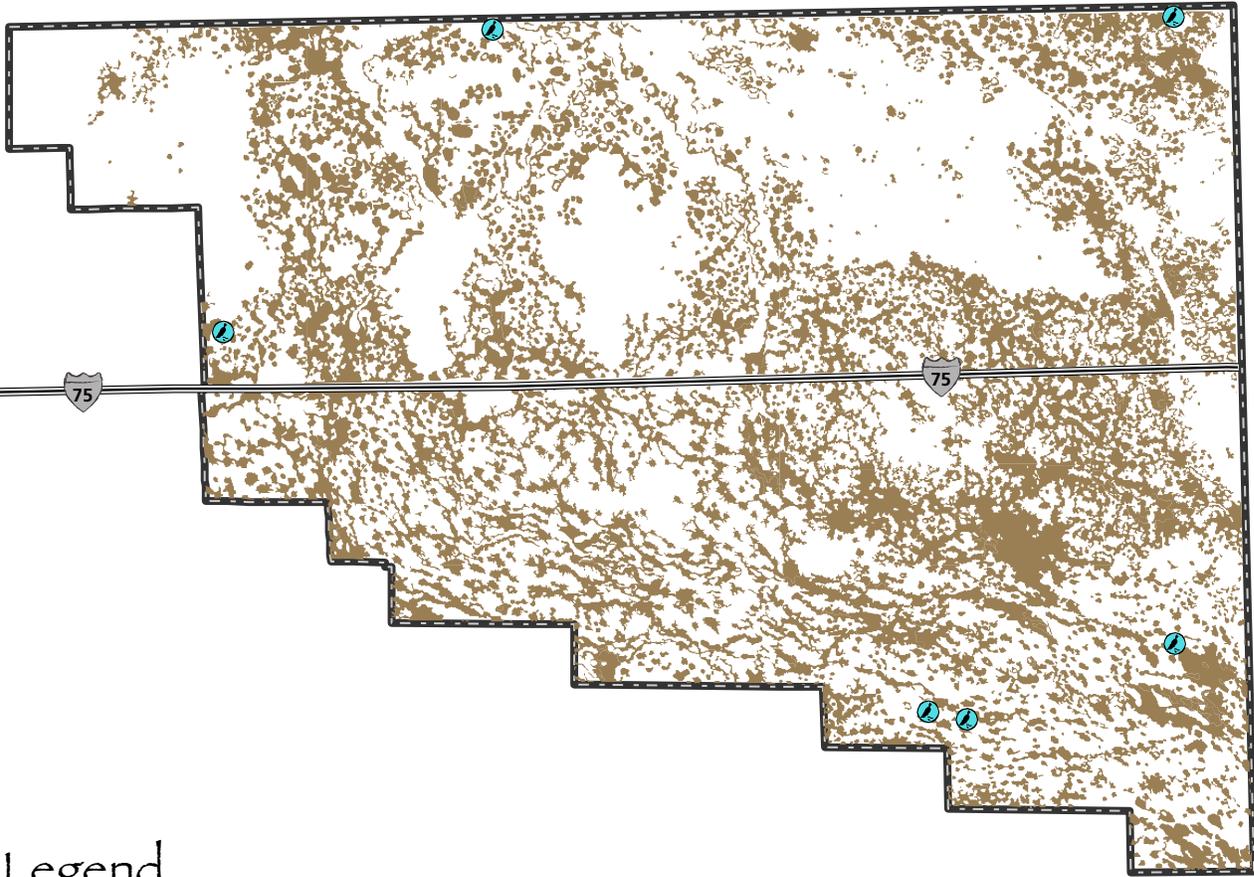
aerial surveys for the Florida panther. Historic wood stork nest sites have been randomly surveyed by NPS staff during the last 10 years, with no documented reoccupation of nest sites occurring in the Addition.

Preservation and/or restoration of natural hydrologic processes is critical to the survival of the wood stork, as it depends on open water to support its nesting, roosting, and foraging sites.

Everglade Snail Kite. The Everglade snail kite (*Rostrhamus sociabilis plumbeus*) was first listed as federally endangered under the Endangered Species Conservation Act (which preceded the Endangered Species Act) in 1967 (32 FR 4001). With a very low population at that time (only 10 snail kites were counted in Florida in 1965), the species was included in the first group of species to be listed under the act. Subsequent to the initial listing, critical habitat for the Everglade snail kite was designated by the U.S. Fish and Wildlife Service in 1977 (42 FR 40685) and augmented and corrected later that year (42 FR 47840). The designated critical habitat areas for the kite are east and north of Big Cypress National Preserve (along the western perimeter of Lake Okeechobee and the South Florida Water Management District's Water Conservation Areas 1, 2A, 2B, and 3A).

Because Water Conservation Area 3A is very close to the Preserve (abutting portions of the Preserve to the east), potential impacts to snail kite critical habitat should be considered. Also, in the *South Florida Multi-Species Recovery Plan*, the U.S. Fish and Wildlife Service recommends a reconsideration of the critical habitat boundaries for the Everglade snail kite as a "species-level recovery action" and identifies Big Cypress National Preserve as a potential area of inclusion in the critical habitat area.

S2.1. Update the critical habitat designation for the Everglade snail kite. Critical habitat has not been modified since



Legend

-  Addition Boundary
-  Cypress Strands and Domes
-  Known Rookeries

N



0 .5 1 2 3 4 5 Miles

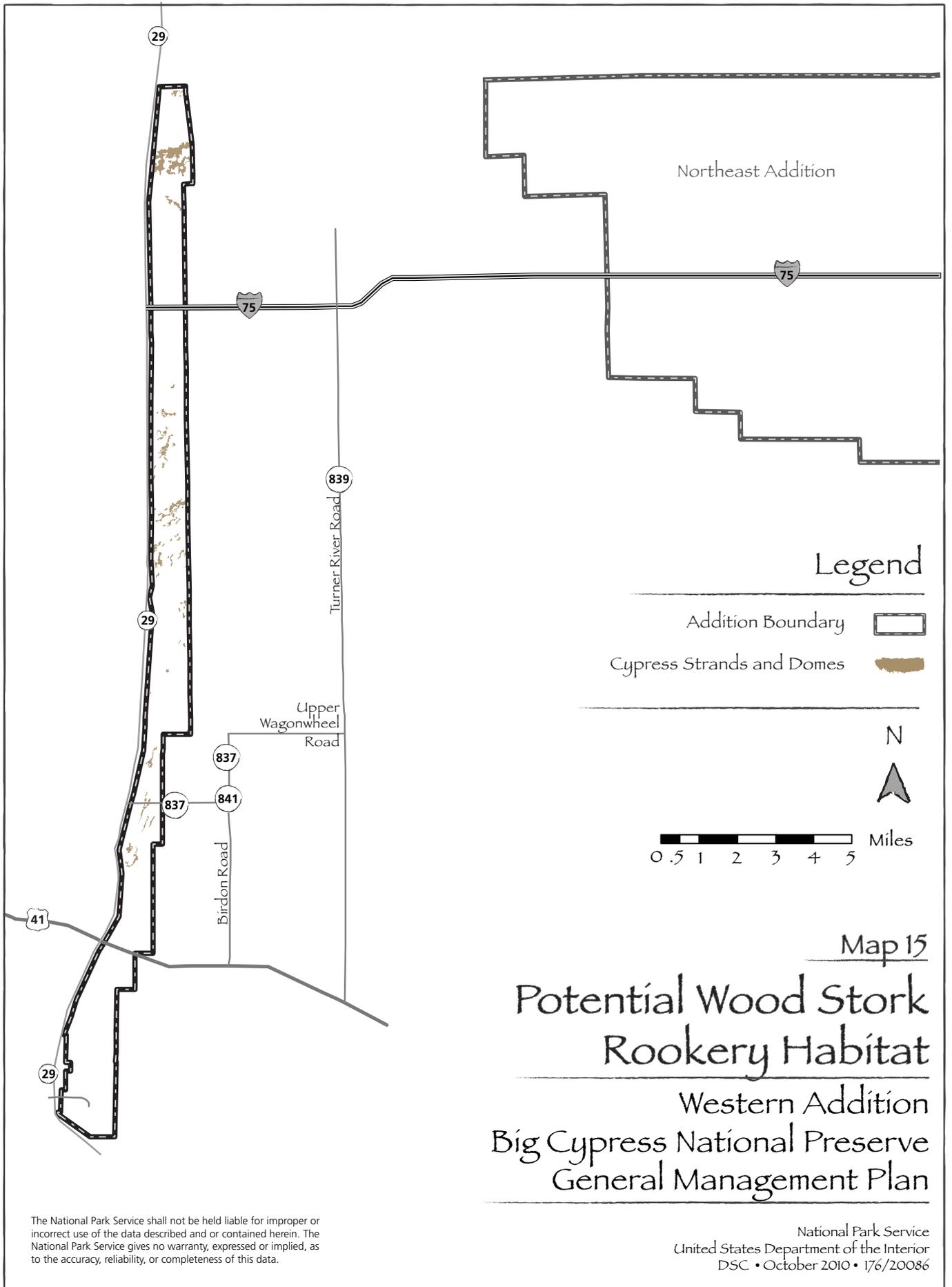
Map 14

Potential Wood Stork Rookery Habitat

Northeast Addition
Big Cypress National Preserve
General Management Plan

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Map 15

Potential Wood Stork Rookery Habitat

Western Addition

Big Cypress National Preserve

General Management Plan

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its original designation in 1977 and is in need of revision. Earlier publications correctly pointed out the importance of Lake Okeechobee and the Everglades as snail kite habitat. However, more recent information suggests that although restoration of Lake Okeechobee and the Everglades must be compatible with snail kite recovery, greater emphasis must be placed on larger wetland systems in the species' range and on smaller peripheral wetlands. Nesting of snail kites in Lake Kissimmee, Lake Tohopekaliga, and East Lake Tohopekaliga since the early 1980s is a significant change that should be considered in revising critical habitat. Although a portion of the St. Johns Marsh south of State Road 60 is included in the current critical habitat, the principal areas being used by snail kites north of that highway need to be included. Other areas outside of the Okeechobee/Everglades basin that should be considered for designation are the Big Cypress National Preserve and marshes surrounding the Corkscrew Swamp.

The Everglade snail kite (or snail kite) is medium in size, with a wingspan of 43 to 46 inches (109-116 cm) and a body length of 14 to 16 inches (36-39.5 cm) (Sykes et al. 1995). It is most easily distinguished from other raptors by its narrow, curved bill, which it uses to extract its primary prey, the apple snail. Also, the tail of both sexes is square-tipped with a white base. Adult snail kites have red eyes, while juveniles have brown eyes (Brown and Amadon 1978, Clark and Wheeler 1987). The adult males are a uniform slate gray in color, whereas adult females are brown with cream-colored streaks from the face down to the breast. Immature snail kites tend to resemble adult females, with the facial/breast streaking being slightly more light brown than cream (Sykes et al. 1995).

The current range of the Everglade snail kite includes parts of south Florida, Cuba, and northwestern Honduras. However, the movement of birds between Florida and Cuba has never been confirmed (Sykes 1979,

Beissinger et al. 1983). Currently, the range and distribution of the Everglade snail kite in Florida is confined to areas with available habitat in the southern half of the state. This Florida range is much smaller than it was years ago when the snail kite was documented in areas of north Florida. Loss of habitat from urban development, agricultural operations, and hydrologic alterations is the primary cause for this reduction in range. Although the snail kite is not a migratory bird species, it is known to be somewhat nomadic within its range in response to habitat changes (i.e., hydrologic changes, food availability, etc.)

The habitat for the Everglade snail kite primarily consists of lowland freshwater marshes and the shallow littoral zones of lakes where an abundance of apple snails (*Pomacea paludosa*) can be found. The snail kite's diet predominantly consists of apple snails. The kite generally forages for the snail by flying low over the water surface or by perching on woody vegetation over open water. Thus the kite depends on sustaining healthy populations of apple snails. Sustained wetland flooding conditions and low-density emergent aquatic vegetation are important for snail reproduction.

However, even if apple snails are thriving in an area, the habitat value for the kite may be dramatically reduced if turbid or eutrophic water conditions exist, or if the kite's view of the water is obstructed by dense vegetation. In other words, the snail kite relies heavily on a clear view of the water subsurface. Thus, marshes or lakes with high nutrient levels can also yield diminished habitat value for the snail kites because nutrient-rich water often generates invasive, exotic plant growth. This impact from eutrophication can be two-fold. First, algal blooms that result from high nutrient levels can diminish water clarity, which in turn limits the kite's ability to locate subsurface apple snails. And, dense, nonnative growths such as cattail stands can quickly displace large areas of open water, which can fully eliminate foraging areas for the kite.

Also, the presence of interspersed shrubs or small trees in the emergent vegetation in the marsh or lake littoral zone is another important habitat feature for the snail kite. The kite uses this woody vegetation for foraging activities, roosting, and nesting. Kite roosting and nesting sites are predominantly located over open water. And, nests in shrubs or small trees are less susceptible to water fluctuations, waves, human disturbances, and predators than nests in emergent herbaceous vegetation. Thus, the nest sites in interspersed shrubs and small trees tend to be more successful than those in herbaceous vegetation.

As noted above, the very low Everglade snail kite population in the 1960s (less than 20) warranted its original listing as an endangered species. Subsequently, the snail kite population has grown to several hundred. However, the population counts vary considerably from year to year. For example, during a 10-year monitoring period from 1985 to 1994, the Everglade snail kite count went from 563 in 1986, to 325 in 1987, and back to 498 in 1988. This count period ended with a 1994 population estimate of 996 kites in Florida. The year-to-year fluctuations in counts is attributed to bird mortality, decreased nesting success, dispersal into new areas, or a combination of these factors. However, the potential for more accurate population estimates increases each year as the number of marked birds and their resightings increase.

According to the *South Florida Multi-Species Recovery Plan*, the U.S. Fish and Wildlife Service has an objective to restore the Everglade snail kite to a stable, self-sustaining population that would allow a status reclassification to threatened (USFWS 1999). This status change would occur if the 10-year average total population size is sustained above 650 kites (assuming various sustainability and year-to-year variation criteria are met). The U.S. Fish and Wildlife Service considers the Everglade snail kite a resilient species in a highly changeable environment.

However, given the limited distribution of the species, its specialized ecological niche, and the irreversible loss of its habitat in south Florida, the U.S. Fish and Wildlife Service believes that the snail kite does not have the potential to be elevated above the threatened status.

American Crocodile. The American crocodile (*Crocodylus acutus*) is one of two crocodilian species that are native to the United States. It was first listed as a federal endangered species under the Endangered Species Act in 1975 (40 CFR 44151). At that time, an estimated 100 to 400 nonhatchling crocodiles existed in Florida (Ogden 1978). Given its low numbers at the time, as well as rapidly growing disturbances to its habitat from human activities (e.g., recreation, hydrology alterations, and urban encroachment), critical habitat for the American crocodile was designated in 1979 (44 CFR 75076). The designated critical habitat for the crocodile includes most of Florida Bay and its perimeter lands, running from the Florida keys north and west to the southern portions of the Everglades.

Given the stabilization of crocodile numbers in Florida by the early 21st century, the U.S. Fish and Wildlife Service reclassified the American crocodile to threatened in the state of Florida in 2007. According to the U.S. Fish and Wildlife Service, the Florida crocodile population is between 1,400 and 2,000 individuals (not including hatchlings), with more than 90 documented nest sites in 2005 (USFWS 2007). However, the crocodile population in Florida continues to be susceptible to habitat loss from development and recreation, road mortality, and extreme weather such as hurricanes. And, through the remainder of its range, the crocodile remains listed as an endangered species. In addition to its south Florida range, the American crocodile inhabits the coastal wetlands and rivers of Cuba, Jamaica, the Caribbean coast from Venezuela to the Yucatan peninsula, and the

Pacific coast from central Mexico to northern Peru (Moler 1992).

The American crocodile is the larger of the two crocodylian species in Florida. Generally, in Florida, both the American crocodile and the American alligator coexist without conflict. The tolerance for the other species is maintained as long as food and essential and unique habitat attributes are available to both species. Most likely, the coexistence and tolerance of these two species result from species-specific habitat utilization (spatially or temporally), which depends on variations in the species' preferences for water salinity levels (USFWS 1999). In addition to its size, it can typically be distinguished from the adult alligator by its longer, narrower, tapered snout and its exposed fourth tooth of the lower jaw (when mouth is closed). Adult crocodiles in Florida are often more than 12 feet (3.8 meters) long (Moler 1992).

The habitat for the American crocodile is mainly associated with mangrove swamps and mangrove-lined creeks, rivers, and bays. However, the habitat use varies seasonally. During breeding and nesting season, adult crocodiles tend to occupy exposed shoreline areas along Florida Bay and nearby inland creek banks. Males generally move more inland than females during this time. In south Florida, breeding typically occurs from late February through March, when ambient air and water temperatures are high enough to trigger reproductive hormonal activity in the crocodiles. In nonnesting seasons, crocodiles generally prefer the lower saline waters of inland swamps, ponds, and creeks (Kushlan and Mazzotti 1989). Given this dependence on inland waterbodies with low salinity and brackish estuaries, the timing and frequency of inland freshwater flow deliveries to south Florida and Florida Bay are very important attributes of American crocodile habitat (USFWS 1999).

Female crocodiles usually locate their nests along the exposed shoreline of open water

bodies (e.g., Florida Bay), or along the banks of inland creeks in extreme south Florida. They typically select nest sites in well-drained, sandy soils at about the normal high water level. However, nests in other substrates, such as peat, marl, and rocky spoil piles, are not uncommon. The nesting success often depends on sustained soil moisture, but success can also be affected by flooding and egg predation. Because females must return to the nests to excavate the soil for the hatchlings, human presence during nest building, egg laying, and incubation tending can also adversely affect nest success. Research indicates that some females may abandon their nest if they are exposed to repeated human disturbances (Kushlan and Mazzotti 1989).

Once the hatchlings leave the nest site, they typically disperse to seek shelter, stable food sources, and brackish to freshwater in nursing areas that are generally more inland than their nest sites. The hatchlings are very susceptible to predation during this dispersal period (Kushlan and Mazzotti 1989). Also, a lack of available freshwater can adversely affect hatchling survival. Periods of low rainfall or long distances to available freshwater can be detrimental to crocodile hatchlings. Once the hatchlings reach the brackish or freshwater nursing areas in estuarine and inland mangrove forests, they typically feed on fish, crabs, snakes, and small invertebrates (USFWS 1999).

Generally, the American crocodile is primarily a nocturnal species, doing most of its active foraging between sunset and sunrise (Lang 1975, Mazzotti 1983). The diet of adult crocodiles generally consists of small mammals, fish, snakes, turtles, and crabs (Ogden 1978, Ross and Magnusson 1989).

Eastern Indigo Snake. The eastern indigo snake (*Drymarchon corais couperi*) was first listed as a federally threatened species under the Endangered Species Act in 1978. The listing was prompted by the snake's significant

population decline, which was caused by overcollecting for the domestic and international pet trade, as well as mortalities resulting from rattlesnake collectors gassing gopher tortoise burrows. With enforcement of the Endangered Species Act as well as the Lacey Act, exploitation for the pet trade has declined but still remains a concern (Moler 1992). And, although the gassing of tortoise burrows is still a threat to the eastern indigo snake, it is not the most serious threat to the snake. Instead, the displacement and fragmentation of habitat from urban development have become the biggest threats to the snake since the listing. However, no critical habitat areas have been designated for the snake to date.

The eastern indigo snake is a long, black, nonvenomous snake found in Florida and Georgia. With a length of up to 104 inches (265 cm), it is considered one of the longest snakes in the United States (Ashton and Ashton, 1981). The eastern indigo has large and smooth scales with a uniform shiny black coloration, except for red or cream tints on the throat, chin, or cheeks.

The eastern indigo snake is an active terrestrial predator that will eat any vertebrate small enough to be overpowered. Layne and Steiner (1996) documented several instances of indigos flushing prey from cover and then chasing it. An adult eastern indigo snake's diet may include frogs, toads, snakes (venomous as well as nonvenomous), lizards, turtles, turtle eggs, fish, juvenile gopher tortoises, small alligators, birds, and small mammals (Keegan 1944, Babis 1949, Kochman 1978, Steiner et al. 1983). Juvenile eastern indigo snakes eat mostly invertebrates (Layne and Steiner 1996).

Currently, the eastern indigo is primarily found in sandhill habitat in northern Florida and southern Georgia. However, the snake is also widely distributed throughout central and south Florida. With their general preference for upland habitats, large numbers of eastern indigos are not common in the wetland

complexes of the Everglades region (Duellman and Schwartz 1958, Steiner et al. 1983). Historically, the eastern indigo snake was found throughout Florida and in the coastal plain of Georgia, Alabama, and Mississippi (L'ding 1922, Haltom 1931, Carr 1940, Cook 1954, Diemer and Speake 1983, Moler 1985a).

Throughout most of its range, the eastern indigo uses a variety of habitat types, particularly because it needs a mosaic of habitats to complete its annual cycle. The habitats include pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, edges of freshwater marshes, agricultural fields, coastal dunes, and even human-altered habitats. They are especially common in the hydric hammocks throughout this region (Moler 1985a). In central and coastal Florida, eastern indigos are mainly found within many of the state's high, sandy ridges. In extreme south Florida, these snakes are typically found in pine flatwoods, pine rocklands, tropical hardwood hammocks, and mangrove forests (Kuntz 1977). In portions of south Florida, eastern indigos may also occupy agricultural sites and areas along canals and other artificial waterways.

Wherever the eastern indigo snake occurs in xeric habitats, it is closely associated with the gopher tortoise (*Gopherus polyphemus*), the burrows of which provide shelter from winter cold (Bogert and Cowles 1947, Speake et al. 1978, Layne and Steiner 1996). In the milder climates of central and southern Florida, eastern indigo snakes exist in a more stable thermal environment, where availability of thermal refuge may not be as critical to the snake's survival. However, even though thermal stress may not be a limiting factor throughout the year in south Florida, eastern indigo snakes still seek and use underground refuges in the region. On the sandy central ridge of south Florida, eastern indigos use gopher tortoise burrows more (62%) than other underground refuges (Layne and Steiner 1996). Other underground refuges

used by this species include burrows of armadillos, cotton rats (*Sigmodon hispidus*), and land crabs; burrows of unknown origin; natural ground holes; hollows at the base of trees or shrubs; ground litter; trash piles; and in the crevices of rock-lined ditch walls (Layne and Steiner 1996, Hyslop 2007).

Eastern indigo snakes range over large areas and into various habitats throughout the year, with most activity occurring in the summer and fall (Smith 1987, Moler 1985b, Speake 1993). In peninsular Florida, data on home ranges for females vary from 4.75 to 375 acres; while male home ranges vary from 4 to 818 acres (Moler 1985b, Layne and Steiner 1996, Bolt 2006, Dodd and Barichivich 2007). Summer home ranges tend to be much larger than winter home ranges. The eastern indigo's relatively large home range also makes it vulnerable to habitat loss, degradation, and fragmentation (Lawler 1977, Moler 1985b). Extensive tracts of wild land are the most important refuge for large numbers of eastern indigo snakes (Diemer and Speake 1981, Moler 1985b). Additional human population growth will increase the risk of direct mortality of the eastern indigo snake from property owners, domestic animals, and highway mortality. Pesticides that are introduced into the food chain may also be a hazard to the snake. Pesticides used on crops or for silviculture would pose a threat to the indigo (Speake 1993). Secondary exposure to rodenticides used to control rats may also occur (Speake 1993).

Declines in gopher tortoise populations are negatively affecting eastern indigo snake populations, especially in the northern areas of the snake's range. Gopher tortoises are declining due to loss of both quantity and quality of their habitat. Loss of tortoise habitat quantity is occurring from human population growth and development and conversion of native habitat to agriculture. The use of off-road vehicles in sandhill habitats of the tortoise can also destroy groundcover and soil stability (Lawler 1977).

In the southern parts of their range, eastern indigo snakes often move among the available habitat types. This is one of the reasons why the species is especially vulnerable to habitat fragmentation (Breininger et al. 2004, Hyslop et al. 2006). Large areas of natural habitats, protected from roads and the fragmentation associated with development, are needed to maintain viable snake populations (Layne and Steiner 1996, Breininger et al 2004).

During the past decade, the loss of natural areas in Florida has continued to rise dramatically (The Nature Conservancy 2006). The effects of habitat destruction and alteration on the eastern indigo snake are likely most substantial along the Florida coasts, in the keys, and along the high ridges of south-central Florida. Agricultural interests (principally citrus) continue to destroy large expanses of suitable natural indigo snake habitat throughout much of southern Florida. More roads create habitat fragmentation and increases in mortality when snakes try to cross highways (Andrews and Gibbons 2005, Bolt 2006). At some point, the size of fragmented habitat patches will become too small to support viable populations. It has been suggested that eastern indigo snake populations that occur on managed preservation lands of at least 2,500 acres, with few roads or human-altered habitats that increase habitat fragmentation and mortality, may have the best chance of long-term viability (Moler 1992, Breininger et al. 2004).

The U.S. Fish and Wildlife Service estimates that the eastern indigo population as a whole is declining in south Florida because of habitat destruction and degradation. Considering the small population of this species, additional threats to its survival or habitat could cause local extirpations. Current and future habitat fragmentation will probably result in a large number of isolated, small groups of indigo snakes. However, even with continued habitat loss, this species will probably persist in most localities where large, unfragmented pieces of natural habitat remain. According to the *South*

Florida Multi-Species Recovery Plan, the U.S. Fish and Wildlife Service has an objective to stabilize and increase the overall eastern indigo population and ensure that multiple healthy populations exist and are protected. If it is determined that sufficient, suitable habitat exists in south Florida for the eastern indigo snake population to stabilize or increase, delisting criteria would be considered.

Major Game Species

Of the 13 game species in Big Cypress, white-tailed deer, wild turkey, and European feral hogs require special management consideration because of their importance to both recreational hunters and the endangered Florida panther. Hunting is currently prohibited in the Addition; however, it is anticipated that hunting will be permitted once the *General Management Plan* is completed and approved. The Addition is expected to become part of the adjacent Big Cypress State Wildlife Management Area. As in the original Preserve, hunting will be regulated according to the requirements, seasons, and bag limits established by the Florida Fish and Wildlife Conservation Commission. NPS staff would manage the hunts in the Addition, with assistance from the commission, and both NPS and commission staff will have the ability to enforce state hunting regulations. The current status of these three game species and their habitat is described below.

White-tailed Deer. The white-tailed deer (*Odocoileus virginianus*) is the most important game species in the Preserve and the Addition. In addition to being a popular large game animal, white-tailed deer are a prey species for the endangered Florida panther. The deer's food preference is the swamp lily (*Crinum americanum*), a monocot that grows in cypress and hardwood swamps (Labisky 2003). The decline of the swamp lily, as swamps are overrun with exotic plants such as melaleuca, would likely affect deer populations, and, consequently, the panther population.

Generally, deer browse in south Florida is poor because of low fertility and low palatability (Florida Game and Fresh Water Fish Commission [FGFWFC], 1959). In the later stages of plant succession woody plants and graminoids, which tend to be high in lignin and low in nutrition, occupy a site. Consequently, deer browse declines as the vegetation matures. The best deer browse occurs after disturbances that encourage new growth, because young shoots are relatively high in nutritional value and much more palatable. Recent fires in the Addition will likely improve deer browse and habitat in the near-term.

Although areas within the Preserve and the Addition host resident Florida panthers, the effect of panther predation on deer herds is unknown. McBride (1985) suggests a comparison with western cougar predation on mule deer.

Ackerman (1982) found that a cougar in Utah killed a mule deer about every 9.5 days, which equates to 39 mule deer per year per cougar. Although it is difficult to directly compare kill rates by cougars in Utah with Florida panthers, the scale of predation (e.g., tens of deer per year per panther) may be appropriate where deer are abundant. If this level of predation on deer is a valid assumption, then Florida panthers and hunters may be competing for the same deer. Studies of Florida panther stomach and fecal contents show wild hogs, rabbits, armadillos, and other small game are also preyed upon, but it is not clear if these prey are preferred or if panthers are forced to prey on smaller game because deer are lacking. If deer are the preferred prey, then predation probably exerts a significant influence on the deer population.

The Florida Fish and Wildlife Conservation Commission began collecting data on the deer herd in the original Preserve in 1984 to estimate the population size and assess the health and condition of the deer. Since the 1991 *General Management Plan* was

completed, the deer population in many areas of the original Preserve has increased. Factors influencing this increase include area closures, favorable environmental conditions, and changes in hunting regulations. Data collected from aerial surveys and counts have limitations and do not allow for accurate estimates of herd size.

Legal hunting does not seem to be a threat to deer populations in the Preserve, but the cumulative effect of legal and illegal hunting and of panther predation is unclear. The U.S. Fish and Wildlife Service expressed concern in the early 1990s that even legal hunting may be adversely affecting the panther through disturbance.

Annual surveys of white-tailed deer in the Addition have been conducted by the Florida Fish and Wildlife Conservation Commission since 2005 to gather baseline data that can be used to make hunting management decisions for the Addition once it is opened to public hunting. The surveys measure the abundance and distribution of white-tailed deer in the Addition. Two types of surveys were conducted in 2006: aerial surveys for recruitment data and land cruise surveys (night and morning) for population estimation. In general, deer observations were highest north of I-75. The survey results were highly variable, but in general habitat for white-tailed deer is considered to be of higher quality north of I-75 (Mihalco 2007). In 2008 the deer herd in the Northeast Addition north and south of I-75 was estimated to be 133 and 54, respectively (Joe Bozzo, Wildlife Biologist, Florida Fish and Wildlife Conservation Commission, pers. comm., December 2008). Typically, up to 33% of the game population can be harvested annually and remain sustainable.

Wild Turkey. Wild turkeys are an important prey resource for the Florida panther and are one of the principal game animals for hunting in the area. Wild turkeys are common in the region. Turkey density tends to fluctuate

widely from year to year due to environmental conditions (Powell 1965, Frye 1954). Turkey poult mortality is very high if heavy rains occur during April or May when young birds are susceptible to disease and drowning, but populations usually bounce back if conditions are favorable during the next breeding season (Powell 1965).

Turkey surveys in the Addition were initiated in 2006 by the Florida Fish and Wildlife Conservation Commission to gather baseline data that can be used to make hunting management decisions for the Addition. Eight sites (all of them north of I-75) were surveyed using digital remote cameras. Habitat north of I-75 is considered to be better than that in the south, supporting a greater number of turkeys. Approximately 230,000 acres were sampled with the placement of the eight cameras. A total of 518 turkeys were documented at four of the eight sites. Statistically, this yields a minimum population estimate of 14 birds (two adult gobblers, three juvenile gobblers, and nine hens) (FFWCC 2006).

Feral Hogs. Feral hogs (*Sus scrofa*) are second to deer in importance as game animals. European feral hogs were first introduced to Florida by Spanish explorers in the 16th century. In more recent years feral hogs have been managed by the state as a game animal and have been stocked in many areas of south Florida, including Big Cypress as late as 1975, to improve hunting. Illegal stocking of feral hogs in Big Cypress may also occur.

Mast-producing hardwood hammocks are probably the preferred habitat for hogs, followed by pinelands (because of their short hydroperiod), and during the dry season mixed-hardwood swamps (Schortemeyer et al. 1985). Belden et al. (1985) found that hogs tend to move into wetter vegetation types as the dry season progresses. As with deer, cypress prairies and prairies are probably the least productive vegetation for hogs (J. L. Schortemeyer, Florida Game and Fresh Water Fish Commission, pers. comm. 1986).

Wild hogs are known for their ability to rapidly reproduce. The U.S. Fish and Wildlife Service reports that in the Merritt Island National Wildlife Refuge near Cape Canaveral, hogs may produce 1.5 litters per year, with an average of 2.3 piglets at weaning (Ron Hight, U.S. Fish and Wildlife Service, pers. comm. 1986). These numbers could be higher for subtropical south Florida; however, the summer wet season may be a limiting factor for hog populations. Schortemeyer has observed hogs freely moving through 1 foot of water or less, but when water is deeper than 16 inches, their movement appears to be greatly restricted, confining the animals to higher ground and limiting available space and food (Schortemeyer et al. 1985). Conversely, a prolonged winter drought appears to reduce hog reproduction and increase hog movements and may cause direct mortality through dehydration (J. L. Schortemeyer, Florida Game and Fresh Water Fish Commission, pers. comm. 1986). Given these limits, the hog population in the Big Cypress may be constrained from large or rapid increases by environmental conditions. Data in the 1991 *General Management Plan* indicated that feral hog populations are very susceptible to hunting pressure.

In addition to being a popular game animal, feral hogs are a prey species for Florida panthers. An analysis of panther feces collected in the preserve showed that 15% of the samples contained hog remains (FGFWFC, Johnson and Belden 1984). The report cautioned, however, that the sample may have contained both panther and bobcat scats, which would probably lower the importance of hog remains in the analysis.

Some concerns have been raised about the impact of hogs as an exotic species on natural and cultural resources in the preserve. Hogs are known to uproot extensive areas in hardwood hammocks, and this activity could pose a threat to native plants, *Liguus* tree snail eggs, and archeological resources. Rooting could encourage exotic plants by providing

disturbed areas necessary for establishment. However, it has also been suggested that rooting exposes grubs and other foods for turkey, quail, and additional native wildlife and encourages browse plants for deer. Rooting also occurs during the dry season in marshes.

Other hog-related problems include diseases carried by hogs, possible competition between hogs and native wildlife, possible adverse effects on wild turkey nesting, and competition with deer for the annual mast crop (under-water shoots on trees) (Beckwith 1965); however, negative impacts from competition have not been quantified or confirmed. Hogs are known to be carriers of brucellosis, a disease that infects humans and could infect the Florida panther.

The current population of feral hogs in the area has declined in recent years and is currently very low. Data from the 2006 hunt conducted in the original Preserve indicated only four animals were taken by hunters, one during muzzle loading season and three during archery season. The reason(s) why hog numbers are so low is not well understood; however, it is suspected that increased hunting pressure by panthers may be a factor.

Exotic and Nonnative Wildlife Species

Exotic species impact natural systems through unchecked predation or consuming and killing of native plant species. In many cases, exotic wildlife have no natural predators and can displace native species and multiply rapidly. More than 100 exotic animal species have been introduced into south Florida (Duever et al. 1986a). Sixty of these are believed to be breeding populations. At least 22 exotic species have been collected in the Preserve, 18 of which are known to be breeding populations. European feral hogs have probably the greatest impact of any exotics on native species. Other exotic mammals have limited distribution in the Addition, and apparently none has a

significant influence on native species. Other important exotics include the armadillo, several fish (walking catfish, black acara, spotted tilapia, and oscar), several insects (fire ants and lovebugs), and snakes.

For an example of exotic species impacting native species, the Mexican bromeliad weevil (*Metamasius callizona*) is known to attack various species of native plants in south Florida. Adult weevils consume plant leaves, and larval weevils bore into plant stems, which often combines to kill the plant.

The increasing number of exotic snakes found in south Florida has also been causing concern to biologists. Five Burmese pythons were discovered in Big Cypress in 2006, up from three in 2005 (*Naples Daily News* 2007). The Burmese python is native to India and southeast Asia and has flourished in the subtropical climate of south Florida.

In nearby Everglades National Park, more than 624 southeast Asian snakes have been found since 2000. In 2006 and 2007, more than 418 snakes were captured and/or removed from the Everglades. Populations of exotic snakes are known to be increasing in south Florida in recent years.

Completed and Ongoing Studies and Inventories Related to Natural Resources

The following studies/plans, some of which were done for the original Preserve, may be relevant to the Addition.

- trail stabilization — The National Park Service has gained knowledge about trail stabilization techniques through experience and experimentation that

would negate the need to conduct a research project/study (as recommended in the 2000 ORV plan) to answer questions about how to best stabilize trails. Field tests conducted on Concho Billie, Oasis, and Monument Trails have demonstrated successful treatments.

- topographic mapping — Some mapping of the original Preserve has been completed via *Comprehensive Everglades Restoration Plan* efforts.
- an inventory of reptiles and amphibians — This inventory has been completed.
- a small mammal inventory — This inventory is in progress and is in its second year.
- a fish inventory — This inventory has been completed.
- a vascular plant inventory — This inventory has been completed.
- water resources monitoring — Although an original research project has not been conducted regarding surface flow, water quality impacts, or wildlife effects, the Preserve has established permanent water quality and water stage monitoring stations in the Addition that could alert Preserve staff to changing conditions resulting from ORV use and other land uses as well.
- wildlife monitoring — Monitoring of wood storks and Florida panthers has been conducted annually since the mid 1990s.
- a game species inventory — The Florida Fish and Wildlife Conservation Commission is also conducting a game species inventory of the Addition that focuses on deer and turkeys.

WILDERNESS RESOURCES AND VALUES

Wilderness resources and values are the attributes of an area that are physically present — they make up the wilderness character of an area.

WILDERNESS RESOURCES IN THE REGION

There are three designated wilderness areas in the south Florida region:

- the Marjory Stoneman Douglas Wilderness (1,296,500 acres in Everglades National Park— the largest wilderness area in the state) managed by the National Park Service in Collier, Miami-Dade, and Monroe Counties
- the J.N. “Ding” Darling Wilderness (2,619 acres) managed by the U.S. Fish and Wildlife Service on Sanibel Island — Lee County
- the Florida Keys Wilderness (6,197 acres) managed by the U.S. Fish and Wildlife Service in the Florida Keys in Monroe County.

There is no designated wilderness in Big Cypress National Preserve.

WILDERNESS RESOURCES IN THE ADDITION

There is currently no designated wilderness in the Addition; however, there are expansive areas that contain wilderness characteristics. Summarizing the Wilderness Act of 1964, wilderness resources and values are generally present if an area is untrammeled, undeveloped, natural, and has outstanding opportunities for solitude or primitive and unconfined types of recreation. General descriptions of the Addition’s wilderness

resources and values are presented below according to these categories, followed by a more detailed description of the wilderness characteristics present in specific areas of the Addition.

Untrammeled

An area is considered “untrammeled” if its natural processes are essentially unhindered and free from modern human manipulation or control. Portions of the Addition have never been significantly altered by human activities, and their natural processes continue to function in an essentially unhindered manner. This is especially true of the Mullet Slough and Kissimmee Billy Strand areas. Although portions of the Addition have been altered in the past by farming, grazing, road building, and other activities, some of these areas have since reverted to natural vegetative and wildlife communities and are now largely free of human manipulation or control. This is especially true in the Northeast Addition south of I-75. Areas north of I-75, as well as in the Western Addition, continue to be influenced by human activities and their natural communities depend on regular intervention.

Undeveloped

Although much of the natural landscape of the Addition has been modified over time by human activity, there are expansive areas that retain their primeval character and where the “imprint of man’s work is substantially unnoticeable.”

Natural

Natural systems in the Addition are affected by unnatural processes such as the alteration

of water systems and other human-induced impacts. Much of the Addition is impacted by the presence of exotic, nonnative plants, although the effect on a visitor's experience and perception of naturalness varies. Despite these effects, and particularly when compared to surrounding areas, the Addition contains a high degree of naturalness. However, regular intervention is necessary to maintain natural values and conditions.

Opportunities for Solitude

The remote character of the Addition provides outstanding opportunities for solitude. No visitor facilities and services are present in the Addition, so visitation is relatively low and limited to self-guided activities such as hiking, biking, and bird-watching. The Addition is currently open mainly to foot and bike travel — it has never been legally open to public hunting and motorized use. Opportunities for solitude are compromised in popular areas, such as at access points, along maintained grades, and near private camps. Solitude may be compromised in areas that are near locations that have seasonal or year-round residences.

Opportunities for Primitive and Unconfined Types of Recreation

The Addition's remote setting provides a backcountry environment that allows for the pursuit of many self-reliant recreational opportunities. Visitors can experience a sense of freedom and rugged individualism through a variety of recreational activities. The Addition provides outstanding opportunities for hiking on- and off-trail, scenic viewing, wildlife watching, fishing, camping, and exploration. Canoeing and kayaking is also possible in certain areas of the Addition.

Other Wilderness Values

The Addition is also important for scenic, educational, and ecological resources and values. These values allow visitors to learn about and experience the contrasting scenery of the Addition's various plant communities, archeological resources, and water-dependant natural systems. All of these resources and values contribute to and enhance the wilderness character of the area.

AREA-SPECIFIC DESCRIPTIONS

Northeast Addition, North of I-75

This area is more fragmented than the area south of I-75, but it still contains a number of natural areas, best represented by Kissimmee Billy Strand. Kissimmee Billy Strand is mostly pristine, although it is bounded on the north by old roads and grades. However, aside from these man-made improvements, the strand is generally wild and free of trails. Natural processes predominate in the south and western portions of the northeast Addition, whereas the northern and eastern portions contain numerous camps, trails, and other permanent improvements. The L-28 Interceptor Canal and the oil/gas pipeline right-of-way are areas that have been substantially manipulated.

Areas east of Nobles Grade contain some evidence of past human disturbance; however, most of the area has healed considerably since 1996 (when acquired by the National Park Service) and is now considered wild and untrammled. Some remnant trails are present, but many have recovered significantly and today are substantially unnoticeable. A few smaller areas contain distinguishable remnants of human works, but they will likely be restored by natural processes over time and will become contributing elements to the wilderness character of this area.

The most frequently visited areas, where encounters with other visitors can be expected, are the mile marker 63 rest area on I-75, which provides access to the Florida National Scenic Trail, and the L-28 Interceptor Canal. Private camps and residences also exist in the Northeast Addition, and thus opportunities for solitude are diminished in these areas due to frequent access by private landowners.

Northeast Addition, South of I-75

Most of the northeast Addition south of I-75 is natural and largely free from the influences of man. This area is best represented by Mullet Slough, the largest pristine area within the Addition. Here, water quality is high, trails and roads are mostly nonexistent, and the slough's remoteness has allowed native communities to persist. Natural processes are mostly uninhibited south of I-75, with the exception of the camps and development that exist in the east near the L-28 Interceptor Canal. In the southwestern portion there are signs of disturbance from previous oil and gas operations, but these are limited mostly to

remnant roads and trails that have recovered significantly during the last 10 years. Today, they are mostly unnoticeable, and the area appears natural.

Western Addition

Most of the lands north of I-75 and south of U.S. 41 in the Western Addition are natural and largely free from the influences of man. The rest of the Western Addition includes those areas that surround improved private properties, roads, and former agricultural sites. Lands east of the Western Addition are owned by the National Park Service, and most are managed in a wilderness-compatible fashion, which contributes to the naturalness and ecological integrity of lands in the Western Addition

Opportunities for solitude in the Western Addition are reduced due to the presence of developed areas along the highway corridors, such as near Miles City, Copeland, Carnestown, and Everglades City, and near popular areas like Bear Island Grade.

CULTURAL RESOURCES

OVERVIEW

Big Cypress National Preserve and the Addition are in the Glades region (an area defined by hardwood and pinewood hammocks, sawgrass, and dwarf cypress interspersed with shallow freshwater marshes and prairies) of south Florida. The limited vegetation of this region is a result of thin soils underlain by limestone bedrock. This region also includes the Everglades and portions of the Atlantic coast, the Ten Thousand Islands, and the Florida Keys. Human habitation of the Glades region can be traced back to the late Pleistocene or Lithic era. Paleo-Indian populations migrating throughout North America probably arrived in south Florida sometime before 13,000 years ago. Florida's environment was substantially different during this period. Its land area was approximately twice the state's current size, and the climate was significantly cooler and drier. The story of human activity in Florida during this period is not well understood, due in part to the fact that much of the area occupied by humans was inundated by rising sea levels that occurred with the retreat of the continental ice sheets that began around 12,000 to 13,000 years ago. This change in global glaciations signaled the end of the Pleistocene era.

The prehistoric periods of human culture represented by sites in south Florida include (1) the Paleo-Indian, (2) the Archaic period, which spanned roughly 8,000 BC to 500 BC, and (3) the Glades Tradition, which extends into the historic period, spanning 500 BC to 1760 AD. The historic periods of human culture begin with the initial Spanish contact in 1513 and continue through the 20th century and the creation of Big Cypress National Preserve.

There are fewer than 100 Paleo-Indian archeological sites in Florida, and none

located within the boundary of Big Cypress National Preserve or in the Addition. In all likelihood, most sites associated with the Paleo-Indians of this era are submerged beneath the state's coastal waters. However, at least one area within the Addition, Deep Lake, has the potential for association with this prehistoric period.

The Archaic period that followed the Pleistocene is divided into three distinct divisions; early, middle, and late. The Archaic cultures of south Florida are distinguished by progressively more diversified hunting, fishing, and gathering; the creation of more permanent settlements, increasingly sophisticated tools, trade networks, and in the late Archaic the appearance of pottery. A few Archaic period sites have been identified within Big Cypress National Preserve. None have yet been discovered in the Addition, but additional survey work remains to be done.

The Glades period or Glades tradition succeeded the Archaic period and incorporates both the end of the prehistoric period in south Florida and the first historic documentation of indigenous culture in south Florida. The Glades tradition witnessed the introduction of decorated pottery and woodworking as well as the introduction of European trade goods such as metal implements and trade beads. Spanish explorers documented the extant tribal cultures, which included the Calusa, Tekesta, and Key Indians.

The Spanish established forts and settlements along the Florida coast, raided the tribes for slaves, and sought to convert the indigenous peoples to Christianity. The Spanish managed to retain some control of Florida despite repeated incursions by the English and French. Following the end of the Seven Years' War in 1763, Spain ceded Florida to Great Britain. At the end of the American Revolution in 1783, the British returned

Florida to Spain. The Spanish maintained at least nominal control of Florida while the British and the Americans tried to assert control over the region. The United States officially acquired Florida in 1821. American expansion into Florida led to the establishment of ports and towns, the introduction of the plantation system, and a policy of Indian removal, which in turn triggered prolonged and intense conflict with the Seminoles.

The Seminoles trace their origins back to bands of the Creek confederacy that had migrated into Florida in the 18th century to escape Indian removal. Escaped black slaves from the colonies and then the United States found refuge among the Seminoles. Continued conflict over American expansion and repeated attempts to remove the Seminoles from Florida led to a series of three wars fought between 1817 and 1858. Many Seminoles were killed during the fighting or removed to Indian Territory in present-day Oklahoma. Others sought refuge in the Everglades and Big Cypress swamp. The Seminoles managed to maintain a presence even as Americans ultimately asserted control over the rest of Florida.

American dominance in Florida was defined in large part by the ascent of southern “cracker culture.” This distinctly southern cultural group shaped the history of Florida in the 19th century and the transition to the 20th century. The pace of modern development in Florida greatly accelerated in the 20th century. Farming, ranching, logging, oil and gas exploration, and land development opened areas that earlier European contact had left relatively undisturbed. The completion of the Tamiami Trail road in 1928 connected the Atlantic and Gulf coasts at the cities of Miami and Tampa and opened the interior to motor touring and eventually other forms of recreation. The Big Cypress area has for generations been home to a wide range of recreational activities, such as hunting, fishing, trapping, boating, and hiking. The establishment of Big Cypress National Preserve in 1974

recognized the importance of these activities to the inherent values of the Preserve.

Despite changes in use, development, and access, the Seminoles maintained a presence in the Big Cypress. Under the authority of the Indian Reorganization Act, a number of Seminoles officially organized as the Seminole Tribe of Florida in 1957. Other Seminoles incorporated and formed the Miccosukee Tribe of Indians of Florida in 1962. The establishing legislation for Big Cypress National Preserve recognizes special access rights for both tribes for “usual and customary use and occupancy . . . within the Preserve, including hunting, fishing, and trapping on a subsistence basis and traditional tribal ceremonials.”

ARCHEOLOGICAL SITES

Fifty-seven archeological sites have been identified in the Addition. These resources are associated with the Archaic and Glades periods in the Preserve’s cultural chronology. Most of these sites are earth middens, which are refuse piles commonly made up of cultural artifacts, and faunal remains. The remaining sites are classified as surface scatters (1), two sand mounds, a sand burial mound, a village site, and a home site. In field surveys conducted in the Addition, researchers from the NPS Southeast Archeological Center have made preliminary determinations about the chronology of these sites.

Of the 57 sites, 10 have been determined to be prehistoric; 23 are determined to be Native American sites; and 22 are associated with the Glades cultural period. Five sites span a range of historic periods and contain artifacts representing Native American and Seminole cultures. The chronological periods of two sites at Deep Lake are unknown. More precise determinations of the chronological periods of the sites in the Addition will require additional research.

Deep Lake

Although no archeological work has yet been conducted within Deep Lake, the potential for scientific archeological resources within the watery environs of the lake is great. Classic sinkholes like this are rare in south Florida. Only four others like it are known in south Florida, and two of these are exceptionally significant archeological sites. Archeological evidence from two other south Florida limestone sinkholes indicates that they served as watering holes during much of the Paleo-Indian and Archaic periods. Archeologists have recovered evidence of Paleo-Indian and Archaic-period use of these water sources from the submerged ledges of the sinkhole. The artifacts recovered were radiocarbon dated to between 8,000 BC, and 11,500 BC. It is clear from the presence of human remains at the site and the radiocarbon dated artifacts that water levels were well below present levels at approximately 11,000 BC. It is likely that the limestone sinkholes, including Deep Lake, served as much needed sources of freshwater to south Florida's inhabitants when it was a scarce commodity elsewhere. Researchers speculate that Deep Lake may also retain resources dating from the earliest periods of human occupation in south Florida

and is therefore viewed as having enormous archeological potential.

ETHNOGRAPHIC RESOURCES

Ethnographic resources are a site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it. Traditionally associated peoples are defined as contemporary neighbors or ethnic or occupational groups that have been associated with a park unit for two or more generations (40 years) and whose interests in the park unit began prior to the park unit's establishment. The Seminole and Miccosukee tribes are both recognized in the enabling legislation as peoples traditionally associated with Big Cypress National Preserve.

Some resources within the Addition have traditional associations with the Seminole and Miccosukee tribes. Information relating to these ethnographic resources will be collected through collaborative research between the National Park Service and designated tribal representatives.

VISITOR USE AND EXPERIENCE

OVERVIEW

South Florida

South Florida offers a variety of recreational activities ranging from developed recreation to primitive and unconfined, natural recreational pursuits. Before the 1920s, south Florida was relatively wild and undeveloped. Beginning in the 1920s, many newcomers began recreating and moving to south Florida to enjoy the warm, semitropical environment and the pristine, sandy beaches. Most of the population and human development in south Florida is now within 15 to 20 miles of the coastline, and the area has become extensively developed. Since the 1920s, the population in Florida has continued to rapidly grow, and today Florida is the fourth most populous state in the United States, with a total population of 17.8 million residents. Owing largely to the unique semitropical environment, the diverse range of recreational opportunities and reputed character, Florida continues to experience intense and concentrated visitation by vacationers every year. Because of the increasing population and visitation, the demand for additional and new recreational opportunities also continues to be a major factor.

The seven southernmost Florida counties — Broward, Collier, Hendry, Lee, Miami-Dade, Monroe, and Palm Beach Counties — measure 10,104 square miles, accounting for 18.7% of Florida's land mass, yet contain 36% of Florida's total population, totaling 6,416,981 (U.S. Census Bureau, 2005). Within this land mass, Big Cypress National Preserve and Everglades National Park, both administered by the National Park Service, account for 3,483 square miles, or 34.4% of the land within the southernmost portion of this seven-county area. These NPS-administered lands represent the largest contiguous area of relatively undeveloped land in the entire

southeastern United States, which is immediately adjacent to one of the highest population concentrations in the country.

Although the traditional developed and semi-developed recreational activities involving south Florida beaches remain the dominant attraction to vacationers, many of the wilder, interior recreational experiences are gaining interest by residents and visitors. Also, the U.S. Census Bureau estimates that the population within this seven-county area is expected to grow to 9,292,316 by the year 2030, an increase of 2.9 million persons. It is likely that demands for recreational opportunities will also increase as the population grows.

The Addition

There are no developed facilities in the Addition to support visitor use, and Interstate 75 is a limited access highway. Visitor use in the Addition is currently limited to hiking, biking on Nobles and Bear Island grades, fishing, backcountry camping, nonmotorized boating in the main portion of the Addition, and motorized boating in the canals and estuarine area near Everglades City. No data specific to visitor use of the Addition is available. The Addition will remain closed to hunting and motorized recreational access until a final management decision is reached and a "Record of Decision" is signed and published in the *Federal Register*.

ORV trails have been mapped and assessed as part of this process to identify sustainable trails for visitors seeking ORV access opportunities. Also as part of this document, a wilderness study was conducted to identify suitable lands for proposal as designated wilderness within the Addition for visitors seeking opportunities for solitude or primitive and unconfined types of recreation within the backcountry.

The Original Preserve

This *General Management Plan* is for the Big Cypress Addition. The following description of the original Preserve is given to provide a relative comparison between the Addition and the original Preserve. The potential demand for recreational opportunities in the Addition is likely to be very similar to that occurring within the original Preserve. (see table 14).

The original Preserve is a large, wet, relatively flat and undeveloped land named for the extensive expanses of cypress trees. Big Cypress National Preserve consists of great stands of cypress forest swamps, marl wet prairies, marshes, and shallow freshwater sloughs. These natural resources offer visitors relatively natural, primitive and unconfined types of visitor experiences compared to the popular developed beach and resort experiences common in south Florida. The primary visitors to Big Cypress during the 1970s and 1980s were hunters, ORV users, and owners of improved properties (privately owned in-holdings) (Big Cypress *General Management Plan* 1991). Since the 1990s, hiking, canoeing, wildlife viewing, bird-watching, photography, bicycling, camping, picnicking, and general sightseeing have all emerged as substantial visitor use activities in addition to the previously mentioned activities. Because of the general lack of developed visitor facilities, the Preserve does not typically have visitation by the general public compared to most units managed by the National Park Service. Because of the primitive nature of the Preserve, visitation typically requires careful planning, fortitude, and self-reliance. The number of visitors seeking opportunities for solitude or primitive and unconfined types of recreation within the backcountry has increased within the Preserve as a whole. Visitation to Big Cypress National Preserve has gradually increased over the past 15 years as the American public has become more informed about the recreational opportunities available.

TABLE 14: PRESERVE VISITATION BY YEAR

Year	Total Recreation Visits
1989	81,157
1990	127,790
1991	159,172
1992	212,682
1993	234,830
1994	294,307
1995	365,463
1996	424,920
1997	462,553
1998	474,895
1999	503,110
2000	505,062
2001	409,771
2002	449,481
2003	400,902
2004	385,194
2005*	768,687
2006	825,857
2007	822,864

* A change was made in data collection methodology.

SOURCE: NPS Public Use Statistics Office, 2008

To support these emerging visitor uses within the original Preserve, interpretive activities are offered to visitors in the Oasis, Concho Billie, Bear Island, and Turner River areas where ORV trails are sometimes used as access into the Preserve. Guided bicycle trips, canoe tours, environmental education programs, and activities, as well as swamp walks and hikes up the Florida Trail, are offered each winter season from mid-December through early April.

ORV users assign considerable importance to the opportunities provided by their ORVs to access and explore the Preserve’s back-country. Considerable work is performed by NPS staff to construct and maintain ORV access points, ORV trails, and campsites within the original Preserve every year.

To enhance recreational opportunities, improvements are gradually being made to

campgrounds, access points, and picnic areas. Safety and visitor amenity improvements associated with the U.S. 41 project have increased visitor opportunities by providing easy walking on boardwalks, interpretive and educational panels, and safe parking in designated areas adjacent to the main highway.

Day use visitor facilities currently available in the original Preserve include the Oasis Visitor Center, two picnic areas at the Kirby Storter Roadside Park and the H.P. Williams Roadside Park, a canoe landing, and an interpretive trail on Loop Road. Overnight visitor use facilities include two developed campgrounds at Monument Lake and Midway, and six primitive campgrounds located at Bear Island, Burns Lake, Pinecrest, Mitchell's Landing, Pink Jeep, and Gator Head. Future projects will add interpretive trails, and improved parking in many areas.

RECREATIONAL OPPORTUNITIES

The primary recreational activities within the original Preserve include the following:

- frontcountry driving, sightseeing, and visitor centers
- walking and hiking
- bird-watching and wildlife viewing
- paddling
- motorboating
- camping
- bicycling
- ORV riding
- hunting, fishing, and frogging
- opportunities to experience peace and quiet in a natural environment

These primary activities are described below in greater detail. Although other recreational activities may occur, these listed activities account for the dominant types of use. Within the Addition, current recreational opportunities are limited to walking and hiking, bird-watching and wildlife viewing, paddling,

limited motorboating, camping, and opportunities to experience peace and quiet in a natural environment. Because of the similarity of resources in the Addition and the original Preserve, descriptions of activities within the original Preserve have been included for purposes of comparison. All of these activities have been proposed for the Addition, including those that do not currently occur there.

Frontcountry Driving, Sightseeing, and Visitor Centers

Several major highways transect or run adjacent to the Big Cypress National Preserve Addition. Interstate 75, also known as Alligator Alley, crosses the northern portion of the Preserve for approximately 30 miles, about 19 of which are within the Addition and are currently used almost solely as a nonrecreationally based travel corridor. Although this highway is the primary transit route between Fort Lauderdale and Naples, it does offer views into the undeveloped land in Big Cypress.

U.S. 41, also known as the Tamiami Trail, is a paved highway that crosses the southern portion of the Preserve for about 36 miles, 1 mile of which is in the Addition. Preserve headquarters, the Big Cypress Swamp Welcome Center, and the Oasis Visitor Center are on U.S. 41 in the original Preserve. The Big Cypress Swamp Welcome Center and the Oasis Visitor Center offer interpretive displays, printed materials and books for sale, and wildlife viewing platforms. Currently, no visitor centers exist in the Addition.

State Road (SR) 29 is a paved highway that runs north/south along the western border of the Big Cypress National Preserve Addition for approximately 29 miles. Wildlife underpasses have been and are being constructed under Interstate 75 and SR 29 to protect animals and drivers, specifically the Florida panther, from being killed in automobile accidents.

A graded dirt administrative road known as Bear Island Grade exists in the northwestern corner of the Addition and provides access into the Bear Island Unit from SR 29. Other graded roads in the Addition include Bundschu Grade and Nobles Grade, each extending approximately 4 miles into the Addition, north of Interstate 75, although neither of these routes is maintained. Numerous unimproved jeep and ORV trails exist in the Addition and are fully described in the trails section of this chapter.

Unpaved, graded, gravel-based roads in the original Preserve include the approximately 24-mile Loop Road (south of U.S. 41), the approximately 23-mile Turner River Road, the 10-mile Birdon Road, the almost 3-mile Wagonwheel Road that crosses the Addition for almost 1 mile, and the 3-mile access road to the Burns Lake site. Other than the main paved highways, the three unpaved roads listed previously, and several rights-of-way to private in-holdings, no public access roads exist within the Big Cypress National Preserve Addition.

Walking and Hiking

Walking is the primary method of accessing places in the Addition. Although there are no designated trails or pathways and no facilities in the Addition, existing, nonmaintained roads or trails serve as primary access routes for visitors. Cross-country travel in the Addition is difficult due to the heavily forested and swampy environment, but this is the only method of accessing the deep backcountry.

Within the original Preserve, the Florida National Scenic Trail received national designation in 1983. The trail is currently incomplete but is planned to extend approximately 1,300 miles from Big Cypress National Preserve to Gulf Islands National Seashore in Florida's western panhandle. The trail, which is the only designated hiking trail longer than 2.5 miles in the original Preserve,

provides backcountry hiking experiences to visitors. Section 1 of this trail (Oasis to the original Preserve boundary) was established by the Florida Trail Association in the early 1970s. Section 1 begins at the visitor center trailhead and now extends about 35 miles to a rest area along Interstate 75. A temporary trail informally follows Nobles Grade, a nonmaintained road north of Interstate 75, up to the Preserve boundary. The official location and designation of this section of the trail in the Addition is pending the completion of this *General Management Plan*.

Bird-watching and Wildlife Viewing

The size and relatively pristine condition of the Addition offers a wide variety of bird-watching and wildlife viewing opportunities. Most bird-watching and wildlife viewing activities in the Addition consist of individual ventures, as well as formal and informal organized group outings. Within the original Preserve, formal wildlife observation platforms are located at the H.P. Williams Picnic Area, Kirby Storter, the Big Cypress Swamp Welcome Center, and at the Oasis Visitor Center. Bird-watching opportunities are even greater in the original Preserve because of the larger acreage and greater accessibility along roads, developed trails, boardwalks, and in both frontcountry and backcountry areas. Within the Big Cypress Addition, wildlife viewing and bird-watching opportunities are relatively primitive in nature and self-directed because no infrastructure has been provided.

Paddling

Most paddling opportunities in the Addition are in the vicinity of Everglades City and Plantation Island. Within the original Preserve, most paddling opportunities are south of U.S. 41 where accessible water routes provide deep enough water. Within the original Preserve, the Turner River Canoe Trail and the Halfway Creek Canoe Trail

provide the opportunity for nonmotorized paddling experiences. Other areas are open to all boats. In the Addition, the lakes and streams adjacent to Everglades City and Plantation Island are open to paddlers and provide a coastal marsh and mangrove experience.

Motorboating

Motorboating in the original Preserve and in the Addition is generally restricted to the deeper water estuarine environments south of U.S. 41 outside of Everglades City. Motorized vessels are regulated by the Florida Fish and Wildlife Conservation Commission, who serves as the state boating law administrator, and by the U.S. Coast Guard navigation rules. All vessels must comply with applicable federal and state laws.

Motorboat use in the Addition is generally restricted to smaller vessels because of the shallow waters and tight turning radiuses in the creeks and open waters. As a result, the most common vessels are class A boats, less than 16 feet in length, and class I boats, 16 feet to less than 26 feet. Occasionally, class II boats, 26 feet to less than 40 feet overall length, operate in the Addition, but because of the relatively confined conditions, use by this boat class is less frequent and generally restricted to the more open, deeper water locations. The most common boat types in use are traditional single hull or pontoon boats powered by outboard motors. In some deeper, more open creeks, larger 40-60 passenger jet driven boats are occasionally operated. Airboat use in the Addition is prohibited by regulation. Airboats are defined as a vessel that is supported by the buoyancy of its hull and powered by a propeller or fan above the water line. All commercial boat operations are currently prohibited within the Addition.

Camping

Backcountry Camping. Backcountry camping is the only type of camping allowed in the Addition, and such camping is subject to Preserve backcountry camping regulations. The Park Service maintains regularly updated and published backcountry regulations.

Developed Campgrounds. No developed campgrounds currently exist in Addition. In the original Preserve, two developed campgrounds (Monument Lake and Midway), and six primitive campgrounds (Bear Island, Burns Lake, Pinecrest, Mitchell's Landing, Pink Jeep, and Gator Head) exist.

Bicycling

Bicycling in the Addition is currently allowed on Nobles and Bear Island grades. In the original Preserve, bicycling occurs along many of the gravel roads and on several of the ORV trails. Because of the rough condition of many of the ORV trails in the original Preserve regarding the relatively large deep ruts and standing water, these trails are oftentimes not conducive to bicycle use.

Horseback Riding

Horseback riding (equestrian use) in the Addition is currently allowed; however, this activity is rare due to the fact that the substrate and hydrology of the area tend to self-limit participation by equestrians. Certain roads and grades in the Addition can accommodate horse travel. Horseback riding is allowed as a dispersed activity in the backcountry of the original Preserve; however, use is also infrequent.

TABLE 15: SUMMARY OF OVERNIGHT VISITS BY YEAR AT THE NATIONAL PRESERVE

Year	Total Visits	Tent Campers	RV Campers	Back-country Campers	Total Overnight Stays
1989	81,157	2,591	5,847	1,117	9,555
1990	127,790	2,938	12,919	2,532	18,389
1991	159,172	2,897	15,714	5,267	23,878
1992	212,682	1,295	16,112	7,824	25,231
1993	234,830	2,659	18,450	18,786	39,895
1994	294,307	1,803	10,682	11,123	23,608
1995	365,463	2,702	12,034	8,701	23,437
1996	424,920	3,529	10,886	12,959	27,374
1997	462,553	3,518	9,929	12,836	26,283
1998	474,895	2,503	7,096	15,093	24,692
1999	503,110	3,031	13,270	10,158	26,459
2000	505,062	6,210	15,179	12,294	33,683
2001	409,771	6,626	15,582	14,326	36,534
2002	449,481	4,684	12,126	13,063	29,873
2003	400,902	3,272	10,330	12,292	25,894
2004	385,194	2,936	6,671	11,715	21,322
*2005	768,687	10,661	31,000	9,798	51,459
2006	825,857	3,706	12,422	11,814	27,942
2007	822,864	3,845	13,240	18,783	35,868
2008	813,790	3,524	10,383	11,679	25,586

* A change was made in data collection methodology

Off-Road Vehicle (ORV) Use

ORV use by the general public is currently prohibited within the Addition, although some of the alternatives in this document propose ORV use in the Addition.

The use of off-road vehicles is a popular recreational activity in the original Preserve, and great interest has been expressed for allowing this activity to occur in the Addition. Enabling legislation states that motorized vehicular access will be limited and regulated in the Preserve. In the original Preserve, several types of off-road vehicles are used to access the swampy backcountry. These include street-legal four-wheel-drive vehicles (4 x 4s), light-weight all-terrain cycles (ATCs), swamp buggies, and airboats. Recreational activities that can involve the use of off-road vehicles in the Preserve include hunting,

fishing, trapping, bird-watching, general exploring, and recreational driving.

Within the Addition, no data on ORV numbers could be located for the years prior to 1988, when this land was privately owned. Within the original Preserve, no data on ORV numbers could be located for years prior to 1980, when the National Park Service implemented a mandatory registration for all ORVs operated in the Preserve. Within the original Preserve, NPS ORV permit data from 1980 to 2008 are presented in table 16. Tracked vehicles were banned in 1988 based on research that showed they produced more adverse impacts than other ORV types (Duever et al. 1981).

Within the original Preserve, ORV permit numbers have ranged from 633 in 1995 to 2,271 in 1999, 1,702 in 2006, and 2,000 in 2008. Fluctuations in the number of ORV permits

issued each year primarily reflect water levels within the Preserve, with fewer registered vehicles in the wetter years (e.g., 1995) when portions of the Preserve were closed to hunting.

In the original Preserve, ORV use is heaviest during the fall, winter, and spring hunting seasons. The greatest use is on opening weekends of hunting seasons and holidays. Accurate data on ORV-related visitation are

TABLE 16: NUMBERS OF ORVs REGISTERED FOR USE IN BIG CYPRESS NATIONAL PRESERVE, 1980 TO 2008

Year	ATV	Swamp Buggy	Street Legal	Airboat	Totals
1980	361	180	176	130	871 ^a
1981	1,154	508	347	195	2,252 ^a
1982	1,042	162	464	166	1,853 ^a
1983	1,012	174	404	133	1,737 ^a
1984	1,020	155	410	115	1,706 ^a
1985	300	143	345	96	891 ^a
1986	300	586	165	238	1,324 ^a
1987	456	794	348	328	1,980 ^a
1988	507	810	393	371	2,082
1989	512	756	398	323	1,989
1990	580	733	334	261	1,908
1991	812	773	315	274	2,174
1992	872	773	314	296	2,255
1993	842	735	270	331	2,178
1994	584	559	193	250	1,586
1995	303	135	108	87	633
1996	682	586	205	234	1,707
1997	967	625	202	277	2,071
1998	1,053	667	219	255	2,194
1999	1,131	670	220	250	2,271
2000 ^b					
2001 ^c					
2002	437	192	90	76	1,754
2003	528	222	121	87	1,699
2004	574	241	107	73	1,652
2005	743	487	146	77	1,444
2006	615	416	111	67	1,702 ^d
2007	972	491	185	83	1,753
2008	1,097	572	221	110	2,000

- a. Includes counts for tracked vehicles until this vehicle type was banned in 1988.
- b. *Recreational ORV Management Plan* finalized for original Preserve, and data is not immediately available.
- c. Data is not immediately available.
- d. 2006: Because of missing information in the database, the total is higher than the number of vehicles.

unavailable, although several efforts have been made to gather such information. Duever et al. (1986a) attributed the substantial increase in ORV trails visible in aerial photographs from 1953 to 1973 to increased recreational ORV use, primarily associated with hunting. They further estimated that approximately 2,540 to 4,000 ORV-related hunters may be present in the original Preserve at peak use times (weekends) during the hunting season. A 1970 study estimated 40,000 person-days of use per year in the entire Big Cypress region.

ORV Trail Mapping. ORV trails in the Addition are currently closed to public recreational ORV use and have had limited use in years preceding federal ownership and management. Intensive trail mapping has been conducted as part of a general inventory of Addition trails. Between 2005 and 2007, NPS staff carefully studied existing maps, aerial photography, and verbal accounts of Addition trails to determine where sustainable trails were located. Identified routes were then field verified to confirm existence and rate condition of the trail and evaluate if the trail was sustainable for public use. Although many miles of tracks exist in the Addition, the key was to determine the trails that could be included in a designated trail system and be sustained in a manner that would not degrade Preserve resources. This effort resulted in identifying sustainable trails, meaning trails capable of withstanding repeated use without irreparable resource damage. The criteria for evaluating sustainability included the following:

- the degree of improvement to the ground surface
- soil and substrate type identified by vegetation type
- trail width
- degree of previous disturbance such as rutting of trail surface
- apparent relative level of past use
- presence of water on trail

This effort attempted to map all known existing trails. Approximately 244 miles of trails were assessed (see Map 7: Conceptual ORV Trails). Of the 253 miles assessed, approximately 135 miles were determined to be sustainable ORV trails.

The Addition offers the National Park Service an opportunity to study the Big Cypress landscape largely in the absence of active ORV traffic. This circumstance presents a relative baseline for which to compare the effects of ORV traffic in the original Preserve to conditions in the Addition where off-road vehicles are not permitted. Off-road vehicles have largely been absent from the Addition since 1988, and prior to 1988 use was relatively low and confined to certain trails.

Characteristics of Off-Road Vehicles. The following paragraphs describe the typical types of off-road vehicles that would be expected to be used (and regulated) in the Addition.

Street Legal 4 x 4s — Street-legal, four-wheel-drive off-road vehicles and trucks that are commercially manufactured and sold are very restricted in the extent of their access within the original Preserve. These vehicles require the driest driving conditions and rarely venture very far into the Preserve's backcountry. As a group, this ORV type is the heaviest, with a mean weight of 4,431 pounds (based on 1996/97 permit data from the Preserve). On average, they comprise approximately 12% of the ORV permits registered with the National Park Service in the original Preserve, although this varies from year to year.

All-Terrain Cycles (ATCs) — Small, commercially manufactured motorized all-terrain cycles are 50 inches or less in width, have a dry weight of 900 pounds or less, are designed to travel on three or more low pressure tires, have a seat designed to be straddled by the operator, and use a

handlebar steering control. These cycles tend to be restricted to drier terrain, as they lack the clearance required for deeper water and mud. They are also limited in their ability to carry camping gear and supplies on extended overnight backcountry trips. They are typically less expensive to purchase and maintain, easier to transport, and can penetrate wooded areas more easily than other ORV types. These vehicles are the smallest and lightest off-road vehicles used in the Preserve; current four-wheel drive models range in weight from 400 to 600 pounds. On average, all-terrain cycles comprise about 50% of the Big Cypress National Preserve ORV permits.

Swamp Buggies — Swamp buggies include a wide variety of custom-designed and –built vehicles. These vehicles have a wide range of configurations based on the frames, engines, number of axles, and wheel sizes used. Their weights range up to 7,160 pounds, with an average of 3,629 pounds. These vehicles are less restricted in their access than street-legal vehicles and all-terrain cycles, and they can carry several individuals and supplies deep into the backcountry on extended trips. Swamp buggies tend to be more expensive to build and maintain, less reliable, and require substantially larger trailers to transport to and from the area than other ORV types. These vehicles are not street legal. Swamp buggies annually comprise approximately 33% of the ORV permits.

Other Vehicle Types — Currently, the above-listed vehicle types are the only types of wheeled off-road vehicles approved and permitted for use in the Preserve. As emerging technologies produce new types of off-road vehicles that do not specifically match the above three descriptions, the National Park Service will consider these new types of vehicles for inclusion in the ORV program

as part of an adaptive management aspect of the *Recreational ORV Management Plan*.

Use patterns in the original Preserve management zones are directly influenced by terrain characteristics. Airboats can most easily negotiate the marshes and wet prairies south of U.S. 41 and the Loop Road. Wheeled vehicles are used more frequently in shallow marl soils, sandy soils, and the drier upland areas north of U.S. 41 where permitted in the original Preserve. Swamp buggies are less restricted, although in forested areas they are constrained by the width of the corridor through the trees, the size of the vehicle, and tire size. All-terrain cycles are less confined to trails and can move faster but cannot traverse the marl or mucky soils as well as the swamp buggies. Street legal four-wheel-drive vehicles require mostly dry conditions and infrequently travel very far into the Preserve backcountry.

Characteristics of ORV Users and Visitation. The Big Cypress National Preserve 2000 *Final Recreational ORV Management Plan* gives specific information and statistics related to ORV use in the Preserve. A description is provided here regarding general characteristics of ORV use at Big Cypress.

Off-road vehicles have customarily been used for hunting-related activities, although participation in a wide variety of nonhunting recreational activities has been observed more frequently during the past decade. ORV riding is usually considered a social activity. The use of off-road vehicles is central to many visitors' enjoyment of the Preserve. Seeing wildlife, the ability to reach a favorite destination, sharing activities with friends and family, and reaching a favorite hunting spot are the primary reasons cited for using off-road vehicles. Although users are deeply attached to certain places, such as hunting camps or favored hunting spots, they also assign considerable importance to the opportunity provided by their vehicles to roam and explore the Preserve's backcountry.

Many recreational outings are reported to produce long-lasting benefits and valued experiences. An analysis of information from focus group discussions suggests that Preserve ORV users are similar to ORV users in other parts of the country. Specifically, they

- travel in groups
- prefer little managerial intervention
- see themselves as skilled risk takers and identify with others like themselves
- say the ORV experience is a way to release stress, revitalize spirits, and gain a sense of purpose
- want to protect the natural environment
- enjoy opportunities for social bonding
- value the ORV as a means to achieve solitude and immersion in nature

Based on information from a larger survey of ORV permit holders, many of the most significant benefits depend on their specific activities and/or on specific places. The connections between users, activities, and places must be taken into consideration when selecting ORV management actions.

Hunting, Fishing, and Frogging

The original Preserve has been designated by the state as a wildlife management area, and the National Park Service permits hunting, frogging, and fishing by the public in accordance with state laws and regulations. Hunting is currently prohibited within the Addition. Fishing is permitted within the Addition subject to applicable laws and regulations.

The National Park Service and the Florida Fish and Wildlife Conservation Commission have concurrent jurisdiction for enforcing game and fish laws in the Preserve. Although the National Park Service has authority to manage wildlife within the Preserve, the Park Service has assigned the management of

hunting to the commission. The commission consults with the National Park Service before issuing regulations that affect hunting and fishing within Big Cypress National Preserve. Likewise, the National Park Service consults with the commission before establishing any temporary or permanent closures or public use limits.

Hunting is a popular recreational activity in the original Preserve. Hunting seasons run from September through April. Deer, turkey, and feral hogs are the principal species hunted. The primary weapons include rifles, shotguns, bows, and muzzle-loading guns. Bird dogs and waterfowl retrievers are the only dogs permitted for hunting. Although many hunters use off-road vehicles to get to hunting areas, many other hunters access the original Preserve on foot.

The *General Management Plan / Final Environmental Impact Statement* (NPS 1991) describes the types of hunting, different hunting opportunities, general regulations, and permit program. The Florida Fish and Wildlife Conservation Commission publishes updated regulations specific to the Big Cypress Wildlife Management Area related to open seasons, game types, quotas, weaponry, and other pertinent regulations annually.

To hunt in the original Preserve, hunters are required to purchase Florida state hunting licenses and wildlife management area stamps. When hunting regulations are established within the Addition and hunting activities are allowed, state hunting licenses and wildlife management area stamps would also be required in the Addition.

Big Cypress National Preserve is home to the endangered Florida panther. Because the Florida panther is listed as a federal endangered species, hunting regulations in the Preserve are relatively restrictive due to the associated direct and indirect disturbance of the panther by hunting activities, and because

white-tailed deer and feral hogs are important prey for the panther.

The Florida Fish and Wildlife Conservation Commission regularly publishes regulations for the following activities:

- deer hunting
- turkey hunting
- hog hunting
- migratory bird hunting
- small game hunting
- frogging
- fishing

NATURAL SOUND PRESERVATION

Soundscape

The Addition's soundscape is comprised of both natural ambient sounds and a variety of human-created sounds. The natural soundscape exists in the absence of human-created sound and is considered a resource. This resource is an aggregate of all natural sounds that occur in the Addition. Examples of sounds found in the natural soundscape include sounds produced by birds, frogs, and insects to define territories or attract mates; sounds created by animals to detect and avoid predators or other danger; and sounds produced by physical processes such as wind in the trees, rain falling, or thunder.

The National Park Service will preserve, to the greatest extent possible, the natural quiet and natural sounds associated with physical and biological resources and will restore to the natural condition wherever possible those soundscapes that have become degraded by unnatural sounds (noise). Human-caused sounds at Big Cypress National Preserve are largely created by motorized vehicles and mechanical equipment. Some examples include vehicles; motorized watercraft; heavy equipment; construction activity; oil and gas development; aircraft; and electronic devices.

The magnitude of noise is usually described by its sound pressure. Human-caused sounds in the Addition are currently limited to highway noise and aircraft overflights since ORV use is currently not permitted in the Addition and no oil and gas activity currently exists. Since the range of sound pressure varies greatly, a logarithmic scale is used to relate sound pressures to some common reference level, usually described in decibels (dB). See table 17 for examples of sound levels.

Ambient sound has been described as the continuous background sound environment. The range in ambient soundscapes can vary considerably among locations or by time in a single location. Ambient sound levels in the original Preserve generally range between 24 dBA and 40 dBA (dBA refers to the "A" frequency weighted decibel scale), depending on the contribution of noise by insects. Acoustic monitoring was conducted in the original Preserve in the summer of 2008 by the John A. Volpe National Transportation Systems Center (Volpe). These data are currently being evaluated.

Noise is generally defined as unwanted sound. Sound can become noise due to factors such as loudness, pitch, and duration or when it occurs at unwanted times, comes from an unwanted source or sources, interrupts or interferes with a desired activity, or is perceived to be a disturbance. With respect to Preserve visitors, what constitutes unacceptable noise will depend on visitor sensitivities and expectations.

When evaluated against the natural soundscape, all human sound is considered noise. This does not, however, mean that all human sounds are inappropriate or unacceptable. In the context of Big Cypress National Preserve, noise evaluations must consider management guidance such as enabling legislation and Preserve purpose, management zoning, resource sensitivity, impacts from the activity, and desired future conditions for resources and visitor experiences.

TABLE 17: SOUND LEVELS FOR COMMONLY EXPERIENCED SITUATIONS

Reference Sound	A-weighted Decibels Level
Whispering at 5 feet	20
Quiet residential area	40
Distant bird calls	45
Wind through trees	///
Normal conversation at 5 feet	60
Helicopter landing at 200 feet	80
Steam train whistle at 100 feet	90-100
Jet aircraft takeoff at 500 feet	100

Sources: League for the Hard of Hearing 2005

There are no absolute standards that define unacceptable levels, duration, or qualities of environmental noise. The Forest Service (1980b) has established subjective audibility guidelines to assess noise impacts for various recreational opportunities. These guidelines are included in table 18, and they relate recreational opportunities to the corresponding acceptable level above ambient sound levels. The U.S. Department of Energy suggests that there is a “strong likelihood of individual complaints” when the intruding noise is greater than 10 dB above ambient sound levels. But, typical forest background noise levels are around 40 dBA, and 50 dBA in campgrounds,

small towns, or quiet suburban communities (EPA 1980).

Noise from Off Highway Vehicles

The increased popularity and widespread use of off-road vehicles on federal lands in the 1960s and early 1970s prompted the development of a unified federal policy for such use (*GAO/RCED-95-209 Off Highway Vehicle Use on Federal Lands*). Executive Order 11644 was issued in February 1972

TABLE 18: ACCEPTABLE LEVELS ABOVE AMBIENT SOUND LEVELS FOR VARIOUS RECREATIONAL OPPORTUNITIES

Recreational Opportunity	Acceptable dB Level
appropriate for primitive recreational area; intruding noise not detectable	0
appropriate for trail camps; will not wake most sleepers; intruding noise normally not detectable	5
appropriate for undeveloped roadside camps and those accessible by four-wheel drive and all-terrain vehicles	10
appropriate for roadside camps accessible by highway vehicles	20
appropriate for highly developed campgrounds in a quiet, suburban neighborhood	40

Source: U.S. Forest Service 1980b

to establish policies and provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users on those lands, and to minimize conflicts among the various uses of those lands.

Executive Order 11989 was issued in May 1977 and contained three amendments to EO 11644. Although these amendments lifted restrictions on the use of military and emergency vehicles on public lands during emergencies, they otherwise strengthened protection of the lands by authorizing agency heads to (1) close areas or trails to off-road vehicles causing considerable adverse effects and (2) designate lands as closed to off-road vehicles unless the lands are specifically designated as open to them. (*GAO/RCED-95-209 Off Highway Vehicle Use on Federal Lands*) Off-road vehicles and motorized watercraft such as motor boats all produce noise that may adversely affect the Addition soundscape and visitor experiences. Noise levels emitted from off-road vehicles and motorized watercraft vary depending on many factors such as engine size, type of motor, vehicle type, speed, gearing ratio, and many other factors.

The Noise Control Act of 1972 provides authority for the U.S. Environmental Protection Agency (EPA) to establish limits and regulations pertaining to acceptable sound levels and to develop procedures by which vehicle sound is measured. Regulations for boating and water use activities established by the National Park Service prohibit vessels from operating at more than 82 decibels measured at 82 feet from the vessel (36 CFR 3.7).

Influence of Off-road Vehicles on the Addition Soundscape

ORV use in backcountry areas with relatively low, natural ambient sound levels is generally considered undesirable by those engaged in

non-ORV activities such as hiking, camping, and bird-watching. ORV use does affect the natural soundscape and the impact is best described using the “audibility” criterion. The criterion level for audibility is the sound level at which an ORV can be discerned from the background by the listener or the minimum level at which it is detectable. “Audibility distances” can be calculated for various types of vehicles in recreation areas with low ambient natural sound levels. Audibility distances for ORV noise are on the order of 0.5-2 miles, but may differ given changes in background and human noise levels, vegetation cover, and type of ORV used.

Influence of Other Human Noise Sources on the Addition Soundscape

Natural sounds generally predominate throughout the Addition. There can be human-caused noise in the backcountry, such as sounds related to NPS management activities, recreation activities, and potentially oil and gas drilling operations. Most human-caused sounds are usually confined to developed areas along major roads and are mobile and temporary in nature.

Activities in adjacent lands and airspace may also affect the Addition’s natural soundscape. Commercial, private sector, military, and NPS aircraft all impact natural soundscapes. Highway traffic on roads that cross the Addition is an additional source of noise that affects the natural soundscape.

Oil and Gas Development Noise. Preserve soundscapes can be affected by oil and gas development, including geophysical operations, drilling, production, abandonment, and reclamation and may affect the soundscape in the Addition in the future. But, oil and gas activity does not currently exist in the Addition. Detailed information for noise impacts associated with these activities is described in the report “Oil and Gas Technology and Associated Environmental Effects” prepared

by Tetra Tech, Inc. for the National Park Service in 1987.

Noise levels associated with drilling operations in Big Cypress National Preserve were documented by Vibra-Tech South Corporation in 1986. The study was conducted for Exxon Company in December 1985 during typical rotary drilling operations and conductor casing drive hammer operations at the Collier 2B4 well. Noise levels were recorded at varying distances from the operation, ranging from 10 feet to 12,000 feet. During conductor casing drive hammer operations, decibel levels were highest within 10 feet of the drilling rig (93 dBA) and lowest (40 dBA or less) at distances of 10,000 feet or greater from the rig. During rotary drilling operations, 85 dBA was recorded 10 feet from the rig and 40 dBA or less was recorded 9,200 feet from the drilling operation. It is important to note that the noise level recording equipment used in this study had a minimum detection limit of 40 dBA. Using 40 dB as a maximum ambient level, noise from rotary drilling operations can be detected up to 8,500 feet (1.61 miles) from a rig, and noise generated from a conductor casing drive hammer operation can be detected up to 9,200 feet (1.74 miles) from a rig in the preserve. By applying the U. S. Forest Service's acceptable level of 10 dB above ambient sound, which if exceeded would likely result in public complaints, the threshold distance for rotary drilling operations is at least 2,400 feet (0.45 mile) and nearly 8,500 feet (1.61 miles) for conductor casing drive hammer operations.

Aircraft Noise. Natural soundscapes throughout the Addition are affected by aircraft noise from a variety of overflight sources. These include high-altitude, commercial jet traffic; military activity; general aviation; NPS administrative operations, such as resource management, prescribed fire activities, emergency response and facility maintenance; municipal and commercial air traffic from surrounding counties; and the air flight training operating out of the Dade-

Collier Training and Transition Airport known locally as the Jetport. The National Park Service resource management and prescribed fire activities are the predominate source of aircraft noise. In addition, another source of aircraft noise is from the 1,260 annual air tour flights over the Preserve.

In order to minimize aircraft noise, The Federal Aviation Administration (FAA) recommends a minimum altitude of 2000 feet. The FAA also limits and regulates noise levels generated by aircraft as authorized under 14 CFR Part 36, "Noise Standards: Aircraft Type and Airworthiness Certification." To be certified for operation within the United States, all aircraft must meet established noise limits based on aircraft type, speed capabilities, operational category (commercial, agricultural, etc.), and age of aircraft. Propeller-driven aircraft, jet aircraft, and helicopters are all included.

Helicopter use is of particular interest within the Addition because this type of aircraft is often used to access the backcountry. The acoustical impact of a helicopter is a function of the size and the type of engine used as well as the movement of the rotor blades through the atmosphere as they produce lift. Turbine-powered helicopters are generally quieter than piston powered helicopters with muffled engine exhausts. Turbine-powered helicopters produce sounds often no louder than familiar surface transportation vehicles.

Highway Noise. Interstate 75 provides the main interstate access route between Fort Lauderdale/Miami and Tampa Bay. This highway creates a considerable impact on the natural soundscape in the northern portion of the Addition as a result of the nearly constant traffic. To a lesser degree, Highways 29 and 41 also impact the natural soundscape within the Addition. The level of highway traffic noise depends on (1) the volume of the traffic, (2) the speed of the traffic, and (3) the number of trucks in the flow of the traffic. Generally, the loudness of traffic noise is increased by

heavier traffic volumes, higher speeds, and greater numbers of trucks. Vehicle noise is a combination of the noises produced by the engine, exhaust, and tires. The loudness of traffic noise can also be increased by defective mufflers or other faulty equipment on vehicles. As a person moves away from a highway, traffic noise levels are reduced by distance, terrain, vegetation, and natural and man-made obstacles (FHWA 1995). A 61-meter (about 200-foot) width of dense vegetation, for example, can reduce noise by 10 decibels, which cuts the loudness of traffic noise in half (FHWA 1995).

Visitor Responses to Noise

An overwhelming majority of public comments to date have indicated that the use of

off-road vehicles in the Addition would create impacts to natural resources and to opportunities for visitors to experience solitude. Although ORV riders enjoy being able to easily access the deep backcountry of the original Preserve, the use of these vehicles impacts the natural soundscape and solitude that many non-ORV users seek. Although most hunters at Big Cypress use some form of off-road vehicle to access prime hunting areas, many hunters have expressed their displeasure with off-road vehicles in disturbing wildlife and their personal recreational experience. Other visitors have commented on the noise disturbance created by Interstate 75, which can be heard thousands of feet into the interior of the Addition.

SOCIOECONOMIC ENVIRONMENT

OVERVIEW

Collier County is the primary geographic unit for analysis of the socioeconomic impacts. When data permit, specific impacts on Everglades City, the Big Cypress Seminole Indian Reservation, and the Miccosukee Indian Reservation will also be discussed in this section.

Collier County is in southwest Florida's Gulf Coast, about 150 miles south of Tampa and 100 miles west of Fort Lauderdale. Its principal city is Naples. The county's land area is 2,025 square miles, and the Preserve encompasses most of the eastern half of the county. Much of the county's population lives in unincorporated areas along the Gulf Coast near Naples. Many Preserve employees live in the Naples area because the Preserve headquarters is about 35 miles southeast along U.S. 41.

The two other incorporated cities in Collier County are Marco Island and Everglades City. Marco Island is south of Naples, around 30 miles from Preserve headquarters. Everglades City is the closest incorporated area to the Preserve, less than 10 miles from headquarters. A discussion of demographic and economic data for Everglades City is included in this section because the city caters to visitors to both Everglades National Park and Big Cypress National Preserve. Public services and infrastructure in the Everglades City area include the following:

- fire protection — Ochopee Fire Control District
- police protection — Collier County Sheriff

- health care — several hospitals and clinics are in Naples and Marco Island
- educational infrastructure — Everglades City School (K–12, approximately 150 students)

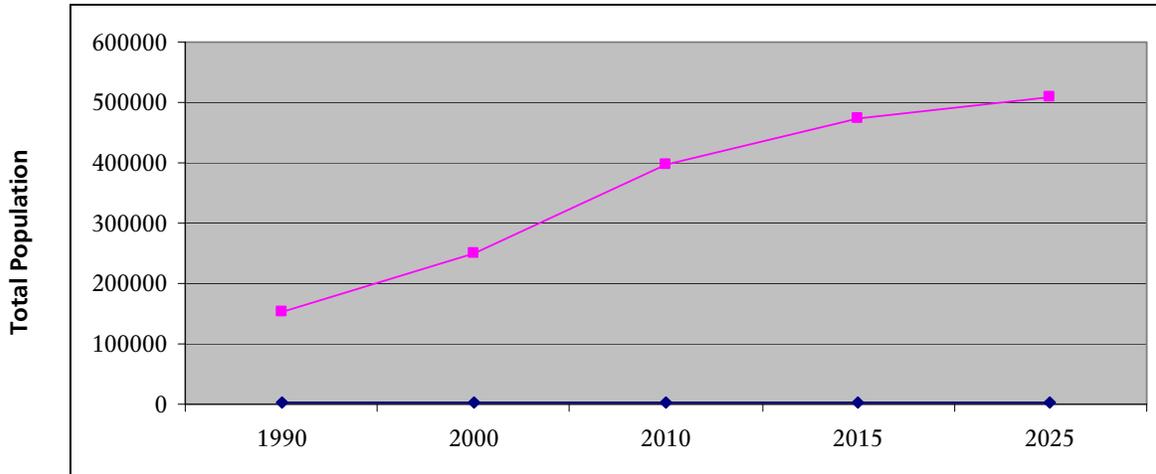
The Big Cypress Seminole Indian Reservation borders the Northeast Addition to the north, and the Miccosukee Indian Reservation borders the Northeast Addition on the east. There is very little census data on the Miccosukee Reservation.

DEMOGRAPHICS

Collier County

Population. The U.S. Census Bureau (*Census*) reports that the population of Collier County in 1990 was 152,099, rising to 251,377 in 2000 and estimated to be 314,649 in 2006. The compound annual growth rate of Collier County's population from 1990 to 2006 was 4.6%, with a 65.3% increase in total population during this period — or about 100,000 people.

According to *Census* 2000 data and the University of Florida's Bureau of Economic and Business Research (BEBR) projections from 2000, the population of Collier County is expected to continue growing rapidly. The bureau projects that population will increase to 397,434 in 2010, 474,192 in 2015, and 507,388 in 2025 (see figure 2). Based on these estimates, the average annual growth rate from 2006 to 2025 is expected to average 2.5%.



Source: 2000 U.S. Census Bureau and Bureau of Economic and Business Research

FIGURE 2: TOTAL POPULATION: COLLIER COUNTY

Age Distribution of Population. Table 19 displays the breakdown of Collier County’s population by age group based on 2000 and 2006 *Census* data. The data reveal that from 2000 to 2006 the four fastest growing age groups were the 85-year and older, 75-84 year, 9-year and under, and 20-34 year categories. These population age groups grew at average annual rates of 10.9%, 6.0%, 5.6%, and 5.5%, respectively during this period. The slowest growing age groups between 2000 and 2006 were the 65-74 year, 55-64 year, and 35-44 year categories, which grew at rates of .8%, 2.1%, and 3.0%, respectively.

The table reveals that the Collier County population is fairly evenly distributed with most age categories representing around 9% to 12% of the total population.

Everglades City

Population: According to the *Census*, the population of Everglades City was 321 in 1990 and 479 in 2000, for an average annual growth rate of 4.1%. Recent Everglades City population projections were provided by

TABLE 19: AGE DISTRIBUTION IN COLLIER COUNTY

Age Category	2000	2006	Compound Annual Growth Rate (CAGR)	% of 2006 Population
9 years and under	27,885	37,507	5.6%	11.9%
10-19 years	27,059	32,474	3.1%	10.3%
20-34 years	39,970	55,051	5.5%	17.5%
35-44 years	33,458	39,845	3.0%	12.7%
45-54 years	29,515	36,920	3.8%	11.7%
55-64 years	31,977	36,199	2.1%	11.5%
65-74 years	35,088	36,736	.8%	11.7%
75-84 years	21,060	29,917	6.0%	9.5%
85 years and over	5,365	10,000	10.9%	3.2%

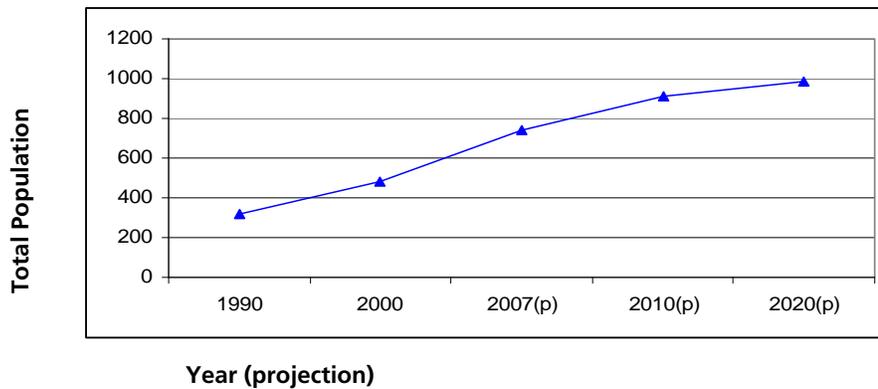
Source: U.S. Census Bureau

Collier County’s Comprehensive Planning Department. According to department forecasts, the population was estimated to be 741 in 2007 and reach 982 in the year 2020. This translates into an average annual growth rate of 2.2% over the period 2007 to 2020. This rate is in line with the 2006 to 2025 estimated population growth rate for Collier County of 2.5% (see figure 3).

Age Distribution of Population. As indicated in table 20, more than 60% of the population in Everglades City is over the age of 44. Only 12.9% of the population is under the age of 20, while persons 20-44 represent about 22.1% of the total population.

Big Cypress Seminole Reservation

Population: The *Census* reported that in 2000, the total population of the Big Cypress Seminole Indian Reservation was 142. This estimate is used as a basis for population growth rate calculations by the Bureau of Economic and Business Research. This bureau and Collier County Comprehensive Planning Department estimated a reservation population of 201 in 2004 and expect slow growth in the future. The most recently reported population projections for Big Cypress Indian Reservation, as calculated by this bureau, indicate that in 2010 there will be an estimated total population of 209, increasing to 222 in 2020. The estimated average annual growth



Source: U.S. Census Bureau and Collier County Comprehensive Planning Department

FIGURE 3: TOTAL POPULATION: EVERGLADES CITY

TABLE 20: AGE DISTRIBUTION OF EVERGLADES CITY POPULATION

Age Category	2000	% of 2000 Population
9 years and under	26	5.4%
10-19 years	36	7.5%
20-34 years	55	11.5%
35-44 years	51	10.6%
45-54 years	66	13.8%
55-64 years	80	16.7%
65-74 years	110	23.0%
75-84 years	34	7.1%
85 years and over	21	4.4%

Source: U.S. Census Bureau, 2000

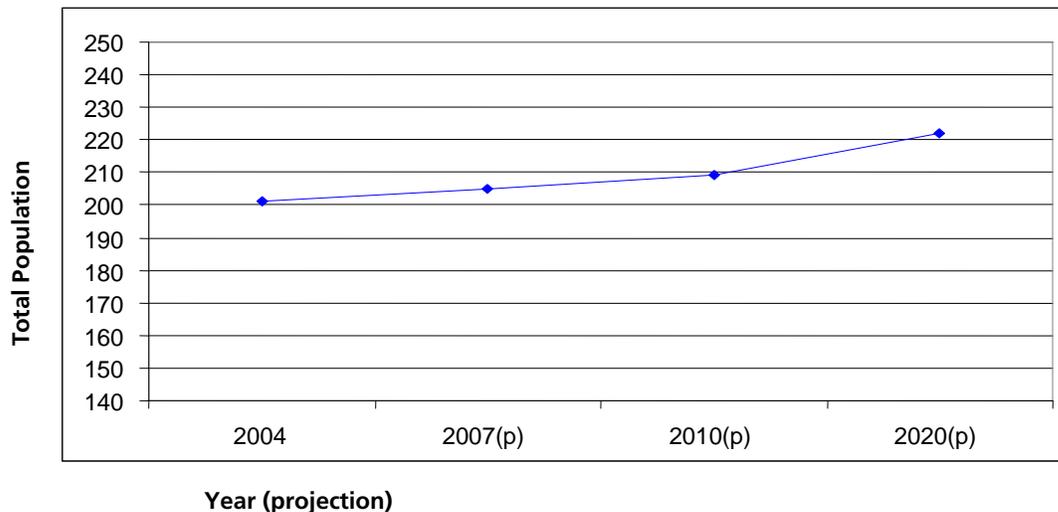
rate of the reservation during the period 2007 to 2020 is estimated to be 0.61% (see figure 4).

Age Distribution of Population. Based on *Census 2000* data, 75.3% of the population of the Big Cypress Seminole Reservation is under the age of 44 (see table 21). Within this age range, the largest population is in the 9 years and under category, followed by the 20 to 34 age category. These two age categories represent 46.4% of the total population.

ECONOMY AND EMPLOYMENT

Collier County

Employment. According to *Census* estimates, in 2006, Collier County’s labor force consisted of 144,905 workers. Of these workers, 140,184 were employed and 4,721 were unemployed, for an unemployment rate of 3.9%. Figure 5 compares the unemployment rates of Collier County and the state of Florida from 1990 to 2006. The figure reveals that unemployment rates steadily declined in Collier County during the period 1992 to 2000 — from a high



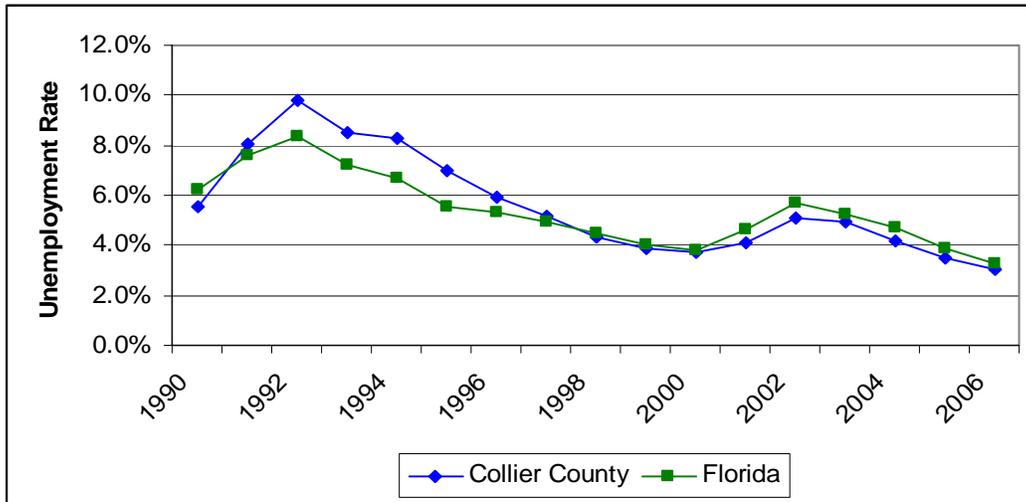
Source: U.S. Census Bureau 2000 and Collier County Comprehensive Planning Department

FIGURE 4: TOTAL POPULATION: BIG CYPRESS SEMINOLE INDIAN RESERVATION

TABLE 21: AGE DISTRIBUTION OF BIG CYPRESS INDIAN RESERVATION

Age Category	2000	% of 2000 Population
9 years and under	35	24.6%
10-19 years	22	15.5%
20-34 years	31	21.8%
35-44 years	19	13.4%
45-54 years	12	8.5%
55-64 years	9	6.3%
65-74 years	4	2.8%
75-84 years	8	5.6%
85 years and over	2	1.4%

Source: U.S. Census Bureau, 2000



Source: U.S. Bureau of Labor Statistics

FIGURE 5: UNEMPLOYMENT RATE: STATE OF FLORIDA AND COLLIER COUNTY

of nearly 10% to about 4% in 2000. Unemployment increased in 2001 and 2002 during a period of national recession, but fell consistently every year after 2002 and reached a 16-year low of 3.0% in 2006.

Table 22 reveals that the construction industry employed the largest share of Collier County workers in 2006, accounting for 19.5% of the workforce. The educational/ healthcare/social assistance, retail trade, and the arts/ entertainment/recreation/ accommodation/ food service industries also employed a relatively large share of workers in 2006, at 13.9%, 13.6, and 11.8% of the Collier County workforce respectively. Together, these four industries employed about 58.7% of the Collier County workforce, or 82,329 workers. From 1990 to 2006 the arts/entertainment/ recreation/accommodation/ food service industry had the most rapid employment growth, increasing at an average annual rate of 13.5%. Employment in the construction and educational/healthcare/ social assistance industries grew relatively rapidly during this

period, increasing at an average rate of 7.6% and 6% per year, respectively. Overall employment grew by an average annual rate of 4.6% in Collier County during the period 1990 to 2006, with the total number of employed workers increasing from around 68,449 in 1990 to 140,184 in 2006.

With respect to work location and travel to work, the 2000 *Census* data reveals that the total number of workers who commuted to work was 126,328. Of this amount, 98,913 people drove alone in a car, truck, or van and 13,505 people carpoled. About 1,245 workers used public transportation, 3,330 people walked to work, 4,103 people used other means of transportation, and 5,232 people worked from their homes. The mean travel time to work was 24.0 minutes, indicating that most employees lived far enough away from their work location to have to use some form of motorized transportation.

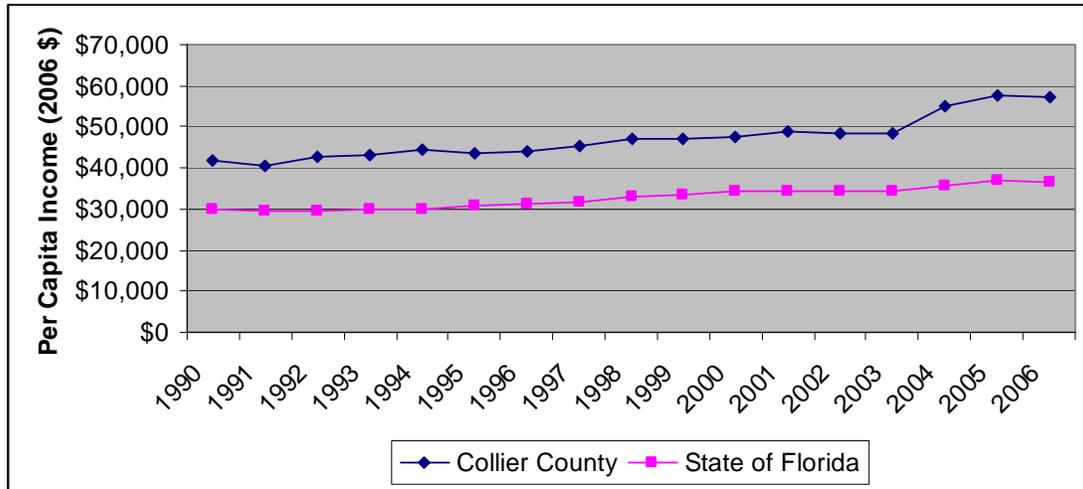
TABLE 22: EMPLOYMENT BY INDUSTRY: COLLIER COUNTY

	Employees (1990)	Employees (2006)	% of 2006 Employees	Compound Annual Growth Rate (1990–2006)
Wholesale trade	1,960	3,991	2.8%	4.5%
Information	n/a	1,768	1.3%	n/a
Agriculture, forestry, fishing, hunting, and mining	5,431	2,861	2.0%	-3.9%
Manufacturing	3,342	3,709	2.6%	0.7%
Public administration	2,545	5,615	4.0%	5.1%
Transportation, warehousing, and utilities	3,600	3,952	2.8%	.6%
Other services (except public administration)	4,811	7,958	5.7%	3.2%
Finance, insurance, real estate and rental and leasing	7,219	12,716	9.1%	3.6%
Professional, scientific, management, administrative, and waste management services	7,584	15,285	10.9%	4.5%
Retail trade	13,630	18,997	13.6%	2.1%
Arts, entertainment, recreation, accommodation, and food services	2,201	16,603	11.8%	13.5%
Educational services, health care, and social assistance	7,609	19,428	13.9%	6.0%
Construction	8,517	27,301	19.5%	7.6%
Total	68,449	140,184	100.0%	4.6%

Source: U.S. Census Bureau, *Census* 1990, and 2006

Personal Income. According to the U.S. Bureau of Economic Analysis, in 2006 Collier County had a per capita personal income of \$57,446, significantly higher than the statewide average of \$36,720. Figure 6 displays trends in per capita personal income in Collier County compared to the state during the period 1990 to 2006 in constant 2006 dollars (net of inflation). The figure reveals that per capita personal income at the county and state

level have trended together during this 15-year period, yet Collier County per capita personal income has remained consistently higher, at around \$13,500 above state per capita personal income levels. In real terms, per capita personal income has increased in Collier County at an average annual rate of 2.0% over the period, compared to 1.3% for the state of Florida.



SOURCE: U.S. Bureau of Economic Analysis (BEA)

FIGURE 6: PER CAPITA PERSONAL INCOME (CONSTANT \$2006): FLORIDA AND COLLIER COUNTY

Composition of Collier County Economy. Table 23 displays the approximate economic output for each industry category in Collier County in 2004. The table reveals that the largest economic sectors are the financial/insurance, construction, accommodation/recreation, and professional service industries, which together produce 54.6% of all goods and services in Collier County. The service sector comprises about 52.4% of the Collier County economy, while goods-producing industries and wholesale/retail trade represent about 24.8% and 11.4% of total economic

output respectively. The state, local, and federal government together represent about 4.7% of the total economic output in the county. The table shows that in 2004 the total economic output for Collier County was \$17.1 billion, of which approximately \$8.9 billion represented the value of services performed, \$4.2 billion reflected goods produced, \$1.9 billion reflected wholesale and retail sales, and \$802 million represented goods and services provided by federal, state, and local governments.

TABLE 23: ESTIMATED ECONOMIC OUTPUT BY SECTOR IN COLLIER COUNTY, 2004

Sector	2004 Output	% of Total
Information	\$435,108,000	2.5%
Transportation and warehousing, and utilities	\$485,707,000	2.8%
Agriculture, forestry, fishing and hunting, and mining	\$525,501,000	3.1%
Wholesale trade	\$539,910,000	3.2%
Manufacturing	\$553,130,000	3.2%
Other services, except public administration	\$591,153,000	3.5%
Public administration	\$802,074,000	4.7%
Owner-occupied dwellings	\$1,149,480,000	6.7%
Educational services, health care, and social assistance	\$1,273,309,000	7.5%
Retail trade	\$1,395,235,000	8.2%
Professional, scientific, and management, and administrative and waste management services	\$1,709,351,000	10.0%
Arts, entertainment, recreation, accommodation, and food services	\$1,714,814,000	10.0%
Construction	\$2,686,321,000	15.7%
Finance and insurance, real estate, and rental and leasing	\$3,221,944,000	18.9%
TOTAL OUTPUT	\$17,083,037,000	100.0%

Source: Minnesota IMPLAN Group (MIG), 2004 Collier County Data Set

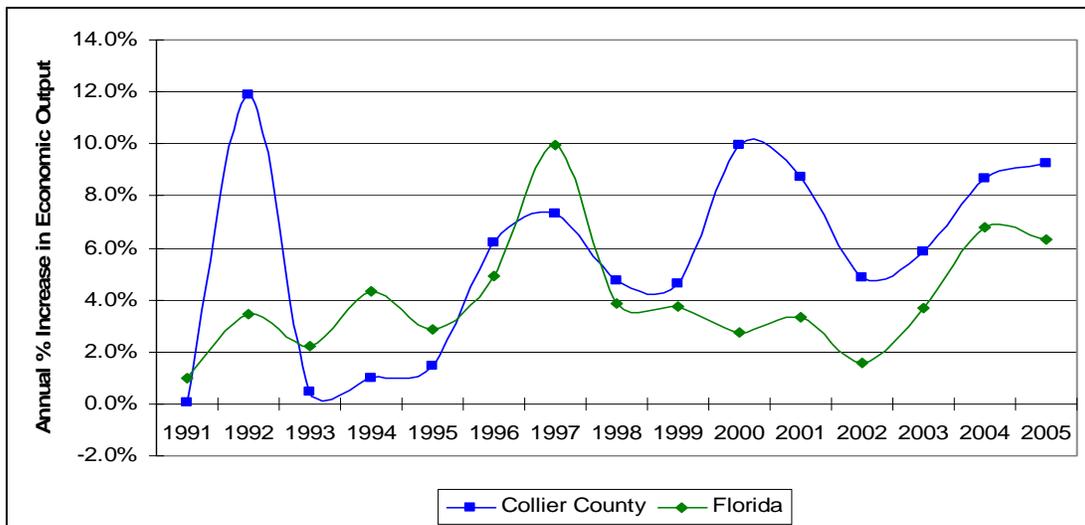
Economic output in Collier County increased by an average annual rate of 5.6% over the period 1990 to 2005, compared to 4.0% for Florida as a whole. More recently, during the period 2000 to 2005, economic growth in Collier County increased at an average annual rate of approximately 7.5%. Whereas economic growth has remained relatively constant over time for Florida, around 4%, an increase in the economic growth rate from 5.6% to 7.5% suggests an acceleration and expansion of economic growth in Collier County (as specified from a study conducted by the National Ocean Economics Program).

During the period 2000 to 2005, the county typically produced between 1.5% and 1.8% of the total Florida gross state product (GSP), which represents the total value of all goods and services produced in Florida in a given year. During this same period, Collier County typically ranked 15th out of 67 counties in Florida in terms of the amount of production of goods and services. Figure 7 displays the annual change in economic output for Florida and Collier County during the period 1990 to 2005. The figure reveals that, as expected, changes in economic output in Collier County have generally tracked with economic growth trends observed at the state level. However,

percentage changes in annual economic output have been consistently greater in Collier County relative to Florida beginning in 1998 and continuing to 2005. Following the economic downturn in 2001–2002, economic output rebounded and expanded in Collier County during the period 2003 to 2005. In 2005, growth slowed in Collier County and actually declined slightly in Florida. Despite the recent slowdown in growth in 2005, the long-term trend in economic growth for Collier County suggests that growth and economic expansion will continue into the future.

Everglades City

Employment. Of the 479 residents in Everglades City in the year 2000, 424 were over the age of 16 and only 200 were part of the civilian labor force, based on data provided by the *Census*. In 2000, 197 workers were employed in Everglades City. The city had a very low unemployment rate in 2000 of 1.5%. As demographic data from the *Census* suggests, a large portion of the city’s population are older residents who are likely retired, which



Source: National Ocean Economics Program

FIGURE 7: ANNUAL CHANGE IN ECONOMIC OUTPUT: FLORIDA AND COLLIER COUNTY (\$2005)

explains why the labor force is relatively small compared to the population. From 1990 to 2000 employment increased by 11.9%, or by an average annual rate of 1.1%. However, the number of persons not part of the labor force nearly tripled during this period, increasing at an average rate of 11.3% per year. This indicates that Everglades City is likely becoming a community increasingly composed of retirees.

In terms of mode of travel to and from work, 118 employees traveled alone in a car, truck, or van, and 33 carpooled. Around 33 workers either walked or used other means of transportation, and the remaining 11 individuals worked from their homes.

Table 24 indicates that a significant portion of the Everglades City workforce is employed in the arts/entertainment/recreation/ accommodation and food services industries, together representing 29.4% of the workforce in 2000. Agricultural/mining and transportation/ utilities industries also employ a relatively large number of workers in Everglades City,

representing a combined total of about 30% of the workforce.

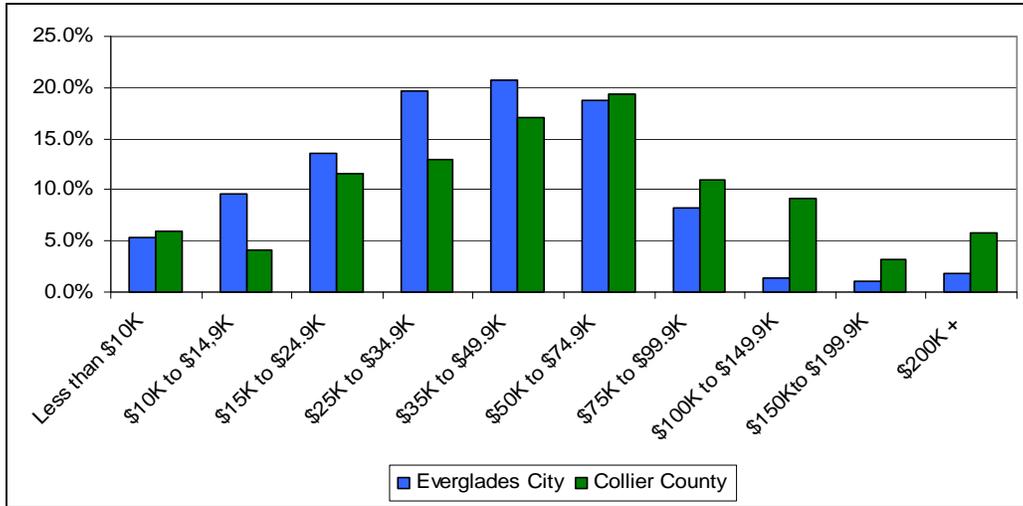
Personal and Household Income in Everglades City. According to the 1990 and 2000 *Censuses*, per capita income in Everglades City was \$16,394 in 1990 and \$20,535 in 2000, for an average annual increase of 2.2%. Figure 8 displays the percentage of total households in Everglades City by income bracket in comparison to Collier County, based on *Census 2000* data.

In comparing Everglades City to Collier County, *Census* data shows that Everglades City's average household income is skewed slightly more towards the lower household income brackets. The median household income for Everglades City was \$36,667, which was significantly lower than the Collier County median income of \$48,289. As for the per capita income comparisons in 2000, the data reflects the same conclusion. Per capita income in Everglades City was \$20,535 — considerably lower than per capita income in

TABLE 24: EMPLOYMENT BY INDUSTRY IN EVERGLADES CITY

	Employees (1990)	Employees (2000)	% of 2000 Employees	CAGR (1990-2005)
Manufacturing	5	0	0.0%	-100.0%
Information	n/a	0	0.0%	n/a
Professional, scientific, management, administrative, and waste management services	10	3	1.5%	-11.3%
Construction	9	5	2.5%	-5.7%
Wholesale trade	6	6	3.0%	0.0%
Other services, except public administration	34	7	3.6%	-14.6%
Finance, insurance, real estate, and rental and leasing	5	8	4.1%	4.8%
Educational, health and social services	18	14	7.1%	-2.5%
Retail trade	27	19	9.6%	-3.5%
Public administration	16	19	9.6%	1.7%
Agriculture, forestry, fishing and hunting, and mining	10	29	14.7%	11.2%
Transportation and warehousing, and utilities	28	29	14.7%	0.4%
Arts, entertainment, recreation, accommodation, and food services	8	58	29.4%	21.9%
Total	176	197	100%	1.1%

Source: U.S. Census Bureau, 1990 and 2000



Source: U.S. Census Bureau, 2000

FIGURE 8: HOUSEHOLDS BY INCOME BRACKETS: COLLIER COUNTY AND EVERGLADES CITY, 2000

Collier County, at an estimated \$31,195. *Census* data for Everglades City beyond the year 2000 are currently unavailable.

Composition of Everglades City Economy. Output by industry sector for Everglades City was estimated based on the ratio of the number of employees in Everglades City to that of Collier County. Table 25 displays estimates of economic output by sector.

Economic output in Everglades City in 2004 was estimated at \$19.6 million. The table reveals that the largest economic sector in Everglades City is the arts, entertainment, recreation, accommodation, and food services sector, which together produced an estimated \$5.8 million in 2004.

The total economic output of Everglades City in 2004 represented approximately 0.11% of total 2004 county economic output.

TABLE 25: ESTIMATED ECONOMIC OUTPUT BY SECTOR IN EVERGLADES CITY

Sector	2004 Output	% of Total Output
Manufacturing	\$0	0.0%
Information	\$0	0.0%
Professional, scientific, management, administrative, and waste management services	\$298,600	1.5%
Construction	\$497,600	2.5%
Wholesale trade	\$597,200	3.0%
Other services (except public administration)	\$696,700	3.6%
Finance, insurance, real estate, and rental and leasing	\$796,200	4.1%
Educational, health and social services	\$1,393,400	7.1%
Retail trade	\$1,891,000	9.6%
Public administration	\$1,891,000	9.6%
Agriculture, forestry, fishing and hunting, and mining	\$2,886,300	14.7%
Transportation and warehousing, and utilities	\$2,886,300	14.7%
Arts, entertainment, recreation, accommodation, & food services	\$5,772,700	29.4%
TOTAL OUTPUT	\$19,607,000	100.0%

Source: Minnesota IMPLAN Group (MIG), 2004 Collier County Data Set; 2000 *Census*

VISITOR USE AND ECONOMIC IMPACT

Visitation Data

Table 26 presents NPS data on recreational visits to the Preserve during the 1997 to 2007 period.

TABLE 26: RECREATION VISITS, 1997–2007

Year	Recreation Visits
1997	462,553
1998	474,895
1999	503,110
2000	505,062
2001	409,771
2002	449,481
2003	400,902
2004	385,194
2005	768,687
2006	825,857
2007	822,864
2008	813,790

SOURCE: NPS Public Use Statistics Office

The table shows that the number of recreation visits to the Preserve was generally in the 400,000 to 500,000 range during 1997 to 2004. In 2005 the Preserve changed its counting methods, adding visitor counts from the Oasis Visitor Center parking lot and vehicle counts from the east and west ends of the Loop Road. This change contributed to the higher visitation figures in 2005-2008.

Visitor Activities

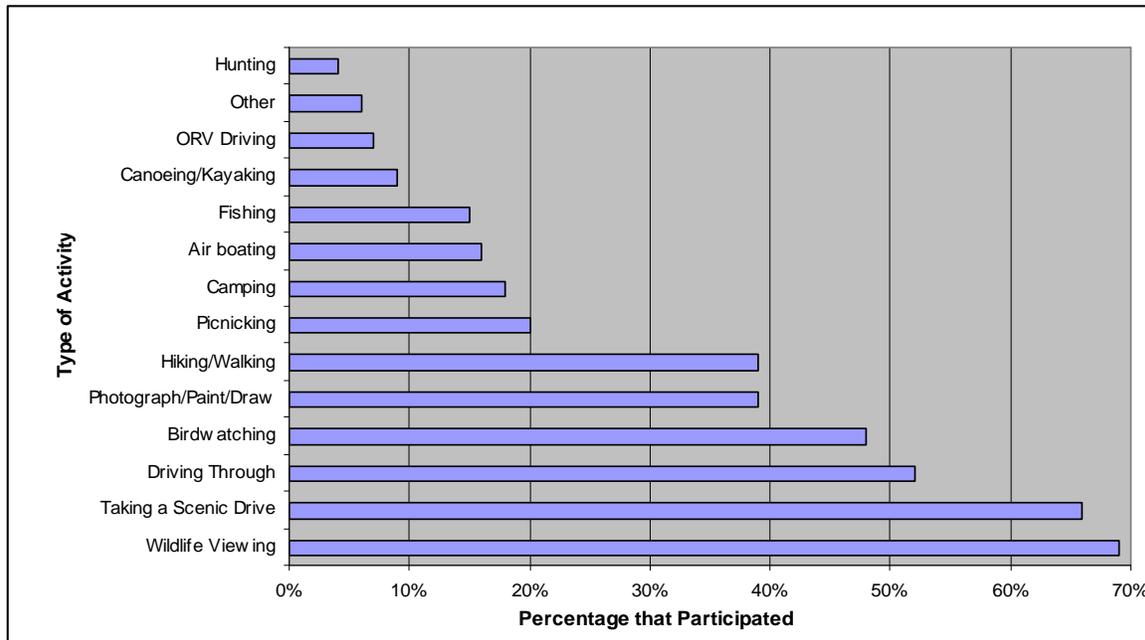
The Visitor Services Project and Cooperative Park Studies Unit of the University of Idaho conducted a general visitor survey for Big Cypress National Preserve in 2007. The park studies unit gathered a large sample of randomly selected visitor groups (N= 634) and requested that the visitors complete questionnaires in order to analyze Preserve visitation and use patterns. The survey indicated that the most common visitor group activities were viewing wildlife (69%), taking a scenic drive

(66%) driving through the Preserve to reach another destination (52%), and bird-watching (48%). Hiking and photography/painting/drawing were also popular activities, at 39%. A smaller portion of visitors participated in more traditional forms of outdoor recreation, including picnicking (20%), camping (18%), airboating (18%), and fishing (15%). Only 9% of the visitors surveyed planned to canoe or kayak, and only 4% planned to hunt. About 7% of visitors interviewed had plans to drive off road vehicles within the Preserve. Around 6% of visitors participated in “other” types of activities, which may include biking and horseback riding. The percentages reported exceed 100% because visitors can participate in more than one of these activities. Figure 9 depicts the activities participated in by Preserve visitors.

Response Concerning the Addition. Visitors surveyed were also asked their opinions and preferences concerning the Big Cypress Addition. Of the visitor groups interviewed, 52% noted that they would be likely to visit the Addition on the next trip, with 36% not sure about visiting, and 13% not likely to visit. Also, 30% reported that they would be more likely to visit the Addition if there was an outfitter or guide available, with 37% not being sure and 34% not likely.

In terms of activities that visitors would like available in the Addition, hiking, camping, wildlife viewing, fishing, canoeing, bird-watching, biking, and hiking were the most frequently mentioned.

ORV and Camp User Survey. In addition to the visitor study, the University of Idaho conducted a survey for Preserve ORV and camp users in 2007. In total, 520 questionnaires were successfully sent to a random sample of registered ORV holders or camp owners, generating 240 respondents (a 46.2% response rate). Of the total respondents, 57% had visited the Preserve five or more times in the past 12 months, which corresponds to the fact that 95% of respondents live in Florida



Source: Park Studies Unit, University of Idaho, Spring 2007 Report

FIGURE 9: GENERAL VISITOR ACTIVITIES AND USE, 2007

(and thus have relatively easy access to the Preserve). In terms of average group size, 30% were in groups of five or more, 40% were in groups of three or four, and 30% were in groups of one or two.

In terms of length of stay, 38% spent less than one day at the Preserve during their last visit, with 62% staying more than one day.

Of the 38% that stayed less than one day, 54% stayed seven or more hours, 23% stayed five or six hours, 12% stayed three or four hours, and 11% stayed one or two hours. Of the 62% that stayed more than one day, 32% stayed three days, 31% stayed two days, 22% stayed four or five days, and 16% stayed six days or more. As a whole, 56% of respondents stayed overnight away from home in the area, with 44% returning home.

As shown in figure 10, activities most frequently participated in during respondents last visit to the Preserve were ORV driving (72%), camping (49%), hunting (45%),

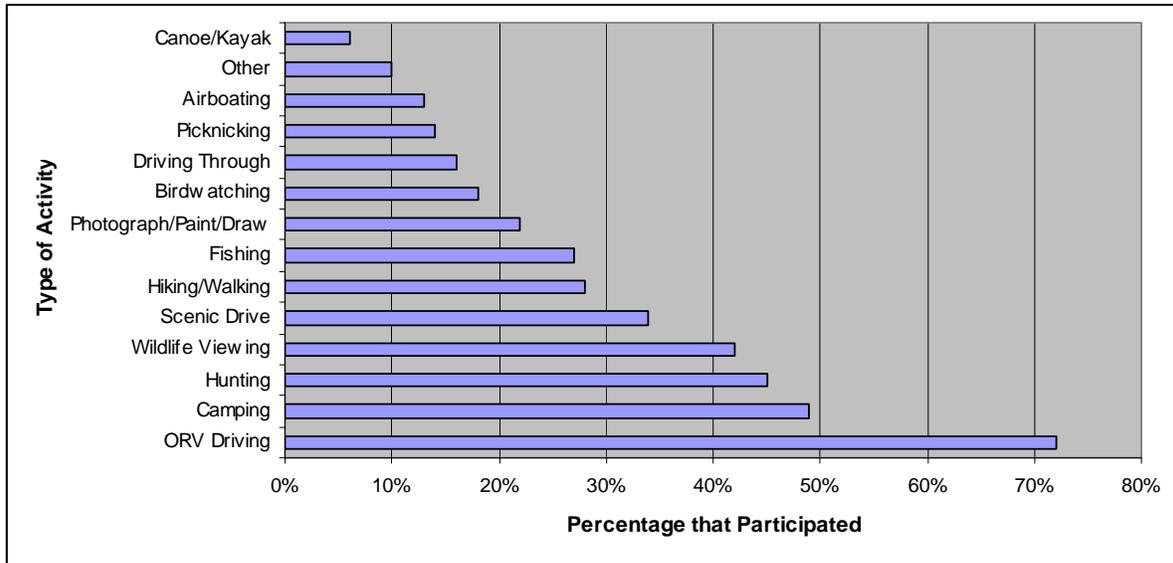
wildlife viewing (42%), and taking a scenic drive.

For most respondents (92%), the Preserve was the primary destination on their most recent trip.

Visitor Group Size and Length of Stay

According to the results of the 2007 visitor study, approximately 76% of all Preserve visitors spent less than a day at the Preserve, and 71% of those spent less than four hours at the Preserve. For the 24% that stayed more than one day in the Preserve, 30% spent seven or more days. The average length of stay for all visitors (for those staying less than one day and those staying more than one day) was 1.6 days. The average length of stay for those staying more than one day at the Preserve was 4.3 days.

The study further shows that 48% of respondents were in groups of two or more,



SOURCE: Park Studies Unit, University of Idaho, Spring 2007 Report

FIGURE 10: 2007 ORV PERMIT HOLDER AND CAMP OWNER ACTIVITY AND USE

44% were in groups of four or more, and just 8% were visiting the Preserve alone. The average group size for respondents was 2.8 people.

visiting the area to see other attractions, 19% to visit friends and/or relatives, 2% for business; and 21% for other reasons.

Visitor Spending and Trip Purpose

Based on the 2007 visitor survey, average visitor group expenditures were \$1,073, with a median expenditure of \$370. The average total expenditure per person was \$484.

As shown in table 27, visitors — as a total of overall spending — spent the most on noncamping overnight accommodations outside the Preserve (36%), restaurants and bars (18%), and groceries and take-out food (11%). Visitors as a whole spent the least amount of money on donations to the Preserve (1%), commercial airboat tours, and on commercial guided tours to the backcountry (2%).

Of total nonlocal visitors, only 22% of respondents noted that they were in the area for the primary purpose of visiting the Preserve. Approximately 36% said they were

TABLE 27: EXPENDITURE CATEGORIES

Types of Expenditures	% of Total Spending
Hotels, motels, cabins, and bed-and-breakfasts	36%
Restaurants and bars	18%
Groceries and take-out food	11%
Gas and oil	9%
All other purchases	8%
Other transportation costs	6%
Camping fees	5%
Admission, recreation, and entertainment	3%
Commercial guided tours to the backcountry	2%
Commercial airboat tours	1%
Donations to the preserve	1%
TOTAL	100%

Source: Park Studies Unit, University of Idaho, Spring 2007 Report

NPS OPERATIONS AND MANAGEMENT

ADMINISTRATIVE ORGANIZATION

The original Preserve is divided into six management planning units — the Bear Island, Corn Dance, Deep Lake, Loop, Stairsteps, and Turner River units. These units encompass about 582,000 acres. The Addition was established in 1988 and consists of two areas — the northeastern section that straddles Interstate 75, and the western section that parallels the north/south portion of SR 29. The two areas of the Addition encompass about 147,000 acres. Currently, NPS operations in the Addition are focused on gathering baseline information and fire/natural resource management activities, such as exotic plant management. Operations will not be fully extended to manage the Addition to the same level as the original Preserve until this *General Management Plan* is finalized and a “Record of Decision” is published in the *Federal Register*.

The Preserve, including the Addition, is administered by a superintendent and a deputy superintendent. NPS headquarters is in the southwestern portion of the Preserve at Ochopee, Florida.

NPS OPERATIONS AND MANAGEMENT

NPS staffing in 2007 was 77 employees. Currently, very minimal dedication of staff time is given to manage the Addition because visitation is minimal and a final management plan has yet to be concluded. Because the Addition makes up about 20% of the entire Preserve, active management for these lands will require additional staff and equipment.

Management of Big Cypress National Preserve, including the Addition, is organized into the following divisions: Visitor and Resource Protection, Interpretation, Resource

Management, Administration, Fire and Aviation, and Maintenance.

Visitor and Resource Protection Division

The Visitor and Resource Protection Division is primarily responsible for law enforcement activities and enforces laws and regulations intended to safeguard visitors and resources. In addition to law enforcement, this division is responsible for search-and-rescue operations and emergency medical services Preserve-wide. Rangers make routine visitor contacts to ensure that Preserve regulations and concurrent state hunting and fishing regulations are understood and being met, to check for safety and resource violations, and to respond to or direct visitor inquiries to appropriate NPS staff. The recreational fee program, ORV special use permit program, and various components of the overall special use permit program are also managed by the division.

Interpretation Division

The Interpretation Division is responsible for educating and offering visitors opportunities to understand the significance of the Preserve and to ensure the protection and enjoyment of associated resources. This includes educating visitors, stakeholders, and the general public about these resources, including the natural systems in the south Florida ecosystem; cultural resources; wilderness and scenic values; scientific opportunities; and the role of the Preserve in local, regional, and national contexts. NPS staff fulfill these responsibilities through formal education and orientation programs, interpretive programs, curriculum-based educational programs, and interpretive media. Personal services include staffing of the visitor centers, ranger-led walks and canoe trips, talks and evening programs, demonstrations and special events, and informal contacts

with visitors. This division is also responsible for supervision of publications and materials available at bookstores and sales outlets, exhibits and audiovisual media, the website, and electronic media.

Resource Management Division

The Resource Management Division manages the Preserve's natural and cultural resources. This program includes the management of all natural resources in the Preserve to ensure the preservation of fundamental physical and biological processes, as well as individual species, features, and plant communities. This division lacks a cultural resource manager and uses the Southeastern Archeological and Conservation Center for technical assistance and guidance on the management of cultural resources. This division administers the Preserve's geographic information system (GIS) database and all cooperative research and research permits in the Preserve.

Administration Division

The Administration Division is responsible for the Preserve's budget and financial accounting, property management, personnel management, procurement, contracting, mail services, administrative filing, and management of the Preserve-wide computer systems.

Fire and Aviation Division

The Fire and Aviation Division is responsible both for fire-fighting activities and for restoring the natural fire regime to areas where fires naturally occur. The effects of fire on natural ecological systems will also be actively monitored by division staff where fires occur.

Maintenance Division

The Maintenance Division is responsible for the operation and maintenance of all NPS facilities and equipment, including buildings and maintained grounds; utility systems such as water, sewer, and solid waste management; employee housing; roads; parking areas and trailheads; trails; and picnic areas. This division is also responsible for fleet management.

NPS FACILITIES

NPS facilities are primarily designed to provide safe, enjoyable, and educational access and support to visitors who come to experience Big Cypress National Preserve. Facilities are typically located in areas that can sustain visitation while protecting resources, natural systems, and the generally wild character that was intended upon designation of these federally managed lands.

Public Facilities

Trails and Trailheads. Within the Addition there are currently no designated trails or developed trailheads. A temporary route of the Florida National Scenic Trail has been designated through the Addition.

Within the original Preserve, there are officially designated and maintained trails for hiking, bicycling and ORV use. NPS staff patrols, maintains, and repairs all trails. Trail use is divided primarily between ORV riders and hikers, with limited use by bicyclists. The *Recreational ORV Management Plan* (completed in 2000) reflects existing use and associated impacts in the original Preserve.

Roads. Within the Addition, the only NPS-managed road used by standard highway vehicles is that portion of the Loop Road that is in Monroe County. Interstate 75 crosses the

northern portion of the Preserve for about 30 miles, 19 miles of which are in the Addition.

U.S. 41, also known as the Tamiami Trail, is a paved highway that crosses the southern portion of the Preserve for about 36 miles, 1 mile of which in the Addition.

State Road 29 is a paved highway that runs north/south between Immokalee and Everglades City and is immediately adjacent to the western border of the Addition for about 29 miles.

Visitor Information

Within the Addition visitor information is limited to way-finding signs. No waysides or visitor information is available.

Within the original Preserve, visitor information is provided at the Oasis Visitor Center, the Big Cypress Swamp Welcome Center, and at a series of waysides along U.S. 41.

Camping. Backcountry camping is the only type of camping allowed in the Addition and is subject to NPS backcountry camping regulations and guidelines. No developed campgrounds currently exist in the Addition.

Within the original Preserve camping opportunities range from developed campgrounds to backcountry camping.

Administrative Facilities

Offices, Storage, and Buildings. The NPS Fire Operations Center is in the Addition on SR 29 at Copeland. This facility provides office space for fire management staff and equipment storage. A fire station is also located at Deep Lake.

All other NPS operations are based out of facilities in the original Preserve. There is limited space in these facilities to accommodate additional staff. It is at least an hour's drive from these facilities to access the northeast portion of the Addition from Interstate 75.

Preserve Housing. Within the Addition there is no housing for NPS staff. There is staff housing in the original Preserve, primarily NPS headquarters and the Oasis Visitor Center. Housing is provided to law enforcement, fire management, and seasonal staff.



CHAPTER 4

ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

The National Environmental Policy Act requires that environmental documents discuss the environmental impacts of a proposed federal action, feasible alternatives to that action, and any adverse environmental effects that cannot be avoided. In this case, the proposed federal action would be the adoption of a *General Management Plan/ORV Management Plan/Wilderness Study* for the Big Cypress National Preserve Addition (the Addition). This chapter analyzes the environmental impacts of implementing the four alternatives on natural resources, cultural resources, visitor experience, the socio-economic environment, and NPS operations and management. The analysis is the basis for comparing the beneficial and adverse effects of implementing the alternatives.

Because of the general, conceptual nature of the actions described in the alternatives, the impacts of these actions are analyzed in general, qualitative terms. Thus, this environmental impact statement should be considered a programmatic analysis. For the purposes of analysis, it is assumed that all of the specific actions proposed in the alternatives would occur during the life of the plan.

This environmental impact statement generally analyzes several actions, such as the development of recreational facilities (including ORV trails and trailheads), the construction of facilities for visitor orientation and NPS operations, and the designation of lands as wilderness. If and when proposed site-specific developments or other actions are ready for implementation following the approval of the general management plan, appropriate detailed environmental and cultural compliance documentation would be prepared. This compliance would be in accordance with the National Environmental Policy Act of 1969 and the National Historic

Preservation Act of 1966, both as amended, and would meet requirements to identify and analyze each possible impact for the resources affected.

This chapter begins with a description of the methods and assumptions used for each impact topic. Impact analysis discussions are organized by alternative and then by impact topic under each alternative. The existing conditions for all of the impact topics that are analyzed were identified in the “Affected Environment” chapter. All of the impact topics retained for detailed analysis are assessed for each alternative.

The analysis of the no-action alternative (continue current management) identifies the future conditions in the Addition if no major changes to facilities or NPS management occurred. The three action alternatives are then compared to the no-action alternative to identify the incremental changes that would occur as a result of changes in Addition facilities, uses, and management. Impacts of recent decisions and approved plans, such as the *Commercial Services Plan* (NPS 2009), are not evaluated as part of this environmental analysis, except as part of cumulative impact analysis. Although these actions would occur during the life of the general management plan, they have been (or would be) evaluated in other environmental documents.

Cumulative impacts are discussed under each alternative and are identified when this project is considered in conjunction with other actions occurring in the region. The discussion of cumulative impacts is followed by a conclusion statement. The key impacts of each alternative are briefly summarized at the end of the “Alternatives, Including the Preferred Alternative” chapter in table 11.

METHODS AND ASSUMPTIONS FOR ANALYZING IMPACTS

The planning team based the impact analysis and the conclusions in this chapter mostly on the review of existing literature and studies, information provided by experts in the National Park Service and in other agencies, and staff insights and professional judgment. The team's method of analyzing impacts is further explained below. It is important to remember that all the impacts have been assessed assuming that mitigative measures will be implemented to minimize or avoid impacts. If mitigative measures described in the "Alternatives, Including the Preferred Alternative" chapter were not applied, the potential for resource impacts and the magnitude of those impacts would increase.

The environmental consequences for each impact topic were identified and characterized based on impact type (adverse or beneficial), intensity, context, and duration. Cumulative effects are discussed later in this section.

Impact intensity refers to the degree or magnitude to which a resource would be beneficially or adversely affected. Each impact was identified as negligible, minor, moderate, or major, in conformance with the definitions for these classifications provided for each impact topic (see table 28, page 251). Because this is a programmatic document, the intensities were expressed qualitatively.

Context refers to the setting within which an impact may occur, such as the affected region or locality. In this document most impacts are either localized (site-specific) or Addition-wide.

Impact duration refers to how long an impact would last. The planning horizon for this plan is approximately 20 years. Unless otherwise specified, in this document the following terms are used to describe the duration of the impacts:

Short term: The impact would be temporary in nature, lasting one year or less, such as the impacts associated with construction and/or disruption of visitor use to an area of the Addition.

Long term: The impact would last more than one year and could be permanent in nature, such as the loss of soil due to the construction of a new facility. Although an impact may only occur for a short duration at one time, if it occurs regularly over a longer period of time the impact may be considered to be a long-term impact. For example, the noise from a vehicle driving on a road would be heard for a short time and intermittently, but because vehicles would be driving the same road throughout the 20-year life of the plan, the impact on the natural soundscape would be considered to be long term.

Effects also can be direct or indirect. Direct effects are caused by an action and occur at the same time and place as the action. Indirect effects are caused by the action and occur later or farther away, but are still reasonably foreseeable. This document discloses and analyzes both direct and indirect effects, but does not differentiate between them in the discussions.

The impacts of the action alternatives describe the difference between implementing the no-action alternative and implementing the action alternatives. To understand a complete "picture" of the impacts of implementing any of the action alternatives, the reader must also take into consideration the impacts that would occur in the no-action alternative.

NATURAL RESOURCES

Analysis of natural resources (surface water flow, water quality, wetlands, soils, floodplains, vegetation, federally threatened and endangered species, major game species,

wilderness resources and values, and energy requirements and conservation potential) was based on research, knowledge of the area's resources, and the best professional judgment of planners, resource specialists, and biologists who have experience with similar types of projects. The definitions for impact intensity of all impact topics are included in table 28, page 251; additional considerations used in characterizing the severity or intensity, as well as the duration, of certain impact topics (floodplains, federally threatened and endangered species, and wilderness resources and values) are discussed below.

It should be noted that the impacts of developing a minimal amount of secondary trails was considered and included as part of the impact analysis conducted on the conceptual ORV trail system.

Floodplains

The "Floodplain Management Guideline" (NPS 1993) and the extent of alteration to natural hydrologic processes were used to determine the intensity of impacts for floodplains.

Federal Threatened and Endangered Species

The environmental consequences for federal threatened and endangered species are described in such a way that meets the requirements of the National Environmental Policy Act and the Endangered Species Act (ESA). The required elements of a "Biological Assessment" have been integrated into the environmental impact analysis included in this chapter. A separate biological evaluation form was also prepared and submitted as required by the local USFWS Ecological Services office. The action area for cumulative impact analysis on special status species is identified in the cumulative impacts section. Impacts for federal threatened and endangered species are characterized according to impact type, intensity, context, and duration. Within this

document, the ESA determinations of *no effect*, *not likely to adversely affect*, and *likely to adversely affect* are based on impact intensity equivalents as identified in table 28. The definitions in table 28 refer to changes in critical habitat designated under the Endangered Species Act — this applies only to the West Indian manatee because it is the only federal listed species among those retained for analysis that has designated critical habitat.

The definitions of these ESA determination categories are based on the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service guidance for implementing Section 7 consultation under the Endangered Species Act (USFWS 1998).

No effect — the appropriate conclusion when the action agency determines its proposed action will not affect a listed species or designated critical habitat.

Not likely to adversely affect — the appropriate conclusion when effects on listed species are expected to be discountable, insignificant, or completely beneficial. Beneficial effects are contemporaneous positive effects without any adverse effects to the species. Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. Discountable effects are those extremely unlikely to occur. Based on best judgment, a person would not: (1) be able to meaningfully measure, detect or evaluate insignificant effects; or (2) expect discountable effects to occur.

Likely to adversely affect — the appropriate finding in a biological assessment (or conclusion during informal consultation) if any adverse effect to listed species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions, and the effect is not discountable, insignificant, or beneficial (see definition of "is not likely to adversely affect"). In the event the

overall effect of the proposed action is beneficial to the listed species, but is also likely to cause some adverse effects, then the proposed action “is likely to adversely affect” the listed species. If incidental take is anticipated to occur as a result of the proposed action, an “is likely to adversely affect” determination should be made. An “is likely to adversely affect” determination requires the initiation of formal section 7 consultation.”

At the time of writing this plan, information and data that could be used to analyze impacts on the Florida panther from increases in ORV use were limited. The National Park Service and U.S. Fish and Wildlife Service have commissioned an analysis of historical data regarding ORV use and panther biology in Big Cypress National Preserve, including an analysis of more than 160,000 hunter check-in forms. This data should provide additional insight into the effects that hunting and ORV use had on panthers in the Bear Island Unit. The study will provide evidence regarding correlations and patterns of past ORV use and panthers over time. The study is being conducted by Robert Fletcher and Kyle McCarthy of the University of Florida, and it is anticipated that it will be completed by the end of 2010.

Additionally, the National Park Service and U.S. Fish and Wildlife Service have been working collaboratively to further evaluate the relationship between the Park Service’s proposed ORV trail system and important characteristics of Florida panther habitat through geographic information system (GIS) analysis. The U.S. Fish and Wildlife Service intends to use the results of this analysis to assist them in evaluating potential impacts on the panther.

The National Park Service and U.S. Fish and Wildlife Service agreed that these data would be useful in evaluating potential impacts on the Florida panther from the actions included in this plan and that the U.S. Fish and Wildlife Service will use these data in developing their “Biological Opinion.”

Wilderness Resources and Values

The National Park Service compared the management actions of each alternative with the wilderness eligibility criteria identified in the Wilderness Act to determine how those values might be affected. A short-term impact would last less than five years following the implementation of an alternative. A long-term impact would last longer than five years after implementing the alternative. Impacts were classified as adverse if they would adversely affect wilderness values or integrity. Conversely, impacts were classified as beneficial if they would enhance wilderness values or integrity.

CULTURAL RESOURCES

Potential impacts (direct, indirect, and cumulative effects) are described in terms of context (are the effects site-specific, local, or even regional?), duration (are the effects short term (impact lasting less than one year), long term (impacts lasting more than one year), or permanent?), and intensity (is the degree or severity of effects negligible, minor, moderate, or major). Because definitions of intensity (negligible, minor, moderate, or major) vary by impact topic, intensity definitions are provided separately for each impact topic analyzed in this environmental impact statement.

Impacts on Cultural Resources and Section 106 of the National Historic Preservation Act: In this environmental impact statement, impacts on cultural resources are described in terms of type, context, duration, and intensity, which is consistent with the regulations of the Council on Environmental Quality (CEQ) that implement the National Environmental Policy Act (NEPA). These impact analyses are intended, however, to comply with the requirements of both the National Environmental Policy Act and Section 106 of the National Historic Preservation Act (NHPA). In accordance with the Advisory Council on Historic Preservation’s regulations implementing Section 106 of the National Historic

Preservation Act (36 CFR Part 800, *Protection of Historic Properties*), impacts on cultural resources were also identified and evaluated by (1) determining the area of potential effects; (2) identifying cultural resources present in the area of potential effects that are either listed in or eligible to be listed in the National Register of Historic Places; (3) applying the criteria of adverse effect to affected, national-register-eligible or -listed cultural resources; and (4) considering ways to avoid, minimize, or mitigate adverse effects.

Under the Advisory Council's regulations, a determination of either *adverse effect* or *no adverse effect* must also be made for affected national-register-listed or -eligible cultural resources. An *adverse effect* occurs whenever an impact alters, directly or indirectly, any characteristic of a cultural resource that qualifies it for inclusion in the national register, e.g., diminishing the integrity (or the extent to which a resource retains its historic appearance) of its location, design, setting, materials, workmanship, feeling, or association. Adverse effects also include reasonably foreseeable effects caused by actions proposed in the alternatives that would occur later in time, be farther removed in distance, or be cumulative (36 CFR 800.5, *Assessment of Adverse Effects*). A determination of *no adverse effect* means there is an effect, but the effect would not diminish the characteristics of the cultural resource that qualify it for inclusion in the national register.

CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision Making* (Director's Order #12) also call for a discussion of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g., reducing the intensity of an impact from major to moderate or minor. Any resultant reduction in intensity of impact due to mitigation, however, is an estimate of the effectiveness of mitigation under the National Environmental Policy Act only. It does not suggest that the level of effect as defined by Section 106 is similarly reduced. Cultural

resources are nonrenewable resources, and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss in the integrity of the resource that can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 may be mitigated, the effect remains adverse.

A Section 106 summary is included in the impact analysis sections. The Section 106 summary is an assessment of the effect of the undertaking (implementation of the alternative), based upon the criterion of effect and criteria of adverse effect found in the Advisory Council's regulations.

Archeological Resources

The intensity of impacts (see table 28, page 251) on an archeological resource would depend upon the potential of the resource to yield important information, as well as the extent of the physical disturbance or degradation.

Ethnographic Resources

The intensity of impacts on an ethnographic resource (see table 28) would depend on the importance of the resource to an ongoing cultural tradition, as well as the extent of physical damage or change.

VISITOR USE AND EXPERIENCE

This impact analysis considers various aspects of visitor use and experience for the following recreational uses in the Addition: motorized (ORV) use, nonmotorized use (including hiking, horseback riding, and bicycling), and hunting (including fishing and frogging). Camping opportunities and experiences are addressed within each of these user categories. Impacts on natural soundscapes and the effects on the user are also addressed within each of the recreational use categories. The analysis is based on how visitor use and

experiences would change with changes in the application of management zones in the alternatives. The analysis is primarily qualitative rather than quantitative due to the conceptual nature of the alternatives.

Impacts were determined using existing and projected visitor use data, information on recreational trends, and the professional judgment of NPS staff. For analysis purposes, impact intensities for all visitor experience topics were defined as in table 28.

SOCIOECONOMIC ENVIRONMENT

The following section of the report describes the economic impacts of changes in visitor spending associated with each of the proposed alternatives, as well as the inputs, methodology, and assumptions employed to perform such an analysis. Under each alternative, a quantitative and qualitative analysis was conducted to trace the flow of visitor spending in the region (limited to Collier County) to identify changes in county sales, employment, and housing, as well as economic activity associated with the Seminole and Miccosukee tribes.

To effectively determine changes in visitor spending under each of the proposed alternatives, various baseline data was gathered concerning recent visitor trends and local economic conditions to project future demand and expenditure impacts. The majority of this information was derived from the 2007 Big Cypress National Preserve Visitor Study (conducted by the University of Idaho), NPS visitation statistics, data from IMPLAN input-output modeling software, interviews conducted with businesses within Collier County, general demographic and tourism data on Collier County, and construction and staffing projection estimates provided by NPS staff.

Money Generation Model (MGM)

For the purpose of this analysis, the NPS-developed Money Generation Model (MGM)

was used to measure the direct and indirect economic impacts of visitor activity in and around the Addition. The model calculated direct expenditure impacts through the compilation and computation of various inputs, such as average length of stay, daily expenditure rates, and attendance rates for projected Preserve visitors under each of the proposed alternatives. Indirect or induced expenditures were also considered within the model to determine multiplier effects in the local economy, including factors like sales, personal income, jobs, and value added.

The short form of the MGM model was employed, which divides Preserve visitors into four category segments: local day users, non-local day users, motel users, and camp users. Local day users are defined as visitors living within Collier County. Nonlocal day users are visitors living outside Collier County who are not staying overnight within county limits. Motel users are visitors who are staying in a hotel, motel, bed and breakfast, or cabin outside the Preserve but within Collier County. Camp users are visitors who are camping either inside the Preserve or outside the Preserve but in Collier County.

Changes in Visitor Spending. The number of additional visitors coming into the Preserve as a result of increased recreational and resource opportunities — the primary variable input within the model — was estimated under each alternative to calculate projected changes in total visitor spending within Collier County. In particular, visitor spending adjustments (based on increased visitation estimates) were determined to be attributable to increases in the following:

- **Informational resources** through the creation of visitor contact centers
- **ORV access** through the addition of new permits and the creation of multiple trails for such use
- **Camping opportunities** through the creation of additional overnight backcountry campsites

- **Hiking, biking, paddling, and horseback riding opportunities** through the creation of additional trails for such use
- **Partnership opportunities** through the provision of boat tours, canoe rentals, and guided hiking trips

Projected changes in visitor spending as a result of each alternative were expected to produce varying degrees of economic changes to Collier County. In particular, impacts on county sales, employment, and housing, as well as economic activity associated with the Seminole and Miccosukee tribes were examined as a result of such expenditure changes. The economic impacts of visitor spending were expected to primarily occur outside the Preserve, where the bulk of purchasable goods and services (i.e., food, lodging, gas, and retail), housing, and labor are located. Areas where the Preserve might directly benefit from visitor spending would likely be minimal and attributable to revenues derived from additional ORV and camping permits, as well as partnership opportunities.

Another initial assumption was that alternative B and the preferred alternative would generate the largest increases in visitor spending due to greater opportunities for recreation and resource use in the Preserve relative to the other alternatives. Alternative A was expected not to produce any impact at all, because resources and recreational opportunities at the Preserve would remain the same. Alternative F was assumed to produce smaller impacts than alternative B and the preferred alternative because recreational and resource opportunities would be increased to a lesser degree.

Due to projected increases in Preserve visitation under the action alternatives, an increase in the number of overnight visitors was also expected to occur. Logically, the provision of camping opportunities in the Addition would likely raise the number of total overnight visitors within the Preserve. Additionally, the number of visitors staying overnight outside the Preserve (but within Collier County) was also expected to increase

under some of the proposed alternatives, particularly for new visitors coming to participate in ORV use or in some of the proposed partnership opportunities.

A select number of motels, hotels and private campgrounds in the nearby vicinity were contacted to discuss potential increases in occupancy rates under each of the proposed alternatives. Although respondents did not provide specific occupancy projections, there appeared to be a general consensus that offering greater recreation and resource access within the Preserve would translate into higher occupancy rates for overnight accommodations. In ranking recreation and resource opportunities, increased ORV and camping access were cited as activities most likely to attract new visitors to stay overnight in the area. Offering boating expeditions, guided tours to the backcountry, and canoe/kayak rentals were cited as the next activities likely to draw new overnight guests. Providing greater trail access for hiking, paddling, biking, and horseback riding were generally viewed as activities least likely to attract new visitors to stay overnight in the area.

Based on respondents' comments, alternative B and the preferred alternative would most likely attract new visitors to stay overnight in the area, with alternative A having no impact on occupancy rates and alternative F producing a negligible impact.

Impacts of Capital Expenditures. One-time capital expenditures associated with construction were also estimated under each alternative and served as a variable input within a modified version of the MGM model called the MGM2Operate. Rather than focusing on visitor spending, this version of the model evaluated short-term impacts as a result of changes in construction costs on employment, housing, sales, and economic activity associated with the Seminole and Miccosukee tribes. Changes in construction costs were determined by estimating the total cost of building facilities, trails, and other related structures in the Addition needed to accommodate the various recreational and

resource opportunities proposed under the alternatives. The percentage of construction activity that remained within Collier County was also projected, which considered how much of the economic impacts were contained within the local area.

Long-Term Versus Short-Term Economic Impacts of Visitor Spending

For this analysis, impacts of visitor spending were divided into long-term and short-term impacts. Long-term impacts are defined as the net changes in the local economy (Collier County) over an extended period of time due to sustainable, yet variable, changes in visitor spending under each alternative. Short-term economic impacts are defined as the net changes to the local economy (Collier County) due to one-time capital construction expenditures incurred under each alternative.

Long-Term Impacts. Changes to employment, housing, sales, and economic activity associated with the Seminole and Miccosukee tribes were analyzed under long-term impacts of visitor spending. The cumulative impacts of these changes represent potentially new stabilized or equilibrium levels of economic activity in Collier County.

- **Employment changes** were divided into two categories: direct and indirect employment. Direct employment refers to additional staff needed as a result of operating and maintaining new facilities, trails, and services in the Addition, as well as new employment created in the tourist industry as a result of direct visitor spending. Indirect (secondary) employment refers to changes in employment due to changes in county sales, income, or employment in tourist-related industries supplying goods and services to tourist-related businesses, as well as changes in employment as a result of direct employee spending. Most new jobs created were assumed to be attributable to hiring additional staff to operate and maintain new facilities, trails, and services offered in the Addition, as

well as additional employees hired at businesses located in the area that provide accommodation, food, entertainment, and retail services.

- **Housing changes** were analyzed under the assumption that new employees arriving from outside the area, as a result of direct and secondary employment changes, would need to secure long-term housing accommodations. Naples and Marco Island appear to be the most viable options for new employees relocating from outside the area due to their larger population size and availability of residential housing relative to the surrounding area. It was assumed that housing changes, at the county level, would be minimal or insignificant, as there appears to be a large enough labor pool to draw from within the county (particularly for secondary employment changes).
- **Sales** are defined as the change in total annual taxable sales of local goods and services as a result of changes in visitor spending. Specific industries in Collier County that are expected to realize the most significant economic gains (i.e., largest percentage of increased sales) under the four alternatives and over the long term are: 1) accommodations and food services; 2) retail and trade, and; 3) arts, entertainment, and recreation. These industries are some of the fastest growing sectors in Collier County and currently account for roughly 18% of total economic output.
- **Economic impacts on the Seminole and Miccosukee tribes** were also analyzed due to their close proximity to the Preserve and importance to the region. Changes in economic activity associated with the two tribes was based on the assumption that new visitors to the area, as a result of increased recreation and resource opportunities in the Addition, would generate positive economic gains at both reservations. Because the Seminole and Miccosukee reservations offer a variety of goods and services that cater to tourists as well as locals — such as food, lodging, and a variety of recreational activities — new

visitors traveling to and from the Preserve would have incentive to make a stop at either one or both of these sites. Additionally, proposed partnership opportunities in the Preserve, such as offering guided tours in the Addition, could produce substantive impacts for the tribes if they became third-party vendors.

Short-Term Impacts. Changes to county employment, housing, and sales, as well as economic activity associated with the Seminole and Miccosukee tribes were also analyzed under short-term impacts of one-time capital expenditures due to construction activity. These capital expenditures include the improvement and building of facilities, trails, and infrastructure in the Addition under each alternative, as well as the acquisition of necessary equipment, materials, and labor. Impacts from these expenditures would cease to occur once construction is completed. Although a moderate number of construction and material-producing industries exist in Collier County, primarily in the Naples region, it was assumed a significant portion of economic impacts will not remain within county boundaries due the strong, diversified, and competitive business and labor force located outside the area.

- **Employment changes**, as a result of construction activity, were also divided into direct and secondary categories. Direct employment refers to temporary changes in employment within the construction industry due to one-time capital expenditures as a result of construction activity in the Addition. Secondary employment refers to changes in employment created by industries supplying goods and services to the construction industry, as well as by changes due to direct employment spending. It was assumed that not all direct and indirect employees would come from Collier County. For example, while many of the construction laborers might be locally based, specialized professional jobs, such as engineers and architects, would likely come from other areas of the state or country.

- **Housing changes** were also analyzed under short-term impacts. Because Collier County already has a relatively large labor pool to draw from in regards to the construction industry (a sector that already employs approximately 20% of the labor force), it is unlikely that the county as a whole will experience any substantial short-term housing impacts. That said, specific areas such as Naples and Marco Island might see a marginal impact in the demand for housing as a result of new employees (particularly in the professional fields) residing in the area during the construction period.
- **Sales** are defined as the change in total annual taxable sales of local goods and services as a result of changes in one-time capital expenditures in the Addition. Specific industries that are expected to realize the most substantial amounts of change under the four alternatives and over the short term are construction; manufacturing; and transportation, warehousing, and utilities. These three industries currently account for about 22% of total economic output of Collier County (based on 2004 data).
- **Economic impacts for the Seminole and Miccosukee tribes** were evaluated to determine the effects on the two reservations as a result of construction activity under each alternative. It was assumed that construction employee spending changes, due to adjustments in both direct and secondary employment as a result of construction activity, would generate some degree of economic gains to the reservations over the short term. Such changes would be attributable to these new temporary employees spending money at the reservations on various goods and services, such as gaming, food, and other recreational activities.

Organization of Impact Categories, Thresholds, and Overall Benefits

For both long-term and short-term impacts, the consequences of implementing each

alternative were further organized into direct, indirect, and cumulative effects; order-of-magnitude (thresholds); and overall value to the local economy.

Direct, Secondary, and Cumulative Effects.

To identify where changes would occur within the local economy under each alternative, impacts were divided into direct, secondary, and total effects:

- **Direct effects** trace the changes in employment, housing, and economic output within Collier County, as well as assess specific changes economic activity for the Seminole and Miccosukee tribes, as a result of changes in visitor spending or one-time capital expenditures.
- **Secondary effects** are the sum of indirect effects (differences in economic output in county sectors that provide goods and services to county sectors that cater to tourists) and induced effects (increased economic activity derived from direct employee spending changes as a result of visitor spending).
- **Cumulative effects** are the incremental impacts on the social and economic environment in Collier County as a result of each of the alternatives when added to other past, present, and reasonably foreseeable actions.

Impact Thresholds. To discern the degree of impact as a result of implementing each alternative, the following order of magnitude scale was used.

- **Neutral effects** would be actions that do not produce any changes at all to the social and economic environment.
- **Negligible effects** would be below detectable levels or detectable only through direct means with no discernable effect on the character of the social and economic environment.
- **Minor effects** would be detectable, but localized in geographic extent or size of population affected and not expected to

alter the character of the established social and economic environment.

- **Moderate effects** would be readily detectable across a broad geographic area or segment of the community and could have an appreciable effect on the social and economic environment.
- **Major effects** would be readily apparent, affect a large segment of the population across the entire community and region, and would have substantial effect on the social and economic environment.

Nature of Impact. Lastly, to determine whether short-term or long-term impacts produce positive or negative gains for Collier County as a whole, effects were classified as either adverse or beneficial, as follows:

- Adverse impacts would diminish the established social and economic environment.
- Beneficial impacts would improve the established social and economic environment.

NPS OPERATIONS AND MANAGEMENT

The impact analysis evaluated the effects of the alternatives on NPS operations, including staffing, infrastructure, maintenance, visitor facilities, and services.

The analysis focused on how NPS operations and facilities might vary with the different management alternatives. The analysis is qualitative rather than quantitative because of the conceptual nature of the alternatives. Consequently, professional judgment was used to reach reasonable conclusions as to the intensity, duration, and type of potential impact.

TABLE 28: IMPACT THRESHOLD DEFINITIONS

Impact Topic and Duration	Negligible	Minor	Moderate	Major
NATURAL RESOURCES				
Surface Water Flow	An action would have no measurable or detectable effect on the timing or intensity of surface water flows.	An action would have measurable effects on the timing or intensity of surface water flows.	An action would have clearly detectable effects on the timing or intensity of surface water flows and potentially would affect hydrologic connectivity, organisms, or natural ecological processes. The impact would be visible to visitors.	An action would have substantial effects on the timing or intensity of surface water flows and potentially would affect hydrologic connectivity, organisms, or natural ecological processes. The impact would be easily visible to visitors.
Water Quality	An action would have no measurable or detectable effect on surface water quality.	An action would have measurable effects on surface water quality. Water quality effects could include increased or decreased loads of sediment, debris, chemical or toxic substances, or pathogenic organisms.	An action would have clearly detectable effects on surface water quality and potentially would affect organisms or natural ecological processes. The impact would be visible to visitors.	An action would have substantial effects on surface water quality and potentially would affect organisms or natural ecological processes. The impact would be easily visible to visitors.
Wetlands	No measurable or perceptible changes in wetland size, integrity, or continuity would occur.	The impact would be measurable or perceptible, but slight. A small change in size, integrity, or continuity could occur due to indirect effects such as construction-related runoff. However, the overall viability of the resource would not be affected.	The impact would be sufficient to cause a measurable change in the size, integrity, or continuity of the wetland or would result in a small loss or gain in wetland acreage.	The action would result in a measurable change in all three parameters (size, integrity, and continuity) or a loss or gain of large wetland areas. The impact would be substantial and highly noticeable.
Soils	The action would result in a change in a soil, but the change would be at the lowest level of detection, or not measurable.	The action would result in a detectable change, but the change would be slight. There could be changes in a soil's profile in a relatively small area, but the change would not increase the potential for erosion.	The action would result in a clearly detectable change in a soil. There could be a loss or alteration of the topsoil in a small area, or the potential for erosion to remove small quantities of additional soil would increase.	The action would result in the permanent loss or alteration of soils in a relatively large area, or there would be a strong likelihood for erosion to remove large quantities of additional soil as a result of the action.

Impact Topic and Duration	Negligible	Minor	Moderate	Major
Floodplains	Impacts would occur outside the regulatory floodplain as defined by the <i>Floodplain Management Guideline</i> (100-year or 500-year floodplain, depending on the type of action), or no measurable or perceptible change in natural hydrologic processes or aquatic habitat would occur.	Actions in the regulatory floodplain would potentially interfere with or improve natural hydrologic processes or aquatic habitat in a limited way or in a localized area. Levee maintenance that would protect development areas from flooding and road and trail construction that would alter natural sheet flow are example actions that would have minor adverse impacts. Removing flood protection devices or small facilities would have beneficial impacts.	Actions within the regulatory floodplain would interfere with or enhance natural hydrologic processes or aquatic habitat in a substantial way or in a large area. Examples of moderate adverse impacts would include modification of natural watercourses or canals in multiple locations or development of small-scale recreational facilities in the floodplain.	An action would greatly alter or improve a floodplain, natural hydrologic process, or aquatic habitat. Examples of major adverse impacts would include substantial modification of natural watercourses or canals in multiple locations or development of facilities in the floodplain.
Vegetation (all vegetation types, including exotics/nonnative plants)	The action might result in a change in vegetation, but the change would not be measurable or would be at the lowest level of detection.	The action might result in a detectable change, but the change would be slight. This could include changes in the abundance, distribution, or composition of individual species in a local area, but would not include changes that would affect the viability of vegetation communities. Changes to local ecological processes would be minimal.	The action would result in a clearly detectable change in a vegetation community and could have an appreciable effect. This could include changes in the abundance, distribution, or composition of nearby vegetation communities, but would not include changes that would affect the viability of plant populations in the Addition or Preserve. Changes to local ecological processes would be of limited extent.	The action would be severely adverse to a vegetation community. The impacts would be substantial and highly noticeable, and they could result in widespread change. This could include changes in the abundance, distribution, or composition of a nearby vegetation community or plant populations in the Addition or Preserve to the extent that the population would not be likely to recover. Key ecological processes would be altered, and “landscape-level” (regional) changes would be expected.

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>Wildlife: Federal Threatened and Endangered Species (Florida Panther, West Indian Manatee, Red-cockaded Woodpecker, Wood Stork, Everglade Snail Kite, American Crocodile, Eastern Indigo Snake)</p>	<p>There would be no effect on the species. There would be no observable or measurable impacts on the species, their habitats (including designated critical habitat), or the natural processes that sustain them. This impact intensity would equate to a determination of “no effect” under Section 7 of the Endangered Species Act.</p>	<p><u>Adverse:</u> The effects of the action would be discountable (i.e., extremely unlikely to occur and not able to be meaningfully measured, detected, or evaluated). Individuals may temporarily avoid areas. Impacts would not affect critical periods (i.e., breeding, nesting, denning, feeding, resting) or habitat. In addition, essential features of critical habitat would not be impacted. This impact intensity would equate to a determination of “not likely to adversely affect” under Section 7 of the Endangered Species Act.</p> <p><u>Beneficial:</u> Impacts would result in slight increases to viability of the species in the Addition because species-limiting factors (i.e., habitat loss, competition, and mortality) would be kept in check. This impact intensity would equate to a determination of “not likely to adversely affect” under Section 7 of the Endangered Species Act.</p>	<p><u>Adverse:</u> Individuals may be impacted by disturbances that interfere with critical periods (i.e., breeding, nesting, denning, feeding, resting) or habitat; however, the level of impact would not result in a physical injury, mortality, or extirpation from the Addition. Some essential features of designated critical habitat would be reduced; however the integrity of the habitat would be maintained. This impact intensity would equate to a determination of “likely to adversely affect” under Section 7 of the Endangered Species Act.</p> <p><u>Beneficial:</u> Impacts would result in improved viability of the species, population structure, and species population levels in the Addition, because species-limiting factors (e.g., habitat loss, competition, and mortality) would be reduced. This impact intensity would equate to a determination of “not likely to adversely affect” under Section 7 of the Endangered Species Act.</p>	<p><u>Adverse:</u> Individuals may suffer physical injury or mortality, or populations may be extirpated from the Addition. Essential features of designated critical habitat would be reduced, affecting the integrity of the designated unit. This impact intensity would equate to a determination of “likely to adversely affect” under Section 7 of the Endangered Species Act.</p> <p><u>Beneficial:</u> Impacts would result in highly noticeable improvements to species viability, population structure, and species population levels in the Addition, because species-limiting factors (e.g., habitat loss, competition, and mortality) would be nearly eliminated. This impact intensity would equate to a determination of “not likely to adversely affect” under Section 7 of the Endangered Species Act.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
<p>Wildlife: Major Game Species</p>	<p>The action might result in a change in game species, but the change would not be measurable or would be at the lowest level of detection.</p>	<p>The action might result in a detectable change, but the change would be slight. This could include changes in the abundance or distribution of individual game species in a local area, but not changes that would affect the viability of local game populations. Changes to local ecological processes would be minimal.</p>	<p>The action would result in a clearly detectable change in a game population and could have an appreciable effect. This could include changes in the abundance or distribution of local game populations, but not changes that would affect the viability of regional game populations. Changes to local ecological processes would be of limited extent.</p>	<p>The action would be severely adverse or exceptionally beneficial to a population. The effects would be substantial and highly noticeable, and they could result in widespread change and be permanent. This could include changes in the abundance or distribution of a local or regional population of a game species to the extent that the population would not be likely to recover (adverse) or would return to a sustainable level (beneficial). Important ecological processes would be altered, and "landscape-level" (regional) changes would be expected.</p>
<p>Wilderness Resources and Values</p>	<p>An action would have no discernable effects on wilderness resources and values.</p>	<p>An action would have detectable effects on wilderness resources and values, affecting the ability for a small area to meet wilderness eligibility criteria or improving and protecting its wilderness characteristics.</p>	<p>An action would have clearly detectable effects on wilderness resources and values, affecting the ability of an area to meet wilderness eligibility criteria or improving and protecting its wilderness characteristics. The impact would be visible to visitors.</p>	<p>An action would have substantial effects on wilderness resources and values, eliminating the characteristics that make substantial areas eligible as wilderness or improving and protecting its wilderness characteristics. The impact would be easily visible to visitors.</p>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
CULTURAL RESOURCES				
Archeological Resources	Impacts would be at the lowest levels of detection — barely perceptible or measurable. For purposes of Section 106, the determination of effect would be no adverse effect.	Impacts would be perceptible and measurable, and would remain localized and confined to archeological site(s) with low to moderate data potential. For purposes of Section 106, the determination of effect would be no adverse effect.	Impacts would be sufficient to cause a noticeable change, and would generally involve one or more archeological sites with moderate to high data potential. For purposes of Section 106, the determination of effect would be adverse effect.	Impacts would result in substantial and highly noticeable changes, involving archeological site(s) with high data potential. For purposes of Section 106, the determination of effect would be adverse effect.
Ethnographic Resources	Impact(s) would be barely perceptible and would neither alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect would be no adverse effect.	Impact(s) would be slight but noticeable but would neither appreciably alter resource conditions, such as traditional access or site preservation, nor the relationship between the resource and the affiliated group's body of practices and beliefs. For purposes of Section 106, the determination of effect would be no adverse effect.	Impact(s) would be apparent and would alter resource conditions. Something would interfere with traditional access, site preservation, or the relationship between the resource and the affiliated group's practices and beliefs, even though the group's practices and beliefs would survive. For purposes of Section 106, the determination of effect would be adverse effect.	Impact(s) would alter resource conditions. Something would block or greatly affect traditional access, site preservation, or the relationship between the resource and the affiliated group's body of practices and beliefs, to the extent that survival of a group's practices and/or beliefs would be jeopardized. For purposes of Section 106, the determination of effect would be adverse effect.

Impact Topic and Duration	Negligible	Minor	Moderate	Major
VISITOR USE AND EXPERIENCE				
<p>Recreational Uses</p> <p>Motorized Use (ORVs)</p> <p>Nonmotorized Use (including hiking, horseback riding, and bicycling)</p> <p>Hunting (including fishing and frogging)</p>	<p>Visitors would likely be unaware of any effects associated with implementation of the alternative.</p> <p>There would be no noticeable changes in visitor use and/or experience or in any defined indicators of visitor satisfaction or behavior.</p>	<p>Changes in visitor use and/or experience would be slight but detectable, but would not appreciably diminish or enhance critical characteristics of the visitor experience. Visitor satisfaction would remain stable.</p>	<p>Few critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be altered. The visitor would be aware of the effects associated with implementation of the alternative and would likely be able to express an opinion on the changes. Visitor satisfaction would begin to either decline or increase as a direct result of the effect.</p>	<p>Multiple critical characteristics of the desired visitor experience would change and/or the number of participants engaging in an activity would be greatly reduced or increased. The visitor would be aware of the effects associated with implementation of the alternative and would likely express a strong opinion about the change. Visitor satisfaction would markedly decline or increase.</p>
SOCIOECONOMIC ENVIRONMENT				
<p>Local Economy</p>	<p>The effect would be below detectable levels or detectable only through direct means, with no discernable effect on the character of the social and economic environment.</p> <p>Effects identified as neutral would be actions that do not produce any changes at all to the social and economic environment.</p>	<p>The effect would be detectable but limited in geographic extent or size of population affected and not expected to alter the character of the established social and economic environment.</p>	<p>The effect would be readily detectable across a broad geographic area or segment of the community and could have an appreciable effect on the social and economic environment.</p>	<p>The effect would be readily apparent, affect a large segment of the population across the entire community and region, and would have substantial effect on the social and economic environment.</p>
NPS OPERATIONS AND MANAGEMENT				
<p>NPS Operations and Management</p>	<p>The effect would be at or below the level of detection, and would not have an appreciable effect on preserve operations and management.</p>	<p>The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on preserve operations and management.</p>	<p>The effects would result in a change in preserve operations and management in a manner readily apparent to staff and possibly to the public.</p>	<p>The effects would result in a substantial and widespread change in preserve operations and management in a manner readily apparent to staff and the public.</p>

CUMULATIVE IMPACT ANALYSIS

A cumulative impact is described in the Council on Environmental Quality's regulation 1508.7 as follows:

Cumulative impacts are the impacts that result from incremental impacts of the action when added to other past, present, and reasonably foreseeable actions, regardless of what agency (federal or nonfederal) or person undertakes such other action. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over time.

The action area for assessing cumulative impacts on the resources retained for detailed analysis varies depending upon the resource. Although these areas extend well beyond the boundaries of the Addition, the projects or actions in these areas can affect the resources of the Addition. For water resources, the action area is the Big Cypress Watershed, which includes most of Collier County and parts of Hendry, Broward, Miami-Dade, and Monroe counties. The action area for the Florida panther is defined as the known occupied range of the species, which is centered in and around Big Cypress and includes Everglades National Park, Fakahatchee Strand Preserve State Park, Florida Panther National Wildlife Refuge, and privately owned lands north of the Addition in Collier and Hendry counties. The action area for all other natural resources is the Addition plus the surrounding region, which is generally limited to the nearby fringes of the six counties that surround the Addition. This geographic area encompasses the habitats and resources of the four other special status species that are analyzed in this chapter and is more than sufficient for analysis of the other natural resource impact topics.

The action area for assessing cumulative impacts on cultural resources would be Collier and Monroe counties.

The action area for assessing cumulative impacts on visitor use and experience topics

includes the Addition and federal, state, tribal, and private lands within 25 miles of the Addition.

The action area for assessing cumulative impacts on the socioeconomic environment is Collier County.

To determine the potential cumulative impacts on the resources, other projects and actions within these action areas were identified. Projects were identified by discussions with NPS staff, federal land managers, and representatives of city and county governments. Potential projects identified as possible contributors to cumulative impacts included any planning or development activity that was currently being implemented, or is expected to be implemented in the future. Impacts of past actions were also considered in the analysis. Projects and actions that could contribute to cumulative impacts include the following:

Recreational Off-road Vehicle Management Plan — The NPS completed this ORV management plan for the original Preserve in 2000. Included in this plan is the development of 15 ORV access points and no more than 400 miles of designated primary trails. A maximum of 2,000 permits per year can be granted to ORV users. The plan requires monitoring of field conditions and impacts from off-road vehicles and outlines an adaptive management framework to do so.

Commercial Services Plan — The *Commercial Services Plan* is intended to address the existing conditions and law in a manner that will be compliant with the 1998 National Park Service Concessions Management Improvement Act (PL 105-391) and regulations. As an implementation plan, this *Commercial Services Plan* must also be consistent with the established planning direction in the 1991 *General Management Plan* for the Preserve and achieve the desired future conditions or

goals for the Preserve. This plan covers the original Preserve only; the Addition will be addressed in an addendum to this plan after the completion of the *General Management Plan* for the Addition.

The National Park Service has several authorization instruments available to manage commercial services within national park system units. Currently, concession contracts and permits are used to manage commercial services that are assigned land and/or facilities in national park system units. Before the National Park Service will commit resources to those facilities, these commercial activities must be identified as a necessary and appropriate use of the Preserve resources and facilities. The *Commercial Services Plan* is the document that identifies activities currently considered necessary and appropriate, as well as guidance on the process for reviewing activities that may be proposed in the future.

The preferred alternative for the original Preserve's *Commercial Services Plan* proposes to develop the Preserve's visitor services to the level and quality described in the 1991 *General Management Plan*. The concept of this alternative is to enhance the Preserve's visitor services by developing one facility at Monroe Station to provide the visitor services deemed necessary and appropriate, with the opportunity to provide a second, smaller facility at Seagrape Drive as funding permits. Other services may begin and end outside the Preserve. Some services expected to be provided include the following: hunting and fishing guides; buggy tours; hiking tours (both day use and multiday); boat and kayak rentals, livery, and guided tours; firewood sales for campgrounds; bicycle rentals; general van tours, birding and wildlife viewing, and photography — by van, foot, or buggy, and offered through a cooperative association (The Everglades Association). The plan also proposes the development of a backcountry camping complex in the northern portion of the Turner River

Management Unit. Some management changes could be made to improve effectiveness and efficiency, and some minor changes to the level of services could be made for resource protection and visitor experience enhancement to be consistent with the management zone prescriptions established in the 1991 *General Management Plan*.

The Preserve will require the use of indicators and standards as part of the visitor experience and resource protection (VERP) method to answer the question of how much visitor use can be accommodated without causing undesirable impacts on Preserve resources and visitor experience, commonly referred to as "user capacity." Once this user capacity is established, continuous monitoring and adaptive management will be required to ensure that the quality of visitor experience is maintained and that resources are protected.

Future Oil and Gas Operations — Plans for future oil and gas operations are a reasonably foreseeable expectation for the Addition. Future oil and gas proposals would likely include conducting a geophysical survey within portions of the Addition and could include the use of specialized off-road equipment that would travel cross-country. An environmental analysis of these proposals and their potential cumulative impacts would be conducted for such submissions.

South Florida Ecosystem Restoration Projects — The south Florida ecosystem stretches south from Orlando through the Chain of Lakes, the Kissimmee Valley, Lake Okeechobee, and the remaining Everglades to the waters of Florida Bay and coral reefs. The ecosystem encompasses about 18,000 square miles within 16 counties. This region supports 68 federally threatened and endangered plant and animal species. There is an intense, cooperative effort among federal, state, and local government agencies, tribes, environmental organizations, universities,

businesses, and local citizens to preserve and restore the greater Everglades ecosystem. More than 200 restoration projects within this region have been identified. Listed below are projects that would have the most influence on the Addition.

- **“Comprehensive Everglades Restoration Plan” (CERP)**, commonly known as the “Restudy.” This is a multibillion-dollar water system improvement plan led by the U.S. Army Corps of Engineers. It will reconfigure the artificially created drainage patterns of south Florida back to more natural conditions. Several projects under the umbrella of this plan that will have direct effects on the Big Cypress ecosystem include:
 - ✓ **Big Cypress / L-28 Interceptor Modifications** — The purpose of this project is to (1) reestablish sheet flow from the West Feeder Canal across the Big Cypress Reservation and into the Big Cypress National Preserve, (2) maintain flood protection on Seminole tribal lands, and (3) ensure that inflows to the North and West Feeder canals meet applicable water quality standards. Upstream flows entering the West and North Feeder canals will be routed through two stormwater treatment areas to be located at the upstream ends of the canals. Sheet flow will be reestablished south of the West Feeder Canal. These improvements will be consistent with the “Big Cypress Seminole Tribe's Water Conservation Plan.”
 - ✓ **Water Conservation Area 3 (WCA 3) Decompartmentalization** — The project is a cooperative effort between the Army Corps of Engineers (Corps) and the South Florida Water Management District (SFWMD).

WCA 3 (made up of WCA 3A and WCA 3B) is located immediately north of Everglades National Park. The compartmentalization and constriction of historically broad wetlands, altered hydroperiods, reduction of wildlife, and degradation of water quality are among the environmentally detrimental effects resulting from the construction of the Central and Southern Florida projects.

Water Conservation Area 3 is part of this project. The project, when implemented, would reduce barriers to sheet flow such as canals and levees to the extent practicable. The goal is to restore historical sheet flow distributions, depth patterns, hydroperiods, and hydrologic connectivity in the various landscapes within WCA 3 and in Northeast Shark River Slough within Everglades National Park, thereby creating a sustainable environment that is suitable for the recovery and long-term survival of native flora and fauna in concert with related projects.

Regional Growth and Development Projects— Based on the most recent data from the Southwest Florida Regional Planning Council, southwest Florida is one of the most rapidly growing areas of the nation. Since April 1, 2000, the southwest Florida population has grown by at least 24% and is expected to continue growing at an average rate of 3.4% per annum. It is estimated that the region will double its current capacity by the year 2030. Historically, development has occurred to the east and west of the Addition along the coasts. As population growth continues, the likelihood is greater that natural and agricultural lands close to the Addition will be developed. Recently, private lands northwest of the Addition have received approval for major developments. As this

growth occurs, increasing demand will occur on all of the region's resources. The following projects are among those that could have cumulative impacts:

- Town of Ave Maria — This project includes the build out of 11,000 housing units on approximately 5,000 acres. The planned development will also include a private university.
- Town of Big Cypress — This project includes the proposed town of Big Cypress, which would include 9,000 housing units on approximately 3,600 acres. (This project is in the review process and has not yet been approved at the time of this writing.)
- Florida Gulf Coast University/
Redevelopment of SW Regional

Airport — This project includes the redevelopment of an airport site into a new state university, along with associated housing development that will support the site's new uses.

These projects and actions were evaluated in conjunction with the impacts of each alternative to determine if they would result in any cumulative impacts on a particular natural or cultural resource, the socioeconomic environment, visitor use, or NPS operations and management. Because most of these actions are in the early planning stages, the evaluation of cumulative impacts is qualitative and based on a general description of the project.

IMPAIRMENT OF ADDITION RESOURCES

In addition to determining the environmental consequences of implementing the alternatives, *NPS Management Policies 2006* (section 1.4) requires analysis of potential effects to determine whether alternatives would impair the Addition's resources and values.

The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve resources and values. NPS managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adverse impacts on resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within a unit, that discretion is limited by the statutory requirement that the National Park Service must leave resources and values unimpaired unless a particular law directly and specifically provides otherwise.

The prohibited impairment is an impact that, in the professional judgment of the responsible NPS manager, would harm the integrity of resources and values, including the opportunities that otherwise would be present for the enjoyment of those resources or values (*NPS Management Policies 2006* section 1.4.5). An impact on any resource or value may constitute impairment. An impact would be more likely to constitute impairment if it results in a moderate or major adverse effect on a resource or value whose conservation is

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the area;
- key to the natural or cultural integrity of the area or to opportunities for enjoyment of the area; or
- identified as a goal in the area's general management plan or other relevant NPS planning documents.

Impairment may result from NPS activities in managing the area; visitor activities; or activities undertaken by concessioners, contractors, and others operating in the Addition. A determination on impairment is made in the "Conclusion" section for each required impact topic related to the Addition's resources and values. An evaluation of impairment is not required for topics related to visitor use and experience (unless the impact is resource based), NPS operations, or the socioeconomic environment. When it is determined that an action or actions would have a moderate to major adverse effect, an explanation is presented of why this would not constitute impairment. Impacts of only negligible or minor intensity would, by definition, not result in impairment. The impairment analysis, later in this chapter, for each of the impact topics has determined that none of the alternatives presented in this plan would result in impairment of Addition resources.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE A (NO ACTION)

NATURAL RESOURCES

Surface Water Flow

Analysis. Under alternative A, impacts on surface water flow would be attributed primarily to the maintenance of existing facilities that prevent natural sheet flow. Maintaining Nobles, Jones, and Bear Island Grades in their current state restricts hydrologic connectivity within the Northeast Addition. Facilities and structures at Deep Lake (fill pad), Copeland (Fire Operations Center), and Carnestown also would continue to affect natural hydrology in localized areas. Limited NPS administrative ORV use would continue to affect surface water flow in localized areas on a short-term basis. Most impacts on surface water flow are due to the presence of roads and grades. These impacts would continue to be long term, adverse, and of moderate intensity. Although the effects could extend beyond the boundaries of the Addition, they would be localized in nature. Impacts related to the continued presence of NPS facilities and structures would be long term, minor, adverse, and localized.

Ongoing NPS restoration to improve soil conditions and reestablish natural ground contours would have beneficial effects on surface water flow; these impacts would be long term, minor to moderate, and localized. Ongoing vegetation management could also improve surface water flow by eliminating exotic vegetation that impedes flow or reduces water availability. The impact would continue to be long term, minor to moderate, beneficial, and Addition-wide.

Collectively, the impacts on surface water flow would be long term, minor to moderate, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on

surface water flow into that portion of the Addition that abuts the original Preserve at localized sites because best management practices and mitigation would maintain or improve hydrologic flow. The impact on surface water flow in the watershed would be negligible.

Implementation of future oil or gas plan of operations proposals could have adverse impacts on surface water flow. If the proposals include using off-road equipment and constructing roads and pads, this would alter local hydrology. Construction and operations activities would affect the timing and intensity of surface water flows. The impacts of these activities would be reduced because NPS approval of the operation plans would require mitigative measures. Short-term impacts on surface water flow would be adverse, minor to moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Proposals involving the Addition include the removal of the L-28 interceptor canal levee, modification of the L-28 Tie Back Canal, and operational changes to various water control structures. Decompartmentalization of Water Conservation Area 3 would also improve sheet flow and hydrologic connectivity. The impact of these efforts on the hydrology of the Addition, as well as within the watershed, is expected to be long term, major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands and alter the hydrology of the general area. Changes in sheet flow, including timing and intensity, would affect hydrologic function and connectivity in the watershed. The impact of these activities is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on surface water flow would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on surface water flow in the watershed.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on surface water flow would be long term, adverse, minor to moderate, and localized.

There could be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of surface water flow in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Water Quality

Analysis. Under alternative A, impacts on water quality would be attributed to visitor use at a few discrete sites as well as from NPS operations and maintenance activities. Visitor use, such as hiking and backcountry camping, could continue to cause soil erosion and generate human waste that would affect turbidity and surface water quality. Inadvertent leaks or spills of fuel or oil from NPS administrative ORV use could affect surface water quality by elevating chemical concentrations. Impacts from parked vehicles would be more common at destination sites or along

roads. The maintenance of roads, grades, and trails within the Addition would likely cause erosion that could enter canals and waterways and increase turbidity. The impacts of these activities would be long term, minor, adverse, and localized. Impacts would be minor due to the limited visitation in the Addition and the limited development and maintenance that would occur under alternative A.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on water quality at localized sites in the portion of the Addition that abuts the original Preserve because best management practices and other mitigation would be used to minimize soil erosion and chemical contamination. The impact of these activities on water quality in the watershed would be negligible.

Implementation of future oil or gas plan of operations proposals could have adverse impacts on water quality. If the proposals included the use off-road equipment and construction of roads and pads, this could result in degrading water quality due to turbidity and chemical contamination. The impacts of these activities would be reduced because NPS approval of the operation plan would require mitigative measures. Short-term impacts on water quality would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized. This is due to the number and complexity of the proposals and uncertainty with their levels of success.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Although the proposals would increase surface water flow and connectivity, the discharged waters are expected to have elevated chemical concentrations that would degrade water quality. Because the current condition of water resources in the Addition is cleaner than what is expected to be discharged, the impact is predicted to be long term, adverse, and Addition-wide, but the intensity is

unknown. The impact on water quality within the watershed is unknown. This is due to the number and complexity of the proposals and uncertainty with their levels of success.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Water quality would be affected by inputs from urban and suburban development, including increases in organic compounds and chemical concentrations. The impact on water quality within the watershed is expected to be adverse, but the intensity is unknown.

Collectively, adverse impacts could be expected from oil and gas operations, ecosystem restoration projects, and regional growth and development. Overall, the effects of the projects discussed above could be adverse on water quality in the watershed, but the intensity is unknown.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on water quality would be long term, minor, adverse, and localized.

There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative A would contribute a very small adverse increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of water quality in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wetlands

Analysis. Under alternative A, impacts on wetlands would be attributed primarily to the retention and maintenance of existing facilities, such as roads, grades, and trails. Impacts would include vegetation loss and alteration of soils, which would result in permanent effects on wetland size and integrity that would be long term, minor, adverse, and localized. Indirect impacts, such as increased runoff and sedimentation, would be long term, minor, adverse, and localized.

NPS efforts to reestablish natural ground contours and restore soil integrity would have positive effects on wetlands — the impact would be long term, beneficial, minor to moderate, and localized.

Collectively, impacts on wetlands under alternative A would continue to be long term, minor, adverse, and localized.

Cumulative Impacts. Implementation of future oil or gas plan of operations proposals could have adverse impacts on wetlands. If the proposals included using off-road equipment and constructing roads and pads, this would result in altering wetland soils and vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on wetlands would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would affect wetlands by increasing the availability of water, which in turn could increase the size and integrity and improve the function of wetlands. The impact of these efforts on wetlands is expected to be long term, moderate to major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of

natural lands to development and alter the hydrology of the general area. Changes in sheet flow and water quality would affect the size, integrity, and function of wetlands in the watershed. The impact of these activities on wetlands would be long term, moderate to major, and adverse. The adverse impacts would be at least partially offset by wetlands mitigation required by permitting agencies.

Collectively, beneficial impacts on wetlands would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on wetlands.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on wetlands would be long term, minor, adverse, and localized.

There would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wetlands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Soils

Analysis. Under alternative A, impacts on soils would be attributed primarily to facility maintenance, limited NPS administrative ORV use, and NPS restoration activities.

Facilities such as temporary access points, trails, and grades and roads require recurring maintenance, which could displace or erode soils. The impacts from these activities would be long term, minor to moderate, adverse, and localized. Some rutting and displacement of soils might occur from NPS administrative or illegal public ORV use; however, activity would be infrequent, and the impact would be long term, negligible to minor, adverse, and localized.

Users participating in nonmotorized activities could also cause erosion, but the adverse impacts would likely be negligible to minor.

NPS efforts to reestablish natural ground contours and restore natural hydrologic conditions would have beneficial long-term, minor to moderate, and localized effects on soils.

Collectively, impacts on soils from implementing alternative A would continue to be minor, adverse, long term, and localized.

Cumulative Impacts. Implementation of future oil or gas plan of operations proposals could have adverse impacts on soils. If proposals include the use of off-road equipment and construction of roads and pads, this would alter soils. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on soils would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

Changes in the availability of water resources due to the south Florida ecosystem restoration project would affect soil properties. The integrity of hydrologic soils could be improved or restored by increases in water — a beneficial impact.

Decreases in water or permanent soil loss resulting from regional growth and development would adversely impact soils. The impact of these efforts on soils is expected to be long term, moderate to major, and adverse.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on soils. The permanent loss of soils would be expected to outweigh any beneficial impacts that might be realized from ecosystem restoration projects. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on soils would be long term, minor, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of soils in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Floodplains

Analysis. Under alternative A, impacts on floodplains would continue to be limited to those derived from the retention of two existing facilities in the 100-year floodplain — the NPS Fire Operations Center at Copeland and the facilities at Carnestown. Retaining these facilities would continue to only slightly affect the capacity of the floodplain to store flood waters. The flow of water in the floodplain during floods would also be slightly affected. The impact on floodplains would continue to be long term, minor, adverse, and localized.

Cumulative Impacts. Regional growth and development is expected to affect floodplains in the region. Floodplains could be physically altered, changing their capacity and altering the natural course of floodwater flow. Natural

flood patterns would be adversely affected, but any adverse impacts on property and life should be mitigated through proper permitting. The impact of these activities on floodplains could be long term, minor to major (depending on the nature of the floodplain design), and adverse.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would affect floodplains by reclaiming some floodplains and improving their integrity and function — a beneficial impact. The impact of these efforts on floodplains would be long term and beneficial, but the intensity is unknown.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on floodplains would continue to be long term, minor, adverse, and localized.

There would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of floodplains in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Cypress Strands and Domes, Mixed Hardwood Swamps, and Sloughs

Analysis. Under alternative A, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be attributed

primarily to NPS restoration efforts and limited NPS administrative ORV use. Ongoing vegetation management and efforts to restore natural hydrologic processes would continue to improve conditions for native vegetation because water availability and connectivity would increase, and competition from exotic plants would be minimized. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from vegetation management would be long term, minor to moderate, beneficial, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would remain infrequent. The conditions that often discourage ORV use (deep water, closely spaced trees, etc.) would continue, and adverse impacts from off-road vehicles would most often be limited to the margins of the plant community. Adverse impacts could include injury to a plant or group of trees, or might include plant loss in a discrete area due to repeated use. The trampling of vegetation by nonmotorized visitors (i.e., hikers) would be more common at frontcountry destinations (Deep Lake and Bear Island Grade) and less common in the backcountry. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from NPS use of off-road vehicles and current visitor use would be long term, minor, adverse, and localized.

Collectively, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from implementing alternative A would continue to be minor, adverse, long term, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If proposals

include the use of off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit cypress strands and domes, mixed hardwood swamps, and sloughs.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps,

and sloughs. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, adverse, minor, and localized.

There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of cypress strands and domes, mixed hardwood swamps, and sloughs in the Addition. (See specific definition of impairment in the “Impairment of Addition Resources” section.)

Vegetation — Prairies and Marshes

Analysis. Under alternative A, impacts on prairies and marshes would be attributed primarily to NPS restoration efforts and limited NPS administrative ORV use.

Ongoing vegetation management, including the use of prescribed fire, and efforts to restore natural hydrologic processes would continue to improve conditions for native vegetation because water availability and connectivity would increase and competition from exotic plants would be minimized. Impacts on prairies and marshes from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would remain infrequent; however, even infrequent use could produce adverse impacts. The soil conditions in prairies and marshes cause poor traction for off-road vehicles, and rutting and braiding of trails is common. Most NPS operators understand the sensitivity of prairies and marshes and know

to avoid these areas. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to rutting or repeated use. Impacts on prairies and marshes from ORV use would be long term, minor, adverse, and localized. The impacts of trampling of vegetation by nonmotorized visitors (i.e., hikers) would be negligible.

Collectively, the impact on prairies and marshes under alternative A would be long term, minor, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If proposals included the use of off-road equipment and construction of roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term residual impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on prairies and marshes is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in

sheet flow, and its timing and intensity, would affect plant communities. Prairies and marshes on private land outside the Addition would continue to be impacted by population growth and development. The impact of these activities on prairies and marshes is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on prairies and marshes would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on prairies and marshes would be long term, minor, and adverse.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on prairies and marshes would be long term, adverse, minor, and localized.

There could be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of prairies and marshes in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Mangrove Forests

Analysis. Under alternative A, motorized boating would continue to be allowed south of U.S. 41 in the Western Addition. Motorized

boating does not include airboating because airboats are classified by the Preserve as off-road vehicles. Most of the boating in the Addition occurs in the deep, open-water environs, outside the dense mangrove forests. Motorized boating could continue to injure individual plants or prevent their expansion into the shallower margins of the well-travelled boating corridors. Impacts on mangrove forests would continue to be long term, minor, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. Because airboats are not allowed in the Addition, beneficial impacts on mangroves would be negligible.

Regional growth and development, including waterfront development, is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Mangroves receive special protection under state law, and any impacts on mangrove forests would be expected to be negligible.

Conclusion. Under alternative A, impacts on mangrove forests would continue to be long term, minor, adverse, and localized.

Cumulative impacts on mangrove forests would be negligible. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of mangrove forests in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Pinelands

Analysis. Under alternative A, impacts on pinelands would be attributed primarily to

NPS restoration efforts and limited NPS administrative ORV use.

Ongoing vegetation management, including the use of prescribed fire, would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on pinelands from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would continue in the Addition. The durability of the substrate present in pinelands minimizes adverse impacts from ORV use. The loss of pines from ORV use has not been documented in the original Preserve; however, wheeled use could have adverse impacts on other plant species present within these communities or within certain ecotonal areas. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to repeated use. Impacts on pinelands from ORV use would be long term, adverse, minor, and localized.

Collectively, the impact on pinelands under alternative A would be long term, minor, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If proposal included the use off-road equipment and construction of roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operation plan would require mitigative measures. Short-term impacts on vegetation would be adverse,

moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of pinelands. The assemblage of pines and palmettos could change as a result of changes in hydrology or periods of inundation. The impact is uncertain because drying often adversely impacts pinelands, and increasing the water table could also cause a net reduction in pinelands compared to current conditions. It is expected that restoring natural hydrologic conditions would have a beneficial impact on pinelands.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Studies have shown that pinelands are the most impacted by human land conversion. Pinelands on private land in the region would continue to be lost. The impact would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on pinelands would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on pinelands in the Addition.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on pinelands would be long term, adverse, minor, and localized.

There could be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of pinelands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Hardwood Hammocks

Analysis. Under alternative A, impacts on hardwood hammocks would be attributed primarily to NPS restoration efforts and limited NPS administrative ORV use.

Ongoing vegetation management would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on hardwood hammocks from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would continue in the Addition. Although the substrate present in hardwood hammocks is suitable for ORV use, use tends to be infrequent because of the size and density of trees present in these areas. However, infrequent ORV use could continue to adversely impact understory plants. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to repeated use. Backcountry camping could also cause trampling or loss of vegetation at localized sites. Impacts on hardwood hammocks from ORV use and backcountry visitor use would be long term, adverse, minor, and localized. Impacts would be expected to be minor because areas affected would be relatively small and dispersed.

Collectively, the impact on hardwood hammocks under alternative A would continue to be long term, minor, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If proposal included the use off-road equipment and construction of roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operation plan would require mitigative measures. Short-term impacts on vegetation would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of hardwood hammocks. The impact is uncertain, but restoring natural conditions is expected to have a long term, minor, beneficial impact.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on hardwood hammocks is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on hardwood hammocks would accrue from ORV

management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit hardwood hammocks.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on hardwood hammocks. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on hardwood hammocks would be long term, adverse, minor, and localized.

There could be a long-term, minor, beneficial cumulative impact on hardwood hammocks. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of hardwood hammocks in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Exotic/Nonnative Plants

Analysis. Under alternative A, impacts on exotic/nonnative plants would be attributed primarily to NPS restoration efforts, limited ORV and visitor use, and facility maintenance activities. Ongoing vegetation management (including the use of prescribed fire and chemical and mechanical treatment) in the Addition would continue to decrease competition from exotic plants and improve the integrity of native habitats. The continuation of monitoring efforts would also help to detect and mitigate new exotic species that could affect native plant communities. Impacts on exotic/nonnative species from ongoing resource management activities

would be long term, beneficial, moderate, and Addition-wide.

Limited NPS administrative ORV use, as well as visitor use and facility maintenance in the Addition, could continue to cause impacts on the distribution and establishment of exotic plants. Visitors and off-road vehicles can be agents for seed dispersal, increasing the threat to native plant communities. Exotic plants can have severe effects on the integrity of native systems and habitats. Impacts on exotic/nonnative plants from these activities would be long term, minor, and adverse. Although the effects would continue to be most pronounced along travel corridors and at disturbed sites, the impacts could extend beyond these immediate areas and become Addition-wide.

Collectively, the impact on exotic/nonnative plants under alternative A would continue to be long term, minor, beneficial, and potentially Addition-wide.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on exotic plants and native vegetation in the original Preserve and reduces the potential for dispersal into the Addition — a beneficial impact on nonnative vegetation. Furthermore, the designated trail system would facilitate management of exotic species, including reporting and removal. The impact on exotic plants and nonnative vegetation in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on native vegetation because of the potential for the spread of exotic plants in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would disturb soils and native vegetation. Short-term impacts could include the establishment of exotic plants on disturbed sites and the dispersal of seeds and plant stock. The impacts of these activities would be reduced because NPS approval of the

operations plan would require mitigative measures. Short-term impacts on native vegetation because of the potential for the spread of exotic and nonnative species would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of exotic plants. The impact on exotic plants is uncertain, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact on native plants and vegetation.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect exotic plants, as would increases in the amount of disturbed land that is available for colonization by exotic species. The impact of these activities on exotic plants and nonnative vegetation is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on native vegetation would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could have a minor adverse impact on exotic plants and nonnative vegetation.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on exotic plants. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on native vegetation because of the potential for the spread of exotic and nonnative plants would be long term, minor, beneficial, and potentially Addition-wide.

There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of native vegetation in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Federal Threatened and Endangered Species

Florida Panther. Under alternative A, impacts on the Florida panther would be attributed primarily to NPS restoration efforts and limited NPS administrative ORV use and visitor use.

Ongoing vegetation management efforts would continue to improve habitat for panthers as well as for the major game species in the Addition that serve as their primary food source. Partnerships with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service would continue and would contribute to the monitoring and improved understanding of the species. Impacts on panthers from ongoing resource management activities would continue to be long term, beneficial, minor, and Addition-wide.

Public ORV use would continue to be prohibited in the Addition under alternative A. The hunting pressure associated with walk-in access only would be expected to be minimal, with no substantial effect on the panther's prey base. Consequently, human use and disturbance in the Addition would continue to be minimal and would maintain conditions that support panther use of the

area as well as robust prey populations. Adverse impacts, such as flushing and displacement of panthers, would continue. The impact would be long term, minor to moderate, adverse, and localized.

Limited administrative ORV use by NPS staff, as well as nonmotorized public use (primarily backcountry hiking), would continue to affect Florida panthers, potentially causing displacement and avoidance of certain areas within the Addition. The impact would continue to be long term, adverse, minor, and localized.

Overall, impacts on the Florida panthers resulting from the continuation of current management (alternative A) would be long term, adverse, minor, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of ORVs on panthers in the region, a beneficial impact because an individual panther's range may include the Preserve as well as the Addition and other adjacent lands. In other words, improving and protecting habitat value on the original Preserve could yield a regional benefit to the species. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on panthers. Adverse impacts on panthers would still occur from ORV use in the original Preserve, but the effects would be less than with no ORV management. With implementation of the terms and conditions of the U.S. Fish and Wildlife Service's "Biological Opinion" (USFWS 2000), the plan is not likely to result in jeopardy to the panther. Overall, the impact of the 2000 *Recreational Off-road Vehicle Management Plan* on the Florida panther would be long term, moderate, and beneficial compared to no ORV management.

Implementation of future oils and gas proposals could have adverse impacts on Florida panthers in the Addition. If such proposals included using off-road equipment and construct ingroads and pads, this could create human disturbances and result in degradation and loss of panther habitat. Short-term adverse impacts from construction could include flushing and displacement of panthers, effects on feeding and sheltering behavior, and an increase in mortality from vehicle collisions. The same types of adverse impacts would be long term due to ongoing operations and maintenance activities. These adverse impacts would be minor and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the Florida panther is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because it would return vegetation communities to historic conditions and improve predator/prey relationships.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of panther habitat. Natural areas that remain are more fragmented and contain higher levels of human disturbance, both of which adversely affect panthers and their long-term survival. Increased panther mortality due to vehicle collisions could also be attributed to the effects of regional growth and development. The impact of these activities on the Florida panther is expected to be long term, moderate to major, and adverse.

Collectively, beneficial impacts on the Florida panther would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development.

Overall, the effects of the projects discussed above would likely be long term, minor to moderate, and adverse on Florida panthers in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion — Continuation of current management under alternative A would result in long-term, minor, adverse, mostly localized impacts on the Florida panther across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not likely result in impairment of the Florida panther in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

West Indian Manatee. Under alternative A, impacts on the West Indian manatee would be

attributed primarily to continued motorboat use associated with recreational fishing (airboat use is prohibited). Manatees in the creeks, canals, and estuarine area south of U.S. 41 in the Western Addition would be subjected to potential injury from collisions with boat hulls and/or propellers. Manatees would also be displaced from and/or avoid certain areas, which could affect feeding and other behaviors. The National Park Service already manages boating in this area to reduce impacts on manatees and their designated critical habitat. Partnerships with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service would continue and would help improve monitoring and recovery of the species. Essential features of critical habitat would not be impacted. Impacts on the West Indian manatee would continue to be long term, adverse, minor, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the manatees. The quality of freshwater inputs is predicted to be less than current conditions, which could adversely impact manatee habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, minor beneficial impacts for the West Indian manatee.

Regional growth and development is expected to continue and could result in an increase in the number of recreational boaters in the region. Injury and mortality of the manatees associated with recreational boating could increase as a result of increased motorboat use. Incompatible coastal development could also adversely affect manatees by loss of habitat and feeding areas, as well as pollution discharges. These activities would adversely

impact manatees and could affect their long-term survival. The impact on the West Indian manatee is expected to be long-term, moderate to major, and adverse.

Overall, the effects of the projects discussed above would likely be adverse to West Indian manatees in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion — Implementation of alternative A would result in localized, long-term, minor adverse impacts on the West Indian manatee. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the West Indian manatee in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Red-Cockaded Woodpecker. Under alternative A, impacts on the red-cockaded woodpecker would be attributed primarily to NPS restoration efforts and limited ORV and visitor use.

Ongoing vegetation management efforts, including the use of prescribed fire to maintain preferred understory conditions, would continue to improve habitat for red-cockaded woodpeckers. Long-term, minor to moderate, beneficial, impacts would be anticipated from ongoing resource management activities.

Nonmotorized visitor use (primarily hiking) could continue to affect woodpeckers, potentially causing displacement and their avoidance of certain areas in the Addition; the impact would be long term, negligible to minor, adverse, and localized.

Because there are currently no known nest sites within the Addition, effects on woodpeckers would be limited to impacts on foraging habitat and avoidance of certain areas during periods of human activity. The impacts would be long term, adverse, minor, and localized.

Overall, the continuation of current management (alternative A) would continue to result in long-term, minor to moderate, beneficial, impacts on this species across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on red-cockaded woodpeckers in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on woodpeckers. Cavity trees and active clusters would be avoided as trail sites, thereby reducing adverse impacts. Adverse impacts on woodpeckers would still occur from ORV use in pinelands in the original Preserve, but the impact would be minor. Overall, the impact of the 2000 *Recreational Off-road Vehicle Management Plan* on the red-

cockaded woodpecker would continue to be long-term, negligible, and adverse.

Implementation of future oil and gas proposals could have adverse impacts on the red-cockaded woodpecker in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could degrade and reduce available woodpecker habitat. The impacts of these activities would be reduced because NPS approval of the operations plans would require mitigative measures. Short-term adverse impacts could include flushing and displacement of woodpeckers, while long-term impacts could include the loss of cavity nesting trees.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities (including pinelands) and in turn wildlife habitat. The impact on the red-cockaded woodpecker is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources would be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of woodpecker habitat (pinelands) in the region. Natural areas that remain are more fragmented and contain higher levels of human disturbance and displacement of woodpeckers, both of which adversely affect woodpeckers and their long-term survival. The impact of these activities on the red-cockaded woodpecker is expected to be long-term, moderate, and adverse.

Collectively, beneficial impacts on the red-cockaded woodpecker would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to red-cockaded woodpeckers in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the red-cockaded woodpecker. The actions contained in alternative A would contribute a small beneficial increment to this cumulative impact.

Conclusion — The continuation of current management (alternative A) would result in long-term, minor to moderate, beneficial impacts across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the red-cockaded woodpecker. The actions contained in alternative A would contribute a small beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment on the red-cockaded woodpecker in the Addition because habitat conditions would be maintained or enhanced, and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wood Stork. Under alternative A, ongoing NPS efforts to improve natural hydrologic processes would continue, but the wood stork's habitat also would continue to be

affected primarily by water levels and drying conditions resulting from natural climatic events. Currently there are no known stork nest sites within the Addition, and they have nested in the Preserve only sporadically since 1996. The continuation of current management (alternative A), including limited human activity in the Addition associated with limited NPS administrative ORV use and backcountry hiking, would continue to result in negligible adverse impacts on the wood stork. Public hunting would be allowed via walk-in access only. The determination of effect under Section 7 of the Endangered Species Act would be *no effect*.

Cumulative Impacts — Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the wood stork's foraging habitat (prairies and marshes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on storks. Nesting habitat (cypress trees in open water) would likely not be affected because off-road vehicles typically avoid the deep, open water areas that storks commonly nest in. Consequently, the effect on nesting habitat due to the actions in the 2000 *Recreational Off-road Vehicle Management Plan* would be negligible. Overall, the impact of that plan on the wood stork in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the wood stork in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of wood stork habitat. The impacts of these activities would be reduced because NPS approval of the operations plans would require mitigative measures. Adverse impacts could include flushing and displacement of wood storks. Short-term impacts on wood storks would

be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply. The impact on the wood stork is unknown, but restoring natural hydrologic conditions is expected to have a long-term, minor to moderate, beneficial impact because vegetation communities would return to historic conditions and foraging resources would improve.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alteration of the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect storks. The impact of these activities on the wood stork is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the wood stork would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse for wood storks in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in alternative A would add a very small increment to this cumulative impact.

Conclusion — Under alternative A, impacts on the wood stork would be long term, negligible, and adverse. The determination of effect under Section 7 of the Endangered Species Act would be *no effect*.

There would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in alternative A would add a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the wood stork in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Everglade Snail Kite. Under alternative A, impacts on the Everglade snail kite would be attributed primarily to NPS restoration efforts and limited NPS administrative ORV use and nonmotorized visitor use.

The snail kite's diet is predominantly apple snails. Given this distinct dependence, the kite can also be affected by actions that affect apple snail populations or affect the kite's access to apple snails. Although there are no known snail kite nest sites in the Addition, kites may occasionally use marshes and open water littoral zones in the Addition for foraging on apple snails. They may also roost in the vicinity of these water bodies. Over time, without disturbances from recreation or hydrologic alterations, it may be possible for kites to nest in the Addition.

Under alternative A, ongoing NPS efforts to improve natural hydrologic processes would continue to benefit apple snail populations in the Addition, which in turn would benefit the kite. However, natural hydrologic cycles would continue to bring yearly fluctuations in apple snail abundance in the Addition, which

would affect foraging opportunities for the kite.

The kite's ability to forage for apple snails depends on water clarity and the lack of dense vegetation in wetlands or pond/lake shallows, because the kite needs to see snails below the water surface. Thus, under alternative A, continued NPS management of invasive plants and water quality in the Addition would also continue to benefit the snail kite by maintaining open, accessible foraging areas in wetlands and open water.

The continuation of current recreation management (alternative A), including limited human activity associated with limited NPS administrative ORV use, backcountry hiking, and walk-in hunting, may continue to occasionally flush or displace foraging or roosting kites in the Addition. This would continue to result in negligible to minor adverse impacts on the Everglade snail kite and its foraging habitat.

Collectively, the continuation of current management (alternative A) would continue to result in long-term, minor to moderate, beneficial, impacts on this species across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the snail kite's foraging, roosting, and nesting habitat (marshes and pond/lake fringes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the kites in the region. However, foraging, roosting, or possible nesting habitat for snail kites could be adversely affected in areas where ORV use is permitted under the plan, particularly in specific ORV use areas that are near marshes, ponds, or lakes. Overall, the

impact of that plan on the snail kite in the region would be long term, minor, and beneficial.

Implementation of future oils and gas proposals could have adverse impacts on the snail kite habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of snail kite habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of snail kites. Short-term impacts on snail kites would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply and water quality. This would be particularly beneficial to the snail kite, because its diet predominantly consists of apple snails that depend on adequate hydrological conditions. Furthermore, the return of natural hydrological conditions and improved water quality to the region would also enhance or increase the availability of quality foraging, roosting, and nesting habitat for the Everglade snail kite. The restoration of natural hydrologic conditions would have long-term, moderate, beneficial impacts.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect snail kites and their primary food source, the apple snail. The impact of these

activities on the snail kite is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the snail kite would result from improved ORV management and ecosystem restoration projects by mitigating ORV impacts and allowing habitat restoration. Adverse impacts would be expected from oil and gas development and regional growth and urban development. Overall, the effects of the projects discussed above would likely be adverse to snail kite habitat in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the Everglade snail kite. The actions contained in alternative A would add a small increment to this cumulative impact.

Conclusion — Under alternative A, impacts on the Everglade snail kite would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

However, there would be a long-term, minor, adverse cumulative impact on the snail kite. The actions contained in alternative A would add a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the Everglade snail kite in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

American Crocodile. Under alternative A, impacts on the American crocodile and its

habitat would primarily be attributed to continued human activities near mangrove forests, particularly motorized boating associated with recreational fishing in the Western Addition (airboat use is prohibited). Mangrove forests are the primary habitat for the American crocodile in south Florida, although crocodiles are generally rare in Big Cypress National Preserve. The mangrove habitat areas along creeks, canals, and estuaries south of U.S. 41 in the Western Addition are where effects would most likely occur.

In these areas, crocodiles may be affected by motorboat noise, boat wakes and waves, human noise or actions, or boat hulls or propellers. Because most American crocodile activity occurs from just before sunset to just after sunrise, most of these human-induced actions would disturb the crocodiles when they are at rest during daytime hours. These disturbances may cause resting crocodiles to be flushed, resulting in unnecessary energy use and stress. Boating in early morning or evening hours may also alter crocodile foraging behavior or flush the possible prey of the crocodile. Depending on the level and frequency of human disturbances, crocodiles could avoid some areas entirely.

Crocodiles are not known to nest in the Addition. However, if nesting occurs, the hatching success would primarily depend on risks from flooding, predation, lack of soil moisture during incubation, and extreme storms. The nest success also depends on the female crocodile returning to the nest to excavate the hatchlings. Research suggests that some female crocodiles may abandon their nests if the area is subjected to repeated, close human presence (Kushlan and Mazzotti 1989). Once hatched, juveniles would then be affected by similar human disturbances as highlighted above. The young crocodiles would be at greatest risk during their journey through open water from their nest site to more distant nursery habitat.

Given the infrequent presence of crocodiles in the area, the above effects from human

recreation activities such as boating would be long term, minor, adverse, and localized.

Alternative A would also continue current NPS vegetation management actions that would help maintain or improve habitat conditions in the Addition. These actions would help address invasive plant infestations that could degrade or displace habitat for the American crocodile. The impacts of ongoing NPS vegetation management would be long term, minor to moderate, beneficial, and localized.

Under alternative A, the impacts on the American crocodile would continue to be long term, adverse, minor, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the American crocodile. This restoration of hydrologic flows and connectivity would be most beneficial to the crocodile in the nonnesting season when they seek inland freshwater habitats. However, the freshwater inflows are predicted to have lower water quality than current conditions, which could adversely impact crocodile habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, moderate, beneficial impacts for the American crocodile.

Regional growth and development, including waterfront development, is expected to continue in south Florida. This would result in the alteration or displacement of natural lands and changes to the local and regional hydrology. Because mangrove forests receive special protection under state law, any direct

impacts on mangrove forests would be expected to be negligible. However, even if direct impacts on mangroves are avoided, urban encroachment may diminish mangrove habitat values if human activity and development is near the mangroves. Road mortality would likely increase as development and regional population increase. Growth and development could also result in an increase in boating and other recreational activities in the area. Crocodile foraging, breeding, resting, and nesting may be affected by increases in motorboat disturbances, boat wakes and waves, and human noise or actions. Crocodiles could avoid some areas entirely depending on the level and frequency of human disturbances. The impact on the American crocodile from urban growth and development is expected to be long term, moderate, and adverse.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion — Implementation of alternative A would result in localized, long-term, minor, adverse impacts on the American crocodile. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the American crocodile in the Addition

because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Eastern Indigo Snake. Under alternative A, impacts on potential habitat for the eastern indigo snake would be attributed primarily to NPS restoration efforts, limited NPS administrative ORV use, and nonmotorized visitor use.

NPS vegetation management efforts would continue to improve habitat values for the indigo snake and its prey. Given the snake's dependence on a mosaic of habitat types throughout its lifecycle and its generalist nature in south Florida, the combination of these Addition-wide active management efforts and natural restoration processes (that restore previously disturbed lands) would enhance the conditions for the eastern indigo snake. Impacts on the snake from these ongoing resource management activities would continue to be long term, beneficial, minor, and Addition-wide.

Public ORV use would continue to be prohibited in the Addition under alternative A. Therefore, little or no disturbance to vegetative groundcover or soil substrates would be expected. Other impacts, such as being flushed by public ORV noises, would also be avoided. This continued effect would be particularly beneficial to the eastern indigo in the upland areas of the Addition, such as pinelands or successional hardwood hammocks, which provide habitat conditions for foraging, breeding, and snake burrows or refuges. The prohibition of ORV use under this alternative would also retain the Addition as a large, unfragmented, mosaic of undisturbed snake habitat types, which is essential for viable eastern indigo populations (Layne and Steiner 1996, Breininger et al. 2004).

The hunting pressure associated with walk-in access only would be expected to be minimal,

with negligible effect on the eastern indigo snake or its prey. In addition, continued enforcement of the Endangered Species Act and the Lacey Act would limit the risk of illegal snake capture for the pet trade. Other nonmotorized public use (e.g., backcountry hiking) would also continue, but would only cause sporadic flushing of the snake or its prey. Limited administrative ORV use by NPS staff would also be an occasional, short-term disturbance. Consequently, human use and disturbance in the Addition would continue to be minimal and would maintain habitat conditions that support the eastern indigo snake and its prey. The impact from human activity would be long term, negligible to minor, adverse, and localized.

Collectively, the continuation of current management (alternative A) would continue to result in long-term, minor to moderate, beneficial, impacts on this species across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of ORVs on the wide variety of habitat types that support the eastern indigo snake. Most importantly, the improved ORV management efforts would reduce disturbance or degradation to vegetative groundcover and soil substrates in areas that provide for foraging, breeding, and snake burrows or refugia, such as pine-lands or successional hardwood hammocks. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the indigo snakes in the region. However, snake habitat might be altered or displaced, and individual snakes may be flushed, in areas where ORV use is permitted under the plan. Overall, the impact of that plan on the eastern indigo in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the eastern indigo snake habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in the loss and degradation of several habitat types that support the snake. Adverse impacts would include displacement of vegetative cover for the snake; soil and burrow disturbances; possible roadway injury/mortality; and disruption of normal foraging, breeding, and dispersal behaviors. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on the snake would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions for many species. This hydrologic restoration could benefit the eastern indigo directly during times of the year when the snake uses wetter habitats in the area. At other times, it would benefit the eastern indigo indirectly by restoring a natural system that could improve conditions and increase populations of the snake's food base. However, the reintroduction of natural flows could displace some existing upland areas. This effect could decrease available upland habitat for the eastern indigo snake and its prey that depend on upland habitat. The restoration of natural hydrologic conditions would have long-term, minor to moderate impacts that could be both beneficial and adverse to the snake.

Regional growth and development is expected to continue and result in an increase in habitat displacement for the snake. Because the eastern indigo uses a variety of habitat types and has a large home range, it is particularly susceptible to

habitat loss and habitat fragmentation from urban development. In addition to habitat displacement and fragmentation, urban development also brings injury or mortality threats from domestic animals, vehicles, and property owners, as well as from pesticides and rodenticides in the food chain. All of these would adversely affect eastern indigos. The impact of these activities on the snake is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the eastern indigo snake would result from improved ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas development and regional growth and urban development. Overall, the effects of the projects discussed above would likely be adverse to the snake's habitat in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo snake. The actions contained in alternative A would add a small beneficial increment to this cumulative impact.

Conclusion — Under alternative A impacts on the eastern indigo snake would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

However, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo. The actions contained in alternative A would add a small beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the eastern indigo snake in the Addition

because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Major Game Species

Analysis. Under alternative A, impacts on the major game species of the Addition (white-tailed deer, feral hogs, and wild turkey) would be attributed primarily to NPS restoration efforts, limited NPS administrative ORV use, and visitor use.

Ongoing vegetation management efforts, including the use of prescribe fire, would continue to improve habitat for major game species by decreasing competition from exotic plants and increasing the availability of native plants as food sources. The deer's preferred browse, the swamp lily, would be favored by reductions of melaleuca. The use of prescribed fire to promote early successional stages of vegetation would provide new vegetative growth for deer browse. Hogs and turkeys would also benefit from ongoing resource management activities. This impact would continue to be minor to moderate, beneficial, and Addition-wide. Short-term adverse impacts, such as flushing and displacement, could occur during implementation of these management activities.

Human activity in the Addition under alternative A would remain minimal — limited to occasional ORV use by NPS staff, infrequent backcountry hiking by the public, and future public hunting via walk-in access only. The hunting pressure associated with walk-in access would be expected to be minimal, with no important effect on the viability of game populations. Short-term, minor adverse impacts, such as flushing and displacement of game species, would continue. Long-term, moderate beneficial impacts could also occur from hunting and management of game populations, such as disease mitigation and

improvements in population genetics. Partnerships with the Florida Fish and Wildlife Conservation Commission would continue and would contribute to the monitoring and improved understanding of game populations.

Overall, impacts on major game species from the continuation of current management (alternative A) would continue to be long term, beneficial, minor, and Addition-wide.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the adverse impacts of off-road vehicles on major game species in the region, a beneficial impact. Eliminating some and designating new ORV trails would make ORV noise and movement more predictable, thereby displacing animals away from travel corridors but reducing the impacts on wildlife habitat and game populations. Conducting education, best management practices, research, and mitigation called for in the 2000 ORV plan would also limit impacts on wildlife. Adverse impacts on major game species would still occur from ORV use in the original Preserve, but the effects on the species from the actions in the 2000 ORV plan would be less than with no ORV management. Overall, the impact of the 2000 ORV plan on major game species would be long term, minor, and beneficial.

Implementation of future oils and gas proposals could have adverse impacts on major game species in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter wildlife habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of game species. Short-term impacts on major game species would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the major game species is unknown, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a loss of wildlife habitat. The major game species are considered generalists and have demonstrated their resiliency and ability to adapt to changing conditions. Within the region, the three species (deer, hogs, and turkey) are widespread. However, continued urbanization has fragmented remaining natural areas and increased the risks and threats to these species, including automobile collisions, exotic species, and pathogens. The impact of these activities on the major game species is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on major game species would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects described above would likely be adverse on major game species in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative A would contribute an appreciable beneficial increment to this cumulative impact.

Conclusion. Under alternative A, impacts on major game species from the continuation of

current management would be long term, beneficial, minor, and Addition-wide.

There would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative A would contribute an appreciable beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the major game species in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

WILDERNESS RESOURCES AND VALUES

Analysis

Per NPS *Management Policies 2006*, eligible land in the Addition would continue to be managed to preserve its wilderness qualities and maintain its potential eligibility for wilderness designation; however, lands within the Addition would not receive any special status or protection from wilderness designation. Because no public ORV use would be allowed, fragmentation of habitats would be minimized, and the current condition of the natural soundscape would continue to be preserved. Opportunities for solitude and primitive and unconfined recreation would continue to be preserved and available. These actions would result in minor to moderate, long-term beneficial impacts.

Hunting, frogging, and fishing would be allowed but would be accommodated by walk-in access only. The minimal public use in the Addition would cause only negligible to minor adverse impacts on wilderness resources and values. Ongoing NPS resource management activities, as well as natural reclamation processes, would continue to improve the long-term naturalness of the Addition, but could cause some short-term adverse impacts on soundscapes and visitor opportunities from restoration actions.

Overall, the impacts on wilderness resources and values would continue to be long term, minor, beneficial, and localized.

Cumulative Impacts

Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the effects of off-road vehicles on wilderness resources and values by reducing the potential for dispersal and establishment of exotic plants, a beneficial impact. The impact on natural soundscapes resulting from the management of off-road vehicles in the original Preserve would be negligible because about the same number of off-road vehicles would be using the original Preserve and in about the same areas. Consequently, impacts on a visitor's wilderness experience (freedom and natural sights and sounds) resulting from the 2000 ORV plan would be negligible. Impacts on wilderness resources and values in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on wilderness resources and values. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter natural habitats. NPS approval of the operations plan would require mitigative measures to eliminate or reduce the impact of activities on natural resources. Short-term impacts on wilderness resources and values would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect natural communities. Restoring natural conditions is expected to have a long-term, moderate, beneficial impact on wilderness resources and values.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands in the general area. Increasing urbanization, fragmentation of habitat, and the loss of natural areas have led to the degradation of natural resources, ecosystem function, and natural soundscapes in the region. The impact of these activities on wilderness resources and values is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on wilderness resources and values would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to wilderness resources and values in the region.

When the likely effects of implementing the actions contained in alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Conclusion

Under alternative A, impacts on wilderness resources and values from the continuation of current management would be long term, minor, beneficial, and localized.

There would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative A would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wilderness resources and values in the Addition. (See specific definition of impairment in

the "Impairment of Addition Resources" section.)

CULTURAL RESOURCES

Archeological Resources

Analysis. Under alternative A, impacts on archeological resources could result from visitor activities such as hiking, camping, cycling, and equestrian use. Most of the archeological sites in the Addition are middens. These raised mound areas would be potentially attractive to backcountry users, and trampling or disturbance could result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence. Impacts related to these activities would be permanent, adverse, and of minor intensity.

Archeological resources adjacent to or easily accessible from trails could be vulnerable to looting and vandalism. Continued ranger patrol and emphasis on visitor education, as well as keeping the Addition closed to public recreational ORV use, would minimize adverse effects and any adverse effects would be anticipated to range in intensity from negligible to minor and be permanent. However, looting and vandalism associated with illegal ORV use, as well as the displacement of soils and potential erosion of archeological sites resulting from such ORV use, could result in permanent, minor, adverse impacts on archeological resources.

There is no potential for impacts on archeological sites resulting from facility development.

Cumulative Impacts. Current research indicates relatively little disturbance of archeological sites in the Addition resulting from past actions such as hunting and camping, logging, looting, and energy exploration. Large-scale water projects and commercial and residential development could pose some impacts on archeological resources in the vicinity of the Addition. The

number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, significant archeological resources would likely be avoided to the greatest extent possible, and any impact on archeological resources would be adverse and permanent and range in intensity from minor to moderate.

Implementation of future oil and gas proposals could have adverse impacts on archeological resources. If such proposals included using off-road equipment and constructing roads and pads, this could affect archeological resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the impact of activities on archeological resources, the permanent effect of energy exploration on archeological resources should be negligible.

When the permanent, minor, adverse effects of implementing the actions in alternative A are added to the permanent, minor to moderate adverse effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Conclusion. Under alternative A, impacts on archeological resources would be permanent, minor, and adverse.

There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative A would contribute a small increment to this cumulative impact.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative A would generally result in a no adverse effect on archeological resources.

Impacts from actions contained in this alternative would not result in impairment of archeological resources in the Addition.

Ethnographic Resources

Analysis. Access to these resources would be limited to recognized traditionally associated peoples. Visitor activities such as hiking, camping, cycling, equestrian use and other recreational uses would not be allowed in or near identified ethnographic sites. Therefore, under alternative A there would be no potential for impacts on ethnographic resources.

There would be no potential for impacts on ethnographic resources or sites resulting from facility development because new development would be sited to avoid ethnographic resources.

Cumulative Impacts. Although other past, present, and reasonably foreseeable future actions may affect ethnographic resources in the area, alternative A would have no impacts on ethnographic resources and therefore would not contribute to the effects of other actions. Consequently, there would be no cumulative impacts on ethnographic resources under alternative A.

Conclusion. Under alternative A there would be no impacts on ethnographic resources. Therefore there would be no cumulative impacts.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative A would generally result in a no adverse effect on ethnographic resources.

This would not result in impairment of ethnographic resources in the Addition.

VISITOR USE AND EXPERIENCE

Recreational Opportunities

Motorized Use. The no-action alternative would not change the current management of the Addition. The National Park Service would continue to manage the Addition to preserve its wilderness characteristics and values, and it would remain closed to ORV use — other than for private property owners with a special use permit and limited NPS administrative use. Access points would be developed at mile markers 51 and 63 per the *I-75 Recreational Access Plan*, providing pull-offs/stopping points within the Addition, but no new facilities would be developed under this alternative. The lack of access and opportunity for ORV users to experience the Addition would continue to have a long-term, moderate, adverse impact on ORV users.

Nonmotorized Use (including hiking, horseback riding, and bicycling). Hikers would continue to enjoy temporary access to the Florida National Scenic Trail, but the trail would remain temporary and undesignated. Access points would be developed at mile markers 51 and 63 per the *I-75 Recreational Access Plan*, providing limited access to the Addition for nonmotorized users. Opportunities for backcountry hiking, horseback riding, and dispersed camping would continue to be allowed throughout the Addition. The lack of designated trails would continue to limit the less adventurous nonmotorized user's ability to experience the Addition. The availability of these recreational opportunities would result in long-term, moderate, beneficial impacts for those seeking solitude and a primitive experience, but the lack of designated trails would result in long-term, minor to moderate, adverse impacts on less adventurous hikers.

Bicycling would continue to be available at Nobles Grade in the Addition. The development of an access point at mile marker 63 would enhance biker experiences by eliminating the need to park on the shoulder of I-75. These opportunities would result in long-

term, minor, beneficial impacts on bicyclists. Overall, impacts on nonmotorized users would be long term, negligible, and adverse.

Hunting (including fishing and frogging). Under this alternative walk-in hunting would be allowed in the Addition. Nonmotorized hunting would be allowed in designated areas and seasons as determined by the National Park Service in cooperation with the Florida Fish and Wildlife Conservation Commission. New access points at mile markers 51 and 63 would facilitate accessibility to many parts of the Addition. Although hunting with the use of an ORV would not be allowed in the Addition, ORV hunters traveling through the Addition on I-75 would benefit from additional stopping points. Camping access and opportunities would remain dispersed and undeveloped. The ability to hunt in the Addition and an increase in the number of access points would have a long-term, minor to moderate, beneficial impact on nonmotorized hunters and a long-term, negligible, beneficial impact on hunters with off-road vehicles because of more pull-offs/stopping points.

Collectively, implementation of all the actions described above would result in long-term, moderate, adverse impacts on visitor use and experience.

Cumulative Impacts

Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* would provide up to 400 miles of designated primary ORV trails, 15 ORV access points, and up to 2,000 annual permits in the original Preserve. This quantity of trail miles and permits provides abundant opportunities for operating off-road vehicles. The availability of these opportunities adjacent to the Addition would have long-term, moderate, beneficial impacts on ORV users in the local area.

Implementation of future oil and gas proposals could adversely impact the experience of visitors. Noise and human

activity from the construction of roads and pads and the use of off-road equipment could detract from the experience of those seeking a primitive experience and natural soundscape. Impacts resulting from a reduction in the natural settings of the Addition due to the operation of oil and gas equipment would be long term, minor, and adverse in localized areas.

The south Florida ecosystem restoration project is a large-scale effort among public, private, and nongovernmental entities to restore surface water flows within the region. Implementation of the proposals would improve sheet flows and hydrologic connectivity and likely restore natural conditions to the Addition. This effort would enhance the visitor use and experience by providing increased opportunities for wildlife viewing and experiencing natural settings. Opportunities for hunting in the Addition would also improve with more abundant, healthy wildlife populations. Impacts resulting from the effects of a healthy, fully-functioning ecosystem would be long term, moderate, beneficial, and regionwide.

Regional growth and development are expected to result in increased visitation to the Addition. More visitations over time may result in increased congestion and user conflicts at mile markers 51 and 63. Impacts from growth and development would be long term, minor to moderate, and adverse as a result of increased congestion and user conflict.

Implementation of the *Commercial Services Plan* will initially only affect the original Preserve. The Addition will be addressed in an addendum to that plan after the completion of this *General Management Plan* for the Preserve Addition. The *Commercial Services Plan* proposes to enhance the original Preserve's visitor services through the development of one or more new facilities; a new backcountry camping complex; hunting and fishing guides; buggy, van, and hiking tours; boat and bicycle rentals; and expanded opportunities for birding, wildlife viewing, and photography. Enhanced and expanded

opportunities in the Preserve, prior to an addendum to include the Addition, would increase visitation and may result in increased congestion and user conflicts. Impacts resulting from increased visitation and congestion at mile markers 51 and 63 would result in long-term, minor, adverse impacts on visitors. When the Addition is addressed in an addendum, visitor opportunities to explore and use the Addition could be expanded, but only minimally given the lack of motorized access and minimal access points. If so, impacts from implementing the *Commercial Services Plan* in the Addition would be long term, negligible, and beneficial as a result of expanded opportunities.

Combining the likely effects of implementing the no-action alternative with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative impact on visitor use and experience in the Addition would be long term, moderate, and adverse. The actions contained in the no-action alternative would contribute an appreciable increment to this cumulative impact.

Conclusion

Under the no-action alternative, recreational ORV use would be nonexistent, whereas informal nonmotorized opportunities would continue and walk-in hunting would be allowed. Collectively, the resulting impacts on visitor use and experience would be long term, moderate, and adverse.

The cumulative impact on visitor use and experience in the Addition would be long term, moderate, and adverse. The actions contained in the no-action alternative would contribute an appreciable increment to this cumulative impact.

SOCIOECONOMIC ENVIRONMENT

Analysis of economic impacts under alternative A was based on projected visitation to the

Preserve (including the Addition) as well as estimated one-time capital expenditures due to construction activities, if appropriate. Because alternative A would maintain the status quo, visitor spending is assumed to remain as it is today.

Local Economy

Employment. Under this no action alternative, long-term direct and indirect employment would remain the same in Collier County. Based on historical trends, the construction, tourist (i.e. entertainment, accommodation, and food service), educational services, and healthcare sectors would continue to be the dominant employers in the county. But, because no new jobs would be created under alternative A, Collier County would not realize any changes to its employment levels. As a result, long-term impacts resulting from alternative A would be localized, negligible, and neutral.

Furthermore, because there would be no new capital expenditures in the Addition, short-term employment impacts would also remain unaffected, because there would be no need to hire labor for construction activity. Based on historical trends, the construction sector would continue to serve as an important employer, employing approximately 20% of the county's workforce (based on 2004 estimates). Consequently, short-term impacts of alternative A would be localized, negligible, and neutral.

Housing. Under alternative A, the housing market would remain unaffected in the long-term because employment levels, the primary driver of residential construction, would remain the same. Naples and Marco Island would continue to serve as the primary housing locations for those moving into and within Collier County due to the relatively high availability of residential housing in these areas. Although population growth in the region is one of the fastest in the nation, Collier County is currently experiencing a slowdown in the residential housing market

(as are many parts of southwest Florida), in part due to factors such as overbuilding, inflated prices, sub-prime mortgages, and an overall weaker U.S. economy. Because alternative A would neither increase nor decrease housing supply and demand, it is assumed Collier County's housing market would continue to trend with southwest Florida as a whole. Consequently, the long-term impacts of alternative A would be localized, negligible, and neutral.

Due to a lack of construction activity, alternative A would not create additional temporary jobs and therefore demand for residential housing would remain unchanged. Short-term impacts resulting from alternative A would be localized, negligible, and neutral.

Sales. Total sales of goods and services in Collier County, as a result of visitor spending, would remain unchanged under the no-action alternative. In 2004 Collier County had more than 1.4 million visitors who spent roughly \$713 million in the area, providing annual direct and indirect (secondary) sales of more than \$1.06 billion. This represents approximately 17% of the \$6.1 billion in sales for all county industries in 2004. Given that annual taxable sales from 1999 to 2004 grew at a 6.5% compound annual growth rate, it is anticipated that Collier County's economy will continue to grow over the long-term. Because alternative A does not increase or decrease sales revenue, long-term impacts would be localized, negligible, and neutral.

Short-term economic impacts resulting from changes in sales of goods and services would remain unchanged under the no-action alternative. Although the construction industry will continue to serve as a primary economic driver in the region, alternative A does not increase or decrease total economic activity. Without capital expenditures for construction activity, short-term impacts would be localized, negligible, and neutral.

Tribal Impacts. In assessing long-term impacts to the Seminole and Miccosukee reservations, it appears that neither tribe

would realize any change in economic activity as a result of implementing alternative A. Consequently, long-term impacts under alternative A would be assumed to be localized, negligible, and neutral.

There would be no short-term economic impacts on the tribes under alternative A because there would be no new construction in the Addition. Consequently, short-term impacts under alternative A would be localized, negligible, and neutral.

Collectively, the long-term and short-term impacts resulting from implementing the no-action alternative would be localized, negligible, and neutral.

Cumulative Impacts

The action area for evaluating cumulative impacts on the socioeconomic environment is Collier County. The likely effects of implementing the actions contained under alternative A, in combination with the effects of other past, present, and reasonably foreseeable actions are described below.

The implementation of the *Recreational Off-Road Vehicle Plan*, which provides for a maximum of 2,000 permits, 15 access points, and 400 miles of designated trails, has a strong likelihood of attracting new visitors and locals to the Preserve. Such an increase in Preserve visitation would translate into greater visitor spending in the area, resulting in positive long-term gains for Collier County in terms of employment, housing, and taxable annual sales, as well as increased economic activity for the Miccosukee and Seminole tribes. However, relative to the economy of the entire county, long-term economic impacts would likely be minimal. Short-term impacts as a result of one-time capital expenditures from building ORV trail access, facilities, and other structures are also likely to be minimal relative to the overall level of construction activity within the county. As a result, both long-term and short-term cumulative impacts would be localized, negligible, and beneficial.

Although the *Commercial Services Plan* does not include the Addition, social and economic impacts to the county as a whole would be positive due to increased visitation and visitor spending in the area, and expansion of facilities, services, and recreational opportunities in the Preserve. In particular, the implementation of the *Commercial Services Plan's* preferred alternative, which includes the potential to develop two new visitor facilities, partnership agreements for offering a variety of guided tours and equipment rentals, and the creation of a backcountry camping complex, could translate into moderate long-term gains in visitor spending at the county level. Depending on the level of construction activity generated from implementation of the *Commercial Services Plan*, short-term impacts could be substantial at the county level. As a result, both long-term and short-term cumulative impacts would be localized, negligible to moderate, and beneficial.

The potential exists for exploration activities, as proposed under the oil and gas plan, to reduce visitation in the Preserve due to environmental disruptions from the use of off-road equipment and the development of roads and pads for oil and gas exploration. Due to multiplier effects, long-term impacts from reduced visitation could result in reductions in county employment, housing, and sales, as well as reduced economic activity for the Miccosukee and Seminole tribes. However, such effects will likely be minimal in relation to the entire county economy. Short-term impacts from construction could be both positive and substantial, depending on the level of construction and percentage of that economic activity that remains within the county. Long-term impacts would be localized, negligible, and adverse, while short-term impacts would be localized, negligible to moderate, and beneficial.

The south Florida ecosystem restoration projects would likely attract additional visitors to the region due to the rehabilitation of natural ecosystems within and near the Preserve through various water system improvements. In particular, the Big Cypress

Interceptor Modification Plan would likely increase use across a variety of recreational activities offered in the Preserve, particularly for visitors interested in enjoying the natural habitat and wildlife. Collier County would also benefit from restoration efforts in nearby sites, such as Everglades National Park, because additional visitors may pass through or decide to make an additional stop at the Preserve. Because these restoration projects are relatively large in scale, are occurring at multiple sites, and are at a regional level, the long-term impacts on county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes could be substantial. Short-term impacts would also be positive because capital expenditures on water infrastructure improvements (estimated at multi-billions of dollars) would likely generate substantial temporary gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. As a result, both long-term and short-term impacts would be localized, moderate, and beneficial.

The development of lands northwest of the Addition could increase Preserve visitation and result in positive long-term economic impacts at the county level. In particular, the availability of greater residential housing and the building of a new private and state university in the area could greatly increase the number of residents living in Collier County. The provision of additional services, goods, and facilities would also likely be expanded to accommodate these new residents, which in turn would also attract a greater number of visitors from outside the region. As a result, increased local and visitor spending would produce long-term positive gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. Short-term economic impacts could be substantial at the county level, because large scale construction activity would be needed to support new residents, the universities, and visitors. As a result, long-term and short-term impacts would be localized, moderate to major, and beneficial.

Each of the tribes, to varying degrees, is expanding services offered to reservation visitors, which currently includes retail, food, accommodations, and entertainment. Although these projects could increase economic activity within the reservations, alternative A would not further benefit these activities.

Combining the likely effects of implementing the no-action alternative with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative socioeconomic impacts would be localized, moderate, and beneficial. Alternative A would contribute a very small increment to this cumulative impact.

Conclusion

Because there would be no changes to visitor spending or construction activity within Collier County under alternative A, long-term and short-term impacts on the socioeconomic environment would be localized, negligible, and neutral. As a result, county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes, would remain constant.

In terms of cumulative impacts, long-term and short-term impacts would be localized, moderate, and beneficial. Alternative A would contribute a very small increment to this total cumulative effect.

NPS OPERATIONS AND MANAGEMENT

Analysis

Under the no-action alternative, NPS operations would be conducted much as they are now. Operations would continue to be based in the original Preserve, which is at a minimum an hour drive from the Northeast Addition. NPS staff's reduced efficiency and ability to respond to fire or enforcement issues in the Addition would be a continuing,

minor to moderate, long-term, adverse impact.

Cumulative Impacts

Expansion of nearby communities, including the towns of Ave Maria and Big Cypress, Everglades ecosystem restoration activities, and oil and gas exploration activities would require time and attention by NPS staff. The expansion of commercial services offered in the original Preserve would require time from staff spent managing the commercial service authorizations and leases. Cooperation and coordination with neighboring agencies and entities regarding planning, land use resources, and development proposals near the Preserve also would require substantial amounts of staff time and result in minor to moderate, long-term, adverse impacts.

Combined with other past, present, and reasonably foreseeable future impacts, the no-action alternative would result in minor to moderate, long-term, adverse impacts on NPS operations. The actions proposed for implementation in alternative A would contribute a modest increment to these cumulative effects.

Conclusion

Operational and visitor facilities in the original Preserve would result in continuing minor to moderate, long-term, adverse impacts on NPS operations.

The cumulative impacts of the no-action alternative and other actions would be minor to moderate, long term, and adverse. The actions proposed for implementation in alternative A would contribute a modest increment to these cumulative effects.

EFFECTS ON ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

Under alternative A, no new facilities would be developed, thereby eliminating any new energy requirements for facility construction. Public use of the Addition would remain very limited. The fuel and energy consumed by visitors traveling to the Addition would not be likely to increase because visitation is not likely to increase. Energy would still be consumed to maintain existing facilities and for resource management of the Addition.

UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as impacts that cannot be fully mitigated or avoided. Adverse impacts on natural and cultural resources and visitor experience could occur in some areas throughout the Addition, resulting from limited public use or NPS management activities.

IRRETRIEVABLE OR IRREVERSIBLE COMMITMENTS OF RESOURCES

Under alternative A, the energy requirements identified above would result in an irreversible commitment of resources. There would be no permanent effects on Addition resources.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE OR ENHANCEMENT OF LONG-TERM PRODUCTIVITY

In this alternative, most of the Addition would be protected in a natural state and would maintain their long-term productivity. Only a small percentage of the Addition would be maintained as developed areas.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE B

NATURAL RESOURCES

Surface Water Flow

Analysis. Under alternative B, impacts on surface water flow would be attributed primarily to the development of new facilities, the maintenance of existing facilities, and restoration activities. Development of new facilities such as trails, trailheads, and access points would alter natural sheet flow, degrading hydrologic connectivity in some localized areas. Development (including formalization of and improvements to existing trails) of about 132 miles of ORV trails would create localized barriers to surface water flow due to raised trail treads and ORV use. Culverts and other best management practices such as at-grade trail construction and low-water crossings would reduce the impacts, resulting in long-term, moderate, adverse, localized impacts. NPS administrative ORV use would continue to affect surface water flow in localized areas on a short-term basis.

Impacts on surface water flow due to the presence of roads and grades would be about the same as in the no-action alternative. These impacts would continue to be long term, adverse, and of moderate intensity. Existing grades, such as Jones, Nobles, and Bear Island grades, would be maintained and converted to trails, which would continue to affect hydrologic connectivity within localized areas of the Northeast Addition. The effects could extend beyond the immediate area of impact and become Addition-wide, because impediments to water flow could affect areas beyond the boundaries of the Addition. Impacts related to the presence of facilities and structures would be long term, moderate, adverse, and localized.

In the context of the regional hydrology of south Florida, the actions of alternative B

would have negligible effects on the hydrologic restoration efforts associated with the Comprehensive Everglades Restoration Plan or related projects. For example, the surface water restoration benefits that would result from the proposed L-28 interceptor project to the east of the Addition would not be adversely affected by the ORV management of alternative B.

Collectively, the impact of these activities on surface water flow would be long term, moderate, adverse, and mostly localized in the Addition compared to the no-action alternative.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on surface water flow into the portion of the Addition that abuts the original Preserve at localized sites because best management practices and mitigation would maintain or improve hydrologic flow. The impact on surface water flow in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on surface water flow. If such proposals included using off-road equipment and constructing roads and pads, this would alter local hydrology. Construction and operations activities would affect the timing and intensity of surface water flows. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on surface water flow would be adverse, minor to moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Proposals involving the Addition include the removal of the L-28 interceptor canal levee, modification of the L-28 Tie Back canal, and operational changes to various water control structures. Decompartmentalization of Water Conservation Area 3 would also improve sheet flow and hydrologic connectivity. The impact of these efforts on the hydrology of the Addition, as well as within the watershed, is expected to be long term, major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect hydrologic function and connectivity in the watershed. The impact of these activities is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on surface water flow would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be negligible on surface water flow in the watershed.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there could be a long term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on surface water flow would be long term, moderate, adverse, and mostly localized.

There could be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in alternative B would

contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of surface water flow in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Water Quality

Analysis. Under alternative B, impacts on water quality would be attributed primarily to the development and maintenance of facilities and ongoing visitor use. Development of new facilities such as trails, trail-heads, and access points would affect water quality by causing erosion that could contribute to turbidity. Inadvertent spills of fuel or oil from construction machinery could also adversely affect water quality. Impacts from these activities would be mostly short term, minor to moderate, adverse, and localized; however, some long-term impacts could occur from larger spills or from ongoing pollution due to runoff from developed sites. The maintenance of roads, grades, and trails within the Addition would likely result in similar long-term adverse impacts.

Visitor use, such as ORV use, hiking, biking, horseback riding, and backcountry camping, could continue to cause soil erosion and generate human waste that would affect turbidity and surface water quality. Impacts on water quality would be reduced by the designated trail system; however, they would be greater than under the no-action alternative because off-road vehicles are not allowed in alternative A. Inadvertent leaks or spills of fuel or oil from ORV use (public and NPS administrative use) could affect surface water quality by elevating chemical concentrations. Similar impacts from parked vehicles would be more common at destination sites, such as mile markers 51 and 63, or Deep Lake. The impacts of these activities would be long term, minor, adverse, and localized.

Collectively, the impact of these activities on water quality would be long term, moderate, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on water quality at localized sites in the portion of the Addition that abuts the original Preserve because best management practices and mitigation would be used to minimize soil erosion and chemical contamination. The impact of these activities on water quality in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on water quality. If such proposals included using off-road equipment and constructing roads and pads, this could degrade water quality due to turbidity and chemical contamination. The impacts of these activities would be reduced because NPS approval of the operation plan would require mitigative measures. Short-term impacts on water quality would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized. This is due to the numbers and complexity of the proposals and uncertainty with their levels of success.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Although the proposals would increase surface water flow and connectivity, the discharged waters are expected to have elevated chemical concentrations that would degrade water quality. Because the current condition of water resources in the Addition is cleaner than what is expected to be discharged, the impact is predicted to be long term, adverse, and Addition-wide, but the intensity is unknown. This is due to the numbers and complexity of the proposals and uncertainty with their levels of success. The impact on water quality in the watershed is unknown.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Water quality would be affected by inputs from urban and suburban development, including increases in organic compounds and chemical concentrations. The impact on water quality within the watershed is expected to be adverse, but the intensity is unknown.

Collectively, adverse impacts could be expected from oil and gas operations, ecosystem restoration projects, and regional growth and development. Overall, the effects of the projects discussed above could be adverse to water quality in the watershed, but the intensity is unknown.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on water quality would be long term, moderate, adverse, and localized.

There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of water quality in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wetlands

Analysis. Under alternative B, impacts on wetlands would be attributed primarily to the development and maintenance of facilities. The development of new facilities, such as trails, trailheads, access points, and specific improvements to develop Deep Lake into a day use area would result in permanent loss of wetlands.

The designation and construction of ORV trails could also adversely impact wetland function and integrity. The proposed 132 miles of primary ORV trails under alternative B, which would also be used by equestrians, bicyclists, and hikers, would cause the direct displacement of a relatively small acreage of wetlands (from trail construction and treatment). These impacts on wetland size and functionality from ORV trail development would be long term, minor to moderate, adverse, and localized.

However, the public use of the ORV trails would also have other adverse effects on wetland values in several other areas throughout the designated ORV trail network. Under alternative B, several miles of primary ORV trails would run through wetland areas. This could amount to direct adverse impacts on wetland functions or values for a notable acreage of wetlands. Also, adverse impacts on additional acreages of wetlands would also be expected because many of the impacts on wetland values or functions would likely extend beyond the 12-foot width of the primary trail or would be associated with secondary spur trails that develop outside the alignment of the primary trail.

Some effects on wetland functions and values that would be expected along ORV trail corridors (primary or secondary) include wetland vegetation displacement, rutting, altered wetland hydrology, soil compaction, and diminished wetland habitat value or habitat displacement (loss of vegetation, ORV noise, etc.). These impacts on wetland values and functional integrity

from ORV use in the Addition would be long term, moderate, adverse, and localized.

The NPS maintenance of roads, grades, and trails could also impact wetlands. Impacts from these activities would include vegetation loss and alteration of soils, which would result in permanent effects on wetland size and integrity and impacts would be long term, moderate, adverse, and localized. Indirect impacts, such as increased runoff and sedimentation, would be long term, minor, adverse, and localized.

Collectively, compared with alternative A (no action), impacts on wetland values and functions under alternative B would be long term, moderate, adverse, and localized.

The site-specific functional analysis of wetland impacts from ORV trails throughout the Addition is beyond the scope of this management plan. However, before any action implementation, NPS staff would conduct more detailed wetland impact and mitigation analyses per NPS policy and Section 404 of the Clean Water Act (as administered by the Army Corps of Engineers). For example, NPS policy requires the development of a “Wetlands Statement of Findings,” that identifies and analyzes all wetland functions and values affected by NPS actions in a park unit. The “Wetlands Statement of Findings” for this management plan for the Addition would quantify all wetland impacts from management actions specified in this management plan. Although Section 404 of the Clean Water Act pertains only to wetland filling and dredging, the NPS statement of findings policy addresses the impacts on several other wetland values, such as wildlife habitat, soils, vegetation communities, surface hydrology, aesthetics, and cultural values.

The detailed functional analysis of wetland impacts and the development of wetland avoidance and mitigation measures would be completed as part of the “Wetlands Statement of Findings.” The effects of ORV use associated with this management plan

would likely be the primary focus of the "Wetlands Statement of Findings" for the Addition. No ORV use, ORV trail development, or other actions with wetland impacts would be implemented or allowed until the appropriate wetland policy requirements are met.

Collectively, compared with the no-action alternative, impacts on wetlands under alternative B would be long term, moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on wetlands. If such proposals included using off-road equipment and constructing roads and pads, this would alter wetland soils and vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on wetlands would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow in the region. The proposals would affect wetlands by increasing the availability of water, which in turn could increase the size, integrity, and function of wetlands. The impact of these efforts on wetlands is expected to be long term, moderate to major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow and water quality would affect the size, integrity, and function of wetlands in the watershed. The impact of these activities on wetlands would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on wetlands would accrue from ecosystem restoration

projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be slightly adverse on wetlands.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on wetlands would be long term, moderate, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wetlands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Soils

Analysis. Under alternative B, impacts on soils would be attributed primarily to facility development and maintenance and visitor use.

Development and maintenance of new recreational facilities, such as at mile markers 51 and 63, Bear Island Grade, and Deep Lake, would result in displacement or permanent loss of soil resources. Designating 132 miles of ORV trails would cause similar impacts; however, these impacts would be reduced by using existing trails and designating ORV routes. Frontcountry development would typically compact previously disturbed/filled areas, while

backcountry developments could impact native soils. The impacts from these activities would be long term, moderate, adverse, and localized.

Some rutting and displacement of soils might occur due to ongoing ORV use, resulting in long-term, minor, adverse, localized impacts. Impacts on soils from ORVs would be confined to the designated trail system. Non-motorized use (equestrians, bicyclists, and hikers) could also cause erosion, but the adverse impact would likely be negligible to minor.

Collectively, impacts on soils from alternative B would be long term, moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on soils. If such proposals included using off-road equipment and constructing roads and pads, this would alter soils. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on soils would be adverse, moderate, and localized; long-term impacts would be minor, adverse, and localized.

Changes in the availability of water resources due to the south Florida ecosystem restoration project would affect soil properties. The integrity of hydrologic soils could be improved or restored by increases in water — a beneficial impact.

Decreases in water or permanent soil loss resulting from regional growth and development would adversely impact soils. The impact of these efforts on soils is expected to be long term, moderate to major, and adverse.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and

reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on soils. The permanent loss of soils would be expected to outweigh any beneficial impacts that might be realized from ecosystem restoration projects. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on soils would be long term, moderate, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of soils in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Floodplains

Analysis. Alternative B would have no impact on floodplains. Two facilities located in the 100-year floodplain would be retained, but would cause no additional impacts to floodplains beyond what is accounted for under the no-action alternative.

Cumulative Impacts. No cumulative impacts to floodplains would occur under alternative B because there would be no impacts on floodplains resulting from the alternative B.

Conclusion. Alternative B would have no impact on floodplains. Two facilities located in the 100-year floodplain would be retained, but would cause no additional impacts to floodplains beyond what is accounted for under the no-action alternative.

No cumulative impacts to floodplains would occur under alternative B because there would be no impacts on floodplains resulting from the alternative B.

Impacts from actions contained in this alternative would not result in impairment of floodplains in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Cypress Strands and Domes, Mixed Hardwood Swamps, and Sloughs

Analysis. Under alternative B, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be attributed to new facility development and visitor use.

Development of trailheads and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake would result in vegetation loss or injury from construction activities. Establishment of 132 miles of ORV trails would result in similar impacts on vegetation. Impacts on this vegetation community from facility development would be long term, moderate, adverse, and localized.

Impacts on this vegetation community such as trampling, injury, or loss of plant material due to the effects of ORV traffic could occur within and along designated ORV trails. The conditions that often discourage ORV use (deep water, closely spaced trees, etc.) would continue, and adverse impacts from off-road vehicles would most often be limited to the margins of the plant community. Adverse impacts could include injury to a plant or group of trees, or might include plant loss in a discrete area due to repeated use. Impacts from nonmotorized visitor use, such as trampling from hiking and camping, would be more common at frontcountry destinations and less common in the backcountry. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from

these visitor activities would be long term, moderate, adverse, and localized.

Collectively, the impact on cypress strands and domes, mixed hardwood swamps, and sloughs under alternative B would be long term, moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would have the potential to alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on this vegetation community would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area.

Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit cypress strands and domes, mixed hardwood swamps, and sloughs.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, moderate, adverse, and localized.

There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of cypress strands and domes, mixed hardwood swamps, and sloughs in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Prairies and Marshes

Analysis. Under alternative B, impacts on prairies and marshes would be attributed primarily to visitor use. New facilities (including ORV trails) would be sited to avoid prairies and marshes to the greatest extent possible, although some adverse impacts on the margins of these plant communities could occur from ORV use. The soil conditions in prairies and marshes cause poor traction for off-road vehicles, and rutting and braiding of trails is common. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to rutting or from repeated use. Impacts on prairies and marshes from ORV use would be long term, minor, adverse, and localized.

Ongoing vegetation management, including the use of prescribed fire, and efforts to restore natural hydrologic processes would continue to improve conditions for native vegetation because water availability and connectivity would increase and competition from exotic plants would be minimized. Impacts on prairies and marshes from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Some prairies and marshes would be accessible to nonmotorized users, and therefore could be subject to impacts, such as trampling of vegetation. Impacts would be greatest and more concentrated in frontcountry locations and less common in the backcountry. Impacts on prairies and marshes from visitor use would be long term, negligible, adverse, and localized.

Collectively, the impact on prairies and marshes under alternative B would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within

the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oils and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on prairies and marshes is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. Prairies and marshes on private land outside of the Addition would continue to be impacted by population growth and development. The impact of these activities on prairies and marshes is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on prairies and marshes would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on

prairies and marshes would be long term, minor, and adverse.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on prairies and marshes would be long term, minor, adverse, and localized.

There would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of prairies and marshes in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Mangrove Forests

Analysis. Impacts on mangrove forests under alternative B would generally be the same as under the no-action alternative because recreational use in this vegetation community would be the same as in alternative A (no action). As in alternative A, motorized boating would continue to be allowed south of U.S. 41 in the Western Addition in the deep, open-water environs outside the dense mangrove forests. Motorized boating could continue to cause injury to individual plants or prevent their expansion into the shallower margins of the well-travelled boating corridors. Consequently, compared to the no-action alternative, there would be no impact on mangrove forests in the Addition under alternative B.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Regional growth and development, including waterfront development, is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Mangroves receive special protection under state law, and any adverse impacts on mangrove forests would be expected to be negligible. Because alternative B would not contribute any increment, there would be no cumulative impact.

Conclusion. Alternative B would have no impact on mangrove forests. Impacts on mangroves would be the same as what was accounted for under the no-action alternative.

There would be no cumulative impacts on mangrove forests under alternative B.

Impacts from actions contained in this alternative would not result in impairment of mangrove forests in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Pinelands

Analysis. Under alternative B, impacts on pinelands would be attributed to new facility development and visitor use.

Ongoing vegetation management, including the use of prescribed fire, would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on pinelands from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Development of trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake would result in vegetation loss or injury from construction activities. Establishment of 132 miles of ORV

trails would affect pinelands. Impacts on pinelands would likely be proportionately greater than for the other vegetation communities because pinelands are often targeted as appropriate development sites and trail corridors. The durability of the substrate present in pinelands reduces adverse impacts from ORV use. The loss of pines from ORV use has not been documented in the original Preserve; however, wheeled use could have adverse impacts on other plant species present within these communities or within certain ecotonal areas. Adverse impacts could include injury to a plant or group of plants or reduced regeneration, or plant loss in a discrete area due to repeated use. Impacts on pinelands from facility development and trail development and use would be long term, moderate, adverse, and localized.

Impacts from nonmotorized visitor use, such as trampling due to hiking or equestrian use, would be more common at frontcountry destinations and less common in the backcountry. Although individual understory plants could be injured or killed, the integrity of the pineland community would not likely be affected due to the durable substrate and the resiliency of mature trees to relatively benign activities. Impacts on pinelands from these activities would be long term, negligible to minor, adverse, and localized.

Collectively, the impact on pinelands under alternative B would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of pinelands. The assemblage of pines and palmettos could change as a result of changes in hydrology or periods of inundation. The impact is uncertain because drying often adversely impacts pinelands, and increasing the water table could also cause a net reduction in pinelands compared to current conditions. It is expected that restoring natural hydrologic conditions would have a beneficial impact on pinelands.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Studies have shown that pinelands are the habitat most impacted by human land conversion. Pinelands on private land in the region would continue to be lost. The impact would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on pinelands would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the

projects discussed above would be adverse on pinelands in the Addition.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on pinelands would be long term, minor, adverse, and localized.

There could be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of pinelands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Hardwood Hammocks

Analysis. Under alternative B, impacts on hardwood hammocks would be attributed primarily to new facility development and visitor use.

Ongoing vegetation management would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on hardwood hammocks from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Development of trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake could result in vegetation loss or injury from construction activities. Establishment of 132 miles of ORV trails would affect hardwood hammocks.

Although the substrate present in hardwood hammocks is suitable for ORV use, use tends to be infrequent because of the size and density of trees present in these areas. However, infrequent ORV use could adversely impact understory plants. Adverse impacts could include injury to a plant or group of plants or might include plant loss in a discrete area due to repeated use. Impacts on hardwood hammocks from facility development and ORV use would be long term, minor to moderate, adverse and localized.

Impacts from nonmotorized visitor use, such as trampling due to hiking or equestrian use, would be more common at frontcountry destinations and less common in the backcountry. Backcountry camping could cause trampling or loss of vegetation at localized sites. Although individual understory plants could be injured or killed, the integrity of the hammock community would not likely be affected due to the durable substrate and the resiliency of mature trees to relatively benign activities. Impacts on hardwood hammocks from these activities would be long term, negligible to minor, adverse, and localized.

Collectively, the impact on hardwood hammocks under alternative B would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced

because NPS approval of the operation plan would require mitigative measures. Short-term impacts on vegetation would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of hardwood hammocks. The impact is uncertain, but restoring natural conditions is expected to have a long-term, minor, beneficial impact.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on hardwood hammocks is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on hardwood hammocks would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on hardwood hammocks would be long term, minor, and adverse.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on hardwood hammocks. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on hardwood hammocks would be long term, minor, adverse, and localized.

There could be a long-term, minor, adverse cumulative impact on hardwood hammocks. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of hardwood hammocks in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Exotic/Nonnative Plants

Analysis. Under alternative B, impacts on exotic/nonnative plants would be attributed primarily to facility development and maintenance, visitor use, NPS restoration efforts, and NPS administrative ORV use. Ongoing vegetation management (including the use of prescribed fire and chemical and mechanical treatment) in the Addition would continue to decrease competition from exotic plants and improve the integrity of native habitats. The continuation of monitoring efforts would also help to detect and mitigate new exotic species that could affect native plant communities. Impacts on exotic/nonnative species from ongoing resource management activities would be long term, beneficial, moderate, and Addition-wide.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would create disturbed lands that would be subject to colonization by invasive plants. Construction materials and activities could also be a seed source for exotic plants and would increase the potential for their dispersion. Maintaining these facilities would also create disturbed habitats that could increase the density of exotic plants and affect the integrity of adjacent natural

areas. Exotic plants can have severe effects on the integrity of native systems and habitats. The impact from these activities would be long term, moderate, adverse, and localized.

NPS administrative ORV use and expanded visitor use, including the establishment and use of 132 miles of ORV trails, would increase the dispersal of exotic plants and also create additional disturbed areas that would be subject to colonization by invasive plants. The impact on exotic plants from visitor use would be long term, moderate, adverse, and localized. Although the effects would be most pronounced along travel corridors and at disturbed sites, the impacts could extend beyond these immediate areas and become Addition-wide. However, ORV management includes education, prevention, and mitigation components that would limit the establishment and distribution of exotic plants in the Addition.

Collectively, impacts on exotic/nonnative plants under alternative B would be long term, moderate, adverse, and potentially Addition-wide.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on exotic plants and nonnative vegetation in the Preserve and reduce the potential for dispersal into the Addition. The impact on exotic plants and nonnative vegetation in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on native vegetation because of the potential for the spread of exotic and nonnative plants in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would disturb soils and native vegetation. Short-term impacts could include the establishment of exotic plants on

disturbed sites and the dispersal of seeds and plant stock. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on native vegetation because of the potential for the spread of exotic and nonnative species would be adverse, moderate, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of exotic plants. The impact on exotic plants is unknown, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact on native plants and vegetation.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect exotic plants, as would increases in the amount of disturbed land that is available for colonization by exotic species. The impact of these activities on exotic plants and nonnative vegetation is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on native vegetation would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could be minor and adverse on exotic plants and nonnative vegetation.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor,

adverse cumulative impact on exotic plants. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Under alternative B, impacts on native vegetation because of the potential for the spread of exotic and nonnative plants would be long term, moderate, adverse, and potentially Addition-wide.

There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of native vegetation in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Federal Threatened and Endangered Species

Florida Panther. Under alternative B, impacts on the Florida panther would be attributed to new facility development, expanded visitor use and expanded NPS administrative ORV use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact panthers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible while also considering design needs and standards (e.g., using disturbed areas near existing access points along major highways). There would still be a loss of habitat within the panther home range. Facility development under alternative B would be greater than in the no-action alternative. The impact would be long term, minor to moderate, adverse, and localized.

Public ORV use in the Addition under alternative B would be allowed on up to 132 miles of designated trails and through the issuance of up to 660 annual ORV permits. Adverse impacts from ORV use could include displacement of panthers and their avoidance of certain areas within the Addition. Public hunting would also be allowed but is not expected to adversely impact the viability of the panther's prey base because game populations would be managed for sustainable harvests. Although no studies have shown that ORV use alone causes changes in panther behavior (NPS 2000), the Janis and Clark (1999) study on the effects of human activity in the original Preserve showed that panthers' home range shifted and they avoided designated ORV trails during higher levels of human activity associated with the hunting season. Total human use and disturbance within panther habitat in the Addition would increase substantially relative to the no-action alternative. The impacts from these activities would be long term, moderate, adverse, and could be Addition-wide.

Nonmotorized visitor use (primarily back-country hiking) could continue to affect Florida panthers, potentially causing occasional displacement of panthers and their avoidance of certain areas within the Addition; the impact would be long term, minor, adverse, and localized.

Designating lands as wilderness under alternative B could result in beneficial impacts on the panther. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This could likely result in greater protection of panther habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the Florida panther under alternative B would be long term, moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on panthers in the region — a beneficial impact (because an individual panther's range may include the Preserve as well as the Addition and other adjacent lands). In other words, improving and protecting habitat value on the original Preserve could yield a regional benefit to the species. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on panthers. Adverse impacts on panthers could still occur from ORV use in the original Preserve, but the effects on the species would be less than with no ORV management. With implementation of the terms and conditions of the U.S. Fish and Wildlife Service's "Biological Opinion" (USFWS 2000), the plan is not likely to result in jeopardy to the panther. Overall, the impact of the 2000 ORV plan on the Florida panther would be long term, moderate, and beneficial compared to no ORV management.

Implementation of future oil and gas proposals could have adverse impacts on Florida panthers in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could create human disturbances and result in degradation and loss of panther habitat. Short-term adverse impacts from construction could include flushing and displacement of panthers, effects on feeding and

sheltering behavior, and an increase in mortality from vehicle collisions. Panthers have been seen at existing oil and gas operations in other portions of the Preserve. The same types of adverse impacts would be long term due to ongoing operations and maintenance activities. These adverse impacts would be minor and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the Florida panther is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because it would return vegetation communities to historic conditions and improve predator/prey relationships.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of panther habitat. Natural areas that remain are more fragmented and contain higher levels of human disturbance, both of which adversely affect panthers and their long-term survival. Increased panther mortality due to vehicle collisions could also be attributed to the effects of regional growth and development. The impact of these activities on the Florida panther is expected to be long term, moderate to major, and adverse.

Collectively, beneficial impacts on the Florida panther would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects

discussed above would likely be adverse to Florida panthers in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative B would contribute a modest increment to this cumulative impact.

Conclusion — Impacts on the Florida panther under alternative B would be long term, moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative B would contribute a modest increment to this cumulative impact.

Impacts from actions contained in this alternative would not likely result in impairment of the Florida panther in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

West Indian Manatee. Impacts on the West Indian Manatee under alternative B would generally be the same as under the no-action alternative. Designating new paddling trails in tidal areas south of U.S. 41 could increase displacement or avoidance behavior, which could affect feeding and other behaviors. The impact would be long-term, minor, adverse, and localized.

Overall, compared to the no-action alternative, impacts on the West Indian manatee would be long term, minor,

adverse, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on manatees. The quality of freshwater inputs is predicted to be less than current conditions, which could adversely impact manatee habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, minor beneficial impacts on the West Indian manatee.

Regional growth and development is expected to continue and could result in an increase in the number of recreational boaters in the region. Injury and mortality of manatees associated with recreational boating could increase as a result of increased motorboat use. Incompatible coastal development could also adversely affect manatees by loss of habitat and feeding areas, as well as pollution discharges. These activities would adversely impact manatees and could affect their long-term survival. The impact on the West Indian manatee is expected to be long term, moderate to major, and adverse.

Overall, the effects of the projects discussed above would likely be adverse to West Indian manatees in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would

be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Conclusion — Impacts on the West Indian manatee under alternative B would be long term, minor, adverse, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the West Indian manatee in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Red-Cockaded Woodpecker. Under alternative B, impacts on potential habitat for the red-cockaded woodpecker would be attributed to new facility development and expanded visitor use.

New facility development — such as trails, trailheads, and access points at mile marker 51, mile marker 63, Bear Island Grade, and Deep Lake — could impact potential habitat and thus woodpeckers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible while also considering design needs and standards (e.g., using disturbed areas near existing

access points along major highways). There would still be a loss of habitat. The impact would be long term, minor to moderate, adverse, and localized.

Public ORV use in the Addition under alternative B would be allowed on up to 132 miles of designated trails and through the issuance of up to 660 annual ORV permits. Adverse impacts on woodpeckers from recreational ORV use would include displacement of woodpeckers and their avoidance of certain areas within the Addition. NPS administrative ORV use could add slightly to these impacts. Public hunting would also be allowed, but it is not expected to adversely impact woodpecker habitat because the integrity of cavity trees and forage resources would be maintained. Total human use and disturbance in the Addition would increase substantially relative to the no-action alternative. Conditions that support woodpecker use of the area would continue to be maintained. Because there are currently no known nest sites within the Addition, effects on woodpeckers would be limited to impacts on foraging habitat and their avoidance of certain areas during periods of human activity. The impacts would be long term, minor to moderate, adverse, and localized.

Nonmotorized visitor use (primarily back-country hiking) would continue to affect woodpeckers, potentially causing occasional displacement of woodpeckers and their avoidance of certain areas within the Addition. The impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative B could result in beneficial impacts on the woodpeckers. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of woodpecker habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its

wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the red-cockaded woodpecker under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on red-cockaded woodpeckers in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on woodpeckers. Cavity trees and active clusters would be avoided as trail sites, thereby also reducing adverse impacts. Adverse impacts on woodpeckers would still occur from ORV use in pinelands in the original Preserve, but the impact would be minor. Overall, the impact of the ORV plan on the red-cockaded woodpecker would be long term, negligible, and adverse.

Implementation of future oil and gas proposals could have adverse impacts on the red-cockaded woodpecker in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could degrade and reduce available woodpecker habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term adverse impacts could include flushing and displacement of woodpeckers, while long-term impacts would include the loss of cavity nesting trees.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities (including pinelands) and in turn wildlife habitat. The impact on the red-cockaded woodpecker is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources should be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of woodpecker habitat (pinelands) in the region. Natural areas that remain are more fragmented and contain higher levels of human disturbance and displacement of woodpeckers, both of which adversely affect woodpeckers and their long-term survival. The impact of these activities on the red-cockaded woodpecker is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the red-cockaded woodpecker would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse on red-cockaded woodpeckers in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the red-cockaded

woodpecker. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion — Impacts on the potential habitat for and thus the red-cockaded woodpecker under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the potential habitat for and thus the red-cockaded woodpecker. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the red-cockaded woodpecker in the Addition because habitat conditions would be maintained or enhanced, and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wood Stork. Under alternative B, impacts on the wood stork would be attributed to new facility development and expanded visitor use.

Because there are currently no known nest sites within the Addition, and they have nested in the original Preserve only sporadically since 1996, effects on wood storks would be limited to impacts on foraging habitat and avoidance of certain areas during periods of human activity.

Because new facility development, such as trailheads and access points, would be confined mostly to developed corridors and areas of existing disturbance, impacts on wood stork habitat would be negligible. Establishment of 132 miles of ORV trails

could cause adverse impacts on storks by creating short-term disturbances associated with construction activities and permanent loss of habitat. Use of the ORV trails and the increase in human occupation and disturbance in the backcountry could displace birds and cause them to avoid certain areas. NPS administrative ORV use could add slightly to these impacts. Public hunting would also be allowed, but is not expected to adversely impact wood stork habitat because the integrity of roost and nest trees and forage resources would be maintained. Total human use and disturbance in the Addition would increase substantially relative to the no-action alternative; however, conditions that support wood stork use of the area would continue to be maintained. The impact of these activities would be long term, minor, adverse, and localized.

Nonmotorized visitor use, (primarily backcountry hiking) would continue to affect wood storks, potentially causing displacement and their avoidance of certain areas in the Addition — the impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative B would likely result in beneficial impacts on the wood stork. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of stork habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the wood stork under alternative B would be long-term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the wood stork's foraging habitat (prairies and marshes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation in the original Preserve would limit impacts on storks. Nesting habitat (cypress trees in open water) would likely not be affected because off-road vehicles typically avoid the deep, open water areas that storks commonly nest in. Consequently, the effect on nesting habitat in the region due to the actions in the ORV plan would be negligible. Overall, the impact of the ORV plan on the wood stork in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the wood stork in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of wood stork habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of wood storks. Short-term impacts on wood storks would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply. The impact on the wood stork is unknown, but restoring

natural hydrologic conditions is expected to have a long-term, minor to moderate, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources should be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect storks. The impact of these activities on the wood stork is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the wood stork would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to wood storks in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in alternative B would add a very small increment to this cumulative impact.

Conclusion — Impacts on the wood stork under alternative B would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor, adverse cumulative impact on the wood

stork. The actions contained in alternative B would add a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the wood stork in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Everglade Snail Kite. Under alternative B, impacts on the Everglade snail kite would be attributed to new facility development, trail development, and expanded visitor use.

Because no snail kite nest sites are known within the Addition, effects on existing snail kite habitat would be limited to impacts on foraging and roosting habitat near marshes and open water bodies. However, the increased recreation and human activity associated with alternative B might preclude possible future kite nesting in the Addition.

New facility development, such as trailheads and access points, would be confined mostly to developed corridors and areas of existing disturbance. Therefore, the impacts from constructing these facilities on snail kite habitat would be negligible. However, the establishment of 132 miles of ORV trails would cause adverse impacts on snail kite habitat. The noise and human activity associated with construction and maintenance of these trails could generate short-term disturbances on kite habitat in areas where trail segments are near marshes, lakes, and other snail kite foraging areas. These impacts would be short term, minor, adverse, and localized.

The long-term public use of the ORV trails and the increase in human occupation and disturbance in the backcountry would also have adverse effects on snail kite habitat. Noise from ORVs and nearby human presence and activity would disturb or flush

kites that are roosting or foraging for apple snails in nearby marshes, ponds, and lakes in the Addition. Over time, this might cause snail kites to avoid foraging or roosting in certain habitat areas that are near ORV trail corridors or associated zones of human activity (which may radiate or spur off of the designated ORV trails). Larger habitat areas that become fragmented into smaller habitat “islands” by ORV trail corridors may also be avoided because of diminished habitat value. NPS administrative ORV use could add to these impacts. Public hunting would also be allowed and would have adverse impacts on snail kite foraging habitat if the hunting takes place in or near the marshes and open water bodies. Human presence and gun noise would contribute to these hunting impacts. The total human use and disturbance in the Addition associated with alternative B would be a substantial increase relative to the no-action alternative. The impact of these activities would be long term, minor to moderate, adverse, and localized.

Nonmotorized visitor use (primarily back-country hiking) would continue to affect Everglade snail kites in a manner that is similar to the no-action alternative. Snail kites could avoid foraging in areas that receive high levels of human activity. The impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative B would likely result in beneficial impacts on the snail kite. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of kite habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Under alternative B, ongoing NPS efforts to improve natural hydrologic processes, water quality, and invasive plant control would continue just as in the no-action alternative. These NPS management actions could benefit apple snail populations in the Addition, as well as improve the snail kite’s accessibility to the apple snails.

Collectively, impacts on the Everglade snail kite under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would be similar to that of the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of ORVs on the snail kite’s foraging, roosting, and nesting habitat (marshes and pond/lake fringes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the kites in the region. However, foraging, roosting, or possible nesting habitat for snail kites could be adversely affected in areas where ORV use is permitted under the plan, particularly in specific ORV use areas that are near marshes, ponds, or lakes. Overall, the impact of that plan on the snail kite in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the snail kite habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of snail kite habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative

measures. Adverse impacts could include flushing and displacement of snail kites. Short-term impacts on snail kites would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply and water quality. This would be particularly beneficial to the snail kite, because its diet predominantly consists of apple snails, which are very dependent on adequate hydrological conditions. Furthermore, the return of natural hydrological conditions and improved water quality to the region would also enhance or increase the availability of quality foraging, roosting, and nesting habitat for the Everglade snail kite. The restoration of natural hydrologic conditions would have long-term, moderate, beneficial impacts.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect snail kites and their primary food source, the apple snail. The impact of these activities on the snail kite is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the snail kite would result from improved ORV management and ecosystem restoration projects by mitigating ORV impacts and allowing habitat restoration. Adverse impacts would be expected from oil and gas development and regional growth and urban development. Overall,

the effects of the projects discussed above would likely be adverse to snail kite habitat in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the Everglade snail kite. The actions contained in alternative B would add a small increment to this cumulative impact.

Conclusion — Impacts on the Everglade snail kite under alternative B would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the snail kite. The actions contained in alternative B would add a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the Everglade snail kite in the Addition because habitat conditions would be maintained or enhanced and NPS staff would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

American Crocodile. Impacts on the American crocodile and its habitat under alternative B would generally be the same as under the no-action alternative because recreational use in and near mangrove forests of the Addition would be the same as in alternative A (no action).

Under alternative B, impacts on the American crocodile and its habitat would primarily be attributed to continued human

activities near mangrove forests, particularly motorized boating associated with recreational fishing in the Western Addition (airboat use is prohibited). Mangrove forests are the primary habitat for the American crocodile in south Florida, although crocodiles are generally rare in Big Cypress National Preserve. The mangrove habitat areas along creeks, canals, and estuaries south of U.S. 41 in the Western Addition are where effects would most likely occur.

In these areas, crocodiles may be affected by motorboat noise, boat wakes and waves, human noise or actions, or boat hulls or propellers. Because most American crocodile activity occurs from just before sunset to just after sunrise, most of these human-induced actions would disturb the crocodiles when they are at rest during daytime hours. These disturbances might cause resting crocodiles to be flushed, resulting in unnecessary energy use and stress. Boating in early morning or evening hours might also alter crocodile foraging behavior or flush the possible prey of the crocodile. Depending on the level and frequency of human disturbances, crocodiles could avoid some areas entirely.

Crocodiles are not known to nest in the Addition. However, if nesting occurs, the hatching success would primarily depend on risks from flooding, predation, lack of soil moisture during incubation, and extreme storms. The nest success also depends on the female crocodile returning to the nest to excavate the hatchlings. Research suggests that some female crocodiles may abandon their nests if the area is subjected to repeated, close human presence (Kushlan and Mazzotti 1989). Once hatched, juveniles would then be affected by similar human disturbances as highlighted above. The young crocodiles would be at greatest risk during their journey through open water from their nest site to more distant nursery habitat.

Given the infrequent presence of crocodiles in the area, the above effects from human

recreation activities such as boating would be long term, minor, adverse, and localized.

Alternative B would also continue current NPS vegetation management actions that would help maintain or improve habitat conditions in the Addition. These actions would help address invasive plant infestations that could degrade or displace habitat for the American crocodile. The impacts of ongoing NPS vegetation management would be long term, minor to moderate, beneficial, and localized.

Under alternative B, the impacts on the American crocodile would continue to be long term, adverse, minor, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the American crocodile. This restoration of hydrologic flows and connectivity would be most beneficial to the crocodile in the nonnesting season when they seek inland freshwater habitats. However, the water quality of freshwater inflows is predicted to be less than current conditions, which could adversely impact crocodile habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, moderate, beneficial impacts for the American crocodile.

Regional growth and development, including waterfront development, is expected to continue in south Florida. This would result in the alteration or displacement of natural lands and

changes to the local and regional hydrology. Because mangrove forests receive special protection under state law, any direct impacts on mangrove forests would be expected to be negligible. However, even if direct impacts on mangroves are avoided, urban encroachment may diminish mangrove habitat values if human activity and development is near the mangroves. Road mortality would likely increase as development and regional population increase. Growth and development could also result in an increase in boating and other recreational activities in the area. Crocodile foraging, breeding, resting, and nesting may be affected by increases in motorboat disturbances, boat wakes and waves, and human noise or actions. Crocodiles could avoid some areas entirely depending on the level and frequency of human disturbances. The impact on the American crocodile from urban growth and development is expected to be long term, moderate, and adverse.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Conclusion — Implementation of alternative B would result in localized, long-term, minor, adverse impacts on the American crocodile. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative B would

contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the American crocodile in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Eastern Indigo Snake. Under alternative B, impacts on the potential habitat for the eastern indigo snake would be attributed to new facility development, ORV trail development, and expanded visitor use.

New facility development, such as the construction of trailheads and access points, would be confined mostly to developed corridors and areas of existing disturbance. Therefore, the impacts from construction of these facilities on existing snake habitat would be negligible. However, debris and brush piles generated during site construction might be an attractant to eastern indigo snakes. This could lead to snake injury or mortality during construction, which would be an impact that is short term, minor to moderate, adverse, and very localized. Also, the establishment and designation of 132 miles of ORV trails could cause adverse impacts on the snakes and their habitat. The noise and human activity associated with construction and maintenance of these trails could generate short-term disturbances on habitat areas where trail segments are close to active snake foraging, breeding, or burrowing areas. These impacts would be short term, minor to moderate, adverse, and localized.

The long-term public use of the ORV trails, radiating spur trails, and the increase in human occupation and disturbance in the backcountry would have adverse effects on potential eastern indigo snake habitat. Noise from ORVs and nearby human presence and

activity would disturb or flush snakes and thus may disrupt normal foraging, breeding, or dispersal. In addition, ORV use and undesignated spur trails that extend beyond the immediate vicinity of designated ORV trails would also displace a variety of potential snake habitat types. This off-trail activity by the public could disturb or degrade vegetative groundcover and soil substrates in areas that support foraging, breeding, and snake burrows or refuges such as pinelands or successional hardwood hammocks. The combination of these impacts could cause eastern indigos to leave the area, abandon den sites, and miss foraging and mating opportunities. NPS administrative ORV use could add to these impacts. Also, the ORV use would have similar impacts on many prey species of the eastern indigo, which would indirectly have adverse effects on the snake. Under alternative B, the ORV use and associated human disturbances in the Addition would be an increase relative to the no-action alternative. The impact of these activities would be long term, minor to moderate, adverse, and localized.

Given the snake's large home range and need to disperse across a variety of habitat types to sustain viable populations, the eastern indigo is particularly vulnerable to habitat fragmentation and the resulting "edge effect" (Layne and Steiner 1996, Breininger et al. 2004). Unlike the no-action alternative, large habitat areas would become fragmented into smaller habitat "islands" by ORV trail corridors. This would result in diminished habitat value for the snake throughout the Addition. The effect of this habitat fragmentation would be long term, minor to moderate, adverse, and Addition-wide.

Public hunting would also be allowed (walk-in or via ORV access) and would have adverse impacts on eastern indigo habitat if the hunting frequently takes places in or near vegetation communities that are commonly occupied by the snake (e.g.,

pinelands, successional hardwood hammocks, and mangrove forests).

Other nonmotorized visitor use (primarily backcountry hiking) would continue to affect eastern indigo snake habitat in a manner that is similar to the no-action alternative. Although increased human use would be expected with alternative B, these pedestrian activities would cause sporadic flushing of the snake. Eastern indigo snakes could avoid foraging in areas that receive high levels of human activity. The impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative B would likely result in beneficial impacts on eastern indigo habitat. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of the snake's habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible. Also, most of the proposed wilderness under alternative B is south of I-75. Most of this area to the south of the highway is the wettest land in the Addition and would be least suitable habitat for the indigo snake.

Under alternative B, ongoing NPS efforts to improve natural hydrologic processes, water quality, and invasive plant control would continue as in the no-action alternative. Given the snake's dependence on a mosaic of habitat types throughout its lifecycle, these active NPS management actions could benefit the eastern indigo snake habitat directly and indirectly.

Collectively, impacts on the potential eastern indigo snake habitat under alternative B would be short term and long term, minor to moderate, adverse, and localized to

Addition-wide. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative B would be similar to those under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of ORVs on the wide variety of habitat types that support the eastern indigo. Most importantly, the improved ORV management efforts would reduce disturbance or degradation to vegetative groundcover and soil substrates in areas that provide for foraging, breeding, and snake burrows or refuges, such as pinelands or successional hardwood hammocks. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the indigo snakes in the region. However, snake habitat might be altered or displaced, and individual snakes might be disturbed, in areas where ORV use is permitted under the plan. Overall, the impact of that plan on the eastern indigo in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the eastern indigo snake habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in the loss and degradation several habitat types that support the snake. Adverse impacts would include displacement of vegetative cover for the snake; soil and burrow disturbances; possible roadway injury/mortality; and disruption of normal foraging, breeding, and dispersing behaviors. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on the snake would be adverse, moderate,

and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions for many species. This hydrologic restoration could benefit the eastern indigo directly during times of the year when the snake uses wetter habitats. At other times, it would benefit the eastern indigo indirectly by restoring a natural system that could improve conditions and increase populations of the snake's food base. However, the reintroduction of natural flows could displace some existing upland areas. This effect could decrease available upland habitat for the eastern indigo snake and its prey that depend on upland habitat. The restoration of natural hydrologic conditions would have long-term, minor to moderate impacts that could be both beneficial and adverse to the snake.

Regional growth and development is expected to continue and result in an increase in habitat displacement for the snake. Because the eastern indigo uses a variety of habitat types and has a large home range, it is particularly susceptible to habitat loss and habitat fragmentation from urban development. In addition to habitat displacement and fragmentation, urban development also brings injury or mortality threats from domestic animals, road vehicles, property owners, and pesticides and rodenticides in the food chain. All of these could adversely affect eastern indigos. The impact of these activities on the snake is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the eastern indigo snake would result from improved ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and

development. Overall, the effects of the projects discussed above would likely be adverse to the snake's habitat in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact and a short-term, minor to moderate, adverse cumulative impact on the potential habitat for the eastern indigo snake. The actions contained in alternative B would contribute a small increment to this adverse cumulative impact.

Conclusion — Impacts on the potential habitat for and thus the eastern indigo snake under alternative B would be short-term and long term, minor to moderate, adverse, and localized to Addition-wide. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a short-term and long-term, moderate, adverse cumulative impact on the potential habitat for the eastern indigo snake. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the eastern indigo snake in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Major Game Species

Analysis. Under alternative B, impacts on the major game species of the Addition (white-tailed deer, feral hogs, and wild turkey) would be attributed to new facility development and expanded visitor use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact game species by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways and the interstate), but there would still be a loss of habitat. The impact would be long term, minor, adverse, and localized.

Establishment of 132 miles of ORV trails would fragment game habitat, and ongoing use of the trails would cause flushing, displacement, and avoidance of certain areas. NPS administrative ORV use could add slightly to these impacts. The impacts on game species from ORV use in the Addition would likely be long term, minor, adverse, and localized. Game species typically adapt to changes in habitat conditions and can become habituated to the predictable use of designated ORV routes.

Public hunting would be allowed under alternative B, and the 132-mile network of ORV trails would allow hunters to access much of the Addition and increase hunting opportunities. The Addition would be expected to become part of the adjacent Big Cypress State Wildlife Management Area. As in the original Preserve, hunting would be regulated according to the requirements, seasons, and bag limits established by the Florida Fish and Wildlife Conservation Commission. Short-term, minor adverse impacts, such as flushing and displacement of game species, would continue. Long-term, moderate beneficial impacts could also occur from harvesting and management of

game populations, such as disease mitigation and improvements in population genetics. Partnerships with the Florida Fish and Wildlife Conservation Commission would continue and would contribute to the monitoring and improved understanding of game populations.

Designating lands as wilderness under alternative B would likely result in beneficial impacts on major game species. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of game habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on major game species under alternative B would be long term, minor to moderate, adverse, and mostly localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the adverse impacts of off-road vehicles on major game species in the region — a beneficial impact. Eliminating some and designating new ORV trails would make ORV noise and movement more predictable, thereby displacing animals away from travel corridors but reducing the impacts on wildlife habitat and game populations. Conducting education, best management practices, research, and mitigation called for in the ORV plan would also limit impacts on wildlife. Adverse impacts on major game species would still occur from ORV use in the Preserve, but the effects on the species would be less than with no ORV plan / management / permitting. Overall, the

impact of the ORV plan on major game species in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on major game species in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter wildlife habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of game species. Short-term impacts on major game species would be moderate, adverse and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the major game species is unknown, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a loss of wildlife habitat. The major game species are considered generalists and have demonstrated their resiliency and ability to adapt to changing conditions. Within the region, the three species (deer, hogs, and turkey) are widespread. However, continued urbanization has fragmented remaining natural areas and increased the risks and threats to these species, including automobile collisions, exotic species, and pathogens. The impact of these activities on the major game species is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on major game species would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to major game species in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the major game species. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Conclusion. Impacts on major game species under alternative B would be long term, minor to moderate, adverse, and mostly localized.

There would be a long-term, minor to moderate, adverse cumulative impact on the major game species. The actions contained in alternative B would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the major game species in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

WILDERNESS RESOURCES AND VALUES

Analysis

Under alternative B, impacts on wilderness resources and values would be attributed primarily to ORV trail development and use and designation of lands as wilderness. Development of approximately 132 miles of ORV trails would fragment native habitat and degrade natural conditions in certain

areas that were evaluated as eligible for wilderness designation. ORV use would affect the natural soundscape of the area. Impacts would be confined to a designated trail system, limiting changes to natural conditions and wilderness character outside of the trail system. Impacts from visitor use would be long term, moderate, and adverse.

Approximately 37,567 acres of the Addition would be proposed for designation as wilderness (53% of those lands considered eligible under the wilderness study and 26% of the Addition's total acreage). The special status and protection afforded to these lands under the Wilderness Act would preserve their wilderness resources and values in perpetuity, a moderate to major beneficial impact. Opportunities for solitude and primitive and unconfined recreation would continue to be preserved and available, but the extent and availability of the opportunities would be reduced compared to the no-action alternative.

Overall, the impacts on wilderness resources and values would be long term, moderate, beneficial, and Addition-wide.

Cumulative Impacts

Cumulative impacts on wilderness resources and values under alternative B would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the effects of off-road vehicle use on wilderness resources and values by reducing the potential for dispersal and establishment of exotic plants, a beneficial impact. The impact on natural soundscapes resulting from the management of off-road vehicles in the original Preserve would be negligible because approximately the same number of off-road vehicles would be using the original Preserve and in roughly the same areas. Consequently, impacts on a visitor's wilderness experience (freedom and natural sights and sounds) resulting from the 2000

ORV plan would be negligible. Impacts on wilderness resources and values in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on wilderness resources and values. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter natural habitats. NPS approval of the operations plan would require mitigative measures to eliminate or reduce the impact of activities on natural resources. Short-term impacts on wilderness resources and values would be moderate, adverse, and localized; residual long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect natural communities. Restoring natural conditions is expected to have a long-term, moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. Increasing urbanization, fragmentation of habitat, and the loss of natural areas have led to the degradation of natural resources, ecosystem function, and natural soundscapes in the region. The impact of these activities on wilderness resources and values is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on wilderness resources and values would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to wilderness resources and values in the region.

When the likely effects of implementing the actions contained in alternative B are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative B would contribute a modest beneficial increment to this cumulative impact.

Conclusion

Impacts on wilderness resources and values under alternative B would be long term, moderate, beneficial, and Addition-wide.

There would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative B would contribute a modest beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wilderness resources and values in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

CULTURAL RESOURCES

Archeological Resources

Analysis. As appropriate, archeological surveys would precede any ground disturbance for the construction of parking, restrooms, trailheads, and trails, and national register-eligible or -listed archeological resources would be avoided. No adverse impacts on archeological resources would be anticipated. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources cannot be preserved in situ, an appropriate mitigation

strategy would be developed in consultation with the state historic preservation officer and any associated Indian tribes.

Most of the archeological sites in the Addition are middens. These raised mound areas would be potentially attractive to ORV and backcountry users, and trampling or disturbance could result. Increased visitor use under this alternative would increase the potential for looting and vandalism, and unauthorized off-trail ORV use could displace soils and cause erosion of archeological sites. Continued ranger patrol and emphasis on visitor education would discourage vandalism and inadvertent destruction of cultural remains, but any adverse impacts would be permanent, minor to moderate, and adverse.

Cumulative Impacts. Current research indicates relatively little disturbance of archeological sites in the Addition resulting from past actions such as hunting and camping, logging, looting, and energy exploration. These impacts would be characterized as permanent and negligible.

Large-scale water projects and commercial and residential development could pose some impacts on archeological resources in the vicinity of the Addition. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, significant archeological resources would likely be avoided to the greatest extent possible, and any impacts on archeological resources would be adverse and permanent, and range in intensity from minor to moderate.

Implementation of future oils and gas could have adverse impacts on archeological resources. If such proposals included using off-road equipment and constructing roads and pads, this could affect archeological resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the impact of activities on archeological resources, the

permanent effect of energy exploration on archeological resources should be negligible.

When the permanent, minor to moderate effects of implementing the actions in alternative B are added to the permanent, minor to moderate adverse effects of other past, present, and reasonably foreseeable actions, there would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative B would contribute a smaller increment to the cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.

Conclusion. Under alternative B, impacts on archeological resources would be permanent, minor to moderate, and adverse.

There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in alternative B would contribute a smaller increment to the cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.

Section 106 Summary. As appropriate, archeological surveys would precede any ground disturbance for the construction of parking, restrooms, trailheads, and trails, and significant archeological resources would be avoided. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative B would result in a potential adverse effect on archeological resources. Impacts from actions contained in this alternative would not result in impairment of archeological resources in the Addition.

Ethnographic Resources

Analysis. Under alternative B, there would be limited potential for impacts on ethnographic resources. Access to these resources would be limited to recognized

traditionally associated peoples. Visitor activities such as hiking, camping, cycling, and equestrian use would not be allowed in or near identified ethnographic sites. However, increases in motorized recreation, specifically ORV use and the construction of trails for ORVs, hiking, camping, cycling, and equestrian use would pose the potential of impacts such as trampling, looting or vandalism on ethnographic resources. Increased ranger patrols and education programs informing visitors of the sensitive nature of these sites would result in long-term, negligible impacts.

The National Park Service would work with traditionally associated people to identify ethnographic resources and identify appropriate protection strategies for these resources. Consultation with traditionally associated peoples would precede construction in order to avoid or mitigate potential impacts resulting from trail or facility development (such as parking areas, restrooms, and trailheads). With this mitigation, no adverse impacts on ethnographic resources would be anticipated from construction.

Cumulative Impacts. Current research indicates negligible impacts on ethnographic resources in the Addition resulting from hunting and camping and looting. Past actions, including road construction, energy exploration, logging, and agricultural development, might have impacted ethnographic resources at Deep Lake and other sites within the Addition. Any adverse impacts would have been long term and of negligible to minor intensity.

Large-scale water projects and commercial and residential development could pose some impacts on ethnographic resources in the vicinity of the Addition. However, ethnographic resources would likely be avoided to greatest extent possible, and any impacts on ethnographic resources would be adverse and permanent and range in intensity from negligible to minor.

Implementation of future oil and gas proposals could have adverse impacts on ethnographic resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the impact of activities on ethnographic resources, the permanent effect of energy exploration on ethnographic resources should be negligible.

When the long-term, negligible adverse effects of implementing the actions contained in alternative B are added to the negligible to minor adverse effects of other past, present, and reasonably foreseeable actions, there would be a long-term, negligible to minor, adverse cumulative impact on ethnographic resources. The actions contained in alternative B would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative B, there would be negligible, long-term, impacts on ethnographic resources.

Combined with the impacts of past actions, including road construction and agricultural development, there would be a long-term, negligible to minor, adverse cumulative impact. The actions proposed in this alternative would contribute a very small increment to any cumulative impacts.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative B would generally result in a no adverse effect on ethnographic resources.

VISITOR USE AND EXPERIENCE

Recreational Opportunities

Motorized Use. ORV access and opportunities to explore, sightsee, and camp would be greatly expanded with the development of up to 132 miles of primary

ORV trails, issuance of a maximum of 660 annual ORV permits, and access points and visitor information at mile markers 51 and 63 and Bear Island Grade. The construction of a new visitor contact station and NPS operation facility at mile marker 63 would also have beneficial impacts by greatly expanding education and interpretation opportunities, services, and NPS operational capacity in the Addition. An increased NPS staff presence would also improve visitor safety and increase opportunities for interpretation. Impacts resulting from ORV access and opportunities as well as visitor services and information would be long term, moderate to major, beneficial, and Addition-wide.

Allowing ORV use in the Addition, along with the construction of a new contact station, might lead to user congestion and user conflicts at trailheads and along the primary and secondary ORV trail network, resulting in long-term, minor, adverse, impacts on users. But dispersing users across multiple access points as proposed would minimize the impact. Finally, the provision of additional services at Carnestown would result in long-term, negligible to minor, beneficial impacts to ORV users seeking additional information and services. Overall, implementation of alternative B would result in long-term, moderate to major, beneficial impacts to motorized users.

Nonmotorized Use (including hiking, horseback riding, and bicycling). The primary and secondary ORV trail network, new access points and visitor information, and the new contact station would also be open to hikers, expanding both access and opportunities. The construction of a new day use area and ADA-compliant boardwalk at Deep Lake would have beneficial impacts by providing a comfortable area to enjoy the natural surrounding and provide an easy, safe route to access the lake. Opportunities for challenging adventure and primitive solitude as well as less primitive hiking would be available. Impacts resulting from expanding access and opportunity for

nonmotorized user groups would be long term, moderate to major, and beneficial.

The addition of ORV users and the construction of a new contact station might result in user congestion and user conflict at trailheads and along the primary and secondary ORV trail network and would reduce the quality of the natural soundscape. The addition of hunting under alternative B would likely further increase encounters, reduce the quality of the natural soundscape, and could periodically affect access. Impacts on hikers as a result of congestion and a reduced natural soundscape would be long term, minor to moderate, and adverse. Dispersing users across multiple access points as proposed would minimize the impact. Impacts resulting from the provision of additional visitor services at Carnestown would be long term, minor, and beneficial.

Access to the Addition and parking would be improved in comparison to alternative A. Although bicycling would be allowed on all designated primary and secondary ORV trails, many of these trails would not be conducive to bicycling; therefore, bicycling opportunities would only be slightly expanded beyond alternative A. New access points and the ability to use the primary and secondary ORV trail network would disperse bicyclists across the Addition, reducing the potential for congestion and user conflict. Impacts resulting from an expansion of access and opportunity would be long term, minor, beneficial, and Addition-wide. Conflict between user groups at trailheads and along the primary and secondary ORV trail network and a reduction of the natural soundscape due to ORV use would detract from the experience of bicycling in a natural setting, resulting in long-term, minor, adverse impacts on bicyclists. Finally, the provision of additional services at Carnestown would result in long-term, negligible to minor, beneficial impacts on bicyclists seeking additional information and services.

Overall, impacts on nonmotorized users would be long term, moderate, and beneficial.

Hunting (including fishing and frogging).

Nonmotorized and ORV hunting would be allowed in designated areas and seasons as determined by the National Park Service in cooperation with the Florida Fish and Wildlife Conservation Commission in the areas zoned as primitive backcountry, backcountry recreation. Hunters using off-road vehicles, however, would not have the opportunity to operate their vehicles off designated trails. Conflict between ORV and nonmotorized hunters and with other trail users at trailheads and along primary and secondary ORV trails would likely be infrequent due to sensible facility design, resulting in long-term, minor, adverse impacts. The operation of off-road vehicles might detract from the hunting experience of those that prefer walk-in hunting and solitude. Overall, impacts on hunters in the Addition would be long term, moderate, and beneficial.

Collectively, impacts on visitor use and experience resulting from alternative B would be long term, moderate, and beneficial.

Cumulative Impacts

Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* would provide up to 400 miles of designated primary ORV trails, 15 ORV access points, and up to 2,000 annual permits in the original Preserve. This quantity of trail miles and permits provides abundant opportunities for operating off-road vehicles. The availability of these opportunities adjacent to the Addition would have long-term, moderate, beneficial impacts on ORV users in the local area.

Implementation of future oil and gas proposals could adversely impact the experience of visitors. The construction of roads and

pads and the use of off-road equipment, if included in the proposals, could detract from the experience of those seeking a primitive experience and natural soundscape. Impacts resulting from a reduction in the natural settings of the Addition due to the operation of oil and gas equipment would be long term, minor, and adverse in localized areas.

The south Florida Ecosystem Restoration Project is a large-scale effort among public, private, and nongovernmental entities to restore surface water flows within the region. Implementation of the proposals would improve sheet flows and hydrologic connectivity and likely restore natural conditions in the Addition. This effort would enhance the visitor use and experience by providing increased opportunities for wildlife viewing and experiencing natural settings. Opportunities for hunting in the Addition would also improve with more abundant, healthy wildlife populations. Impacts resulting from the effects of a healthy, fully functioning ecosystem would be long term, moderate, beneficial, and regionwide.

Regional growth and development are expected to result in increased visitation to the Addition. More visitation over time might result in increased congestion and user conflicts at access points and along the primary and secondary ORV trail network. Impacts from growth and development would be long term, minor to moderate, and adverse because of increased congestion and user conflict.

Implementation of the *Commercial Services Plan* will initially only affect the original Preserve. The Addition will be addressed in an addendum to the *Commercial Services Plan* after the completion of the *General Management Plan* for the Addition. The *Commercial Services Plan* proposes to enhance the original Preserve's visitor services through the development of one or more new facilities; a new backcountry camping complex; hunting and fishing

guides; buggy, van, and hiking tours; boat and bicycle rentals; and expanded opportunities for birding, wildlife viewing, and photography. Enhanced and expanded opportunities in the original Preserve, before an addendum to include the Addition, would increase visitation in the Addition and might result in increased congestion and user conflicts. Impacts resulting from increased visitation and congestion at access points and along the primary and secondary ORV trail network would result in long-term, minor, adverse impacts on visitors. When the Addition is addressed in an addendum, visitor opportunities to explore and use the Addition could be expanded. If so, impacts from implementing the *Commercial Services Plan* in the Addition would be long term, minor to moderate, and beneficial as a result of expanded opportunities.

The likely effects of implementing alternative B, in combination with the effects of other past, present, and reasonably foreseeable actions described above, would result in long-term, moderate, and beneficial cumulative impacts on visitor use and experience in the Addition. The actions contained in alternative B would contribute an appreciable increment to this cumulative impact.

Conclusion

Under alternative B, designated access points and abundant trail opportunities would be provided for ORV use, hunting, and nonmotorized uses. Collectively, the resulting impacts on visitor use and experience would be long term, moderate, and beneficial.

The cumulative impact on visitor use and experience in the Addition would be long term, moderate, and beneficial. The actions contained in the alternative B would contribute an appreciable increment to this cumulative impact.

SOCIOECONOMIC ENVIRONMENT

Analysis of economic impacts under alternative B was based on projected increases in visitation to the Preserve (including the Addition) (which in turn would affect visitor spending patterns), as well as estimated one-time capital expenditures due to construction activity. A total of 39,479 new visitors were estimated to visit the Preserve each year as a result of implementing this alternative. Of this total, it was assumed that 8,291 were local visitors, 15,002 were non-local day visitors, 11,054 were motel visitors, and 5,132 were campers. In terms of capital expenditures, it was estimated that alternative B would produce \$6.7 million in total construction costs.

Local Economy

Employment. Approximately 41 jobs (35 direct and six indirect) would be created in Collier County as a result of visitor spending under alternative B. This would generate a total labor income of \$604,000 annually (which covers wages, salaries, and payroll benefits), representing \$458,000 in direct labor income effects as a result of new job growth and \$146,000 in indirect labor income effects from new job growth in tourism-related industries. Approximately half of direct employment would be attributable to increases in Preserve staff needed to operate and maintain new facilities, trails, and services in the Addition; the remaining jobs would result from partnerships at Carnestown and businesses that cater to tourists. Indirect employment increases would result from firms that support tourist-related businesses, as well as from firms that hire additional staff as a result of changes in direct employment spending. Employment in Collier County is approximately 140,184 (2006 estimate) so the additional jobs only increase county employment by .03%. Consequently, as a result of alternative B, long-term impacts related to employment would be localized, negligible, and beneficial.

In terms of short-term impacts, approximately 51 temporary jobs would be created due to construction activity in the Addition, generating about \$1.6 million in personal labor income. Most direct employment increases would be attributable to temporary labor needed during the construction period. Secondary employment increases would be attributable to new staff needed in industries that provide goods and services to the construction sector as well to businesses that need additional staff to support changes in direct employee spending. However, the additional jobs only increase county employment by 0.04%. Short-term impacts related to employment in alternative B would be localized, negligible, and beneficial.

Housing. The addition of jobs could translate into greater demand for housing, if most of the additional employees come from outside the county (and thus need to seek housing near the Preserve). However, such impacts, if felt at all, would likely be concentrated in the Naples and Marco Island areas, because the creation of 41 jobs is not large enough to create a discernable impact on the housing market at the county level. Consequently, the long-term impacts related to housing would be localized, negligible, and beneficial.

Short-term housing impacts as a result of construction activity are also likely to be insignificant from a county perspective. Specific locales such as Naples and Marco Island might see temporary increases in the demand for housing as a result of transitory employees moving into the area during the construction period. However, in relation to the overall housing market in Collier County, this impact is likely to be undetectable. Consequently, short-term impacts related to the housing market would be localized, negligible, and beneficial.

Sales. Long-term impacts of visitor spending under alternative B would generate a total of \$1.76 million annually in direct and indirect sales of goods and services by businesses in

Collier County. The majority of businesses that would realize these financial gains would be in industries that cater directly to tourism, such as retail, arts, entertainment, recreation, accommodation and food services. As a total of Collier County's annual taxable sales, estimated to be over \$6.10 billion in 2004, such changes represent only a .03% increase. Consequently, the long-term impacts related to sales under alternative B would be localized, negligible, and beneficial.

Capital construction expenditures would also increase short-term sales under alternative B. Total annual taxable sales of goods and services were estimated to be \$4.3 million, with \$3.4 million (79%) of that amount attributable to transactions occurring within Collier County. The majority of direct sales would be attributable to construction-related businesses, with indirect sales attributable to industries that support the construction industry and its temporary employees. Consequently, the short-term impacts related to sales under alternative B would be localized, negligible, and beneficial.

Tribal Impacts. In qualitatively assessing long-term impacts to the Miccosukee and Seminole tribes, it appears that both reservations would realize some degree of positive long-term benefits under alternative B. Increased visitation to the Preserve as a result of this alternative would likely generate a small to moderate boost in sales of tourist-related goods and services (i.e. gaming, dining, and entertainment) provided at these reservations. Both tribes could also directly benefit from entering into select partnership agreements with the Preserve, as specified under this alternative. However, the magnitude of such gains is based on reasonable speculation due to the limited amount of data available on the tribes' economic activities. Consequently, the long-term impacts related to economic activity under alternative B would be localized, negligible to moderate, and beneficial.

New construction activity in the Addition would generate temporary construction jobs. Additional construction workers in the area would likely increase visitation to the two reservations, leading to an increase in the sales of tourist-related goods and services. Consequently, the short-term impacts related to economic activity under alternative B would be localized, negligible to moderate, and beneficial.

Collectively, the long-term and short-term impacts resulting from implementing alternative B would be localized, negligible, and beneficial.

Cumulative Impacts

The action area for evaluating cumulative impacts on the socioeconomic environment is Collier County. The likely effects of implementing the actions contained under alternative B, in combination with to the effects of other past, present, and reasonably foreseeable actions are described below.

The implementation of the *Final Recreational Off-Road Vehicle Plan*, which provides for a maximum of 2,000 permits, 15 access points, and 400 miles of designated trails, has a strong likelihood of attracting new visitors and locals to the Preserve. Such an increase in Preserve visitation would translate into greater visitor spending in the area, resulting in positive long-term gains for Collier County in terms of employment, housing, and taxable annual sales, as well as increased economic activity for the Miccosukee and Seminole tribes. However, relative to the economy of the entire county, long-term economic impacts will likely be minimal. Short-term impacts as a result of one-time capital expenditures from building ORV trail access, facilities, and other structures are also likely to be minimal relative to the overall level of construction activity in the county. As a result, both long-term and short-term cumulative impacts would be localized, negligible, and beneficial.

Although the *Commercial Services Plan* does not include the Addition, social and economic impacts to the county as a whole would be positive due to increased visitation and visitor spending in the area, and expansion of facilities, services, and recreational opportunities in the Preserve. In particular, the implementation of the *Commercial Services Plan's* preferred alternative, which includes the potential to develop two new visitor facilities, partnership agreements for offering a variety of guided tours and equipment rentals, and the creation of a backcountry camping complex, could translate into moderate long-term gains in visitor spending at the county level. Depending on the level of construction activity generated from implementation of the *Commercial Services Plan*, short-term impacts could be substantial at the county level. As a result, both long-term and short-term cumulative impacts would be localized, negligible to moderate, and beneficial.

The potential exists for exploration activities, as proposed under the oil and gas plan, to reduce visitation in the Preserve due to environmental disruptions from the use of off-road equipment and the development of roads and pads for oil and gas exploration. Due to multiplier effects, long-term impacts from reduced visitation could result in reductions in county employment, housing, and sales, as well as reduced economic activity for the Miccosukee and Seminole tribes. However, such effects will likely be minimal in relation to the entire county economy. Short-term impacts from construction could be both positive and substantial, depending on the level of construction and percentage of that economic activity that remains within the county. Long-term impacts would be localized, negligible, and adverse, while short-term impacts would be localized, negligible to moderate, and beneficial.

The south Florida ecosystem restoration projects would likely attract additional visitors to the region due to the rehabilitation of natural ecosystems within and near

the Preserve through various water system improvements. In particular, the Big Cypress Interceptor Modification Plan would likely increase use across a variety of recreational activities offered in the Preserve, particularly for visitors interested in enjoying the natural habitat and wildlife. Collier County would also benefit from restoration efforts in nearby sites, such as Everglades National Park, because additional visitors may pass through or decide to make an additional stop at the Preserve. Because these restoration projects are relatively large in scale, are occurring at multiple sites, and are at a regional level, the long-term impacts on county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes could be substantial. Short-term impacts would also be positive because capital expenditures on water infrastructure improvements (estimated at multi-billions of dollars) would likely generate substantial temporary gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. As a result, both long-term and short-term impacts would be localized, moderate, and beneficial.

The development of lands northwest of the Addition could increase Preserve visitation and result in positive long-term economic impacts at the county level. In particular, the availability of greater residential housing and the building of a new private and state university in the area could greatly increase the number of residents living in Collier County. The provision of additional services, goods, and facilities would also likely be expanded to accommodate these new residents, which in turn would also attract a greater number of visitors from outside the region. As a result, increased local and visitor spending would produce long-term positive gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. Short-term economic impacts could be substantial at the county level, because large scale construction activity would be needed to support new residents, the universities, and visitors.

As a result, long-term and short-term impacts would be localized, moderate to major, and beneficial.

Combining the likely effects of implementing alternative B with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative long-term and short-term socioeconomic impacts would be localized, moderate, and beneficial. Alternative B would contribute a very small increment to this cumulative impact.

Conclusion

Because of increased visitor spending under alternative B, long-term and short-term impacts on the socioeconomic environment would be localized, negligible, and beneficial. As a result, county employment, housing, and sales, as well as economic activity associated with the Miccosukee and Seminole tribes would realize positive gains, although such increases would be minimal when compared to the county as a whole.

In terms of total cumulative effects, long-term and short-term impacts would be localized, moderate, and beneficial. Alternative B would contribute a very small increment to the total cumulative impact.

NPS OPERATIONS AND MANAGEMENT

Analysis

Alternative B proposes a visitor contact station, an operations center, and employee housing to be located in the Addition. The visitor contact station would allow staff to orient and educate visitors to the Addition, which would not be as easily done without a local visitor facility. An operations center, which would station employees and equipment in the Addition, would increase operational efficiency and reduce response time for fire, law enforcement, maintenance,

and interpretation staff. Currently, staff must travel a minimum of an hour to reach the Northeast Addition from the original Preserve. Employee housing for three law enforcement and two fire division staff would increase efficiency and reduce response time for fire and enforcement scenarios. Having staff based at these NPS facilities in the Addition would result in moderate, long-term, beneficial impacts on NPS operations.

Oversight of design and construction processes for new facilities would require managerial and contracting staff time. Additionally, new facilities must be maintained, and this would burden maintenance staff. A day use area at Deep Lake, up to 132 miles of primary ORV trails, trailheads, and interpretive panels are also proposed for development in the Addition. Managing the Addition would require time and effort from administrative, visitor and resource protection, interpretation, resource management, and fire division staff. Maintenance and resource management in areas proposed as wilderness would require the use of the minimum requirements process, which would require staff time and, in some cases, could increase the cost of management actions. Increased visitation due to the new facilities would also require time from all staff divisions. Therefore, management of the Addition and construction and maintenance of facilities under alternative B would result in moderate, long-term, adverse impacts to NPS operations.

Cumulative Impacts

Expansion of nearby communities, including the towns of Ave Maria and Big Cypress, Everglades ecosystem restoration activities, and oil and gas exploration activities, would require time and attention by NPS staff. The expansion of commercial services offered in the original Preserve would require staff time for managing the commercial service authorizations and leases. Cooperation and coordination with neighboring agencies and

entities regarding planning, land use resources, and development proposals near the Preserve also would require substantial amounts of staff time and result in minor to moderate, long-term, adverse impacts.

Alternative B would place an additional burden on NPS staff, but this burden would be lessened with adequate staffing. Combined with other past, present, and reasonably foreseeable future impacts, alternative B would result in moderate, long-term, beneficial impacts on NPS operations. Although the extra staff time required to manage the Addition facilities and actions taken by other entities would have an adverse impact, the new facilities would play a much larger role in the overall impact by allowing staff to be located within the Addition and respond to operational and visitor needs in an efficient and timely manner. Alternative B's proposed actions would contribute a modest increment to these cumulative impacts.

Conclusion

Operational efficiencies achieved through development of new facilities in the Addition, along with the increased staffing burdens associated with managing those lands and constructing and maintaining new facilities, would have overall long-term, moderate, adverse and beneficial impacts on NPS operations.

The cumulative impacts of alternative B and other actions would be moderate, long term, and beneficial. Alternative B's proposed actions would contribute a modest increment to these cumulative impacts.

EFFECTS ON ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

The construction of new facilities under alternative B, such as trails, trailheads, access points, and visitor/operations facilities, would result in more energy use and con-

sumption; however, the projects would follow NPS policies concerning sustainability and energy conservation to minimize the overall energy requirements. The carbon footprint of the facilities would be minimized through appropriate design and the use of green technology to the greatest extent possible. To maintain, operate, and protect the facilities, NPS travel to and within the Addition also would increase, and the increased travel would increase energy consumption. The fuel and energy consumed by visitors traveling to and within the Addition would increase because visitation would be expected to increase as a result of the Addition being open to the public and the expansion of ORV and nonmotorized recreational opportunities.

UNAVOIDABLE ADVERSE IMPACTS

Human use and the construction of new facilities under the alternative B would result in minor to moderate adverse impacts to natural resources, primarily vegetation and wildlife, in some areas throughout the Addition. Impacts on certain aspects of visitor experience, namely solitude and primitive conditions, would also be unavoidable. Mitigation to reduce these impacts would be carried out where possible.

IRRETRIEVABLE OR IRREVERSIBLE COMMITMENTS OF RESOURCES

The additional energy requirements identified above would result in an irreversible commitment of resources. In addition, there would be a commitment of material used to construct new visitor facilities such as trailheads and access points and the visitor and operations facilities at mile marker 63.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

As in alternative A, most of the Addition would be protected in a natural state and would maintain its long-term productivity under alternative B. Only a small percentage of the Addition would be converted to development. No actions in this alternative would jeopardize the long-term productivity of the environment. Short-term impacts might result from construction, such as local air and water pollution, as detailed in the analysis of specific impact topics. Noise and human activity from construction and restoration might displace some wildlife from the immediate area. However, these activities would not jeopardize the long-term productivity of the environment.

ENVIRONMENTAL CONSEQUENCES OF THE PREFERRED ALTERNATIVE

NATURAL RESOURCES

Surface Water Flow

Analysis. Under the preferred alternative, impacts on surface water flow would be attributed primarily to the development of new facilities, the maintenance of existing facilities, and restoration activities. Development of new facilities such as trails, trailheads, and access points would alter natural sheet flow, degrading hydrologic connectivity in some localized areas. Development (including improvements to existing trails) of up to 130 miles of ORV trails would create localized barriers to surface water flow due to raised trail treads and ORV use. Culverts and other best management practices such as at-grade trail construction and low-water crossings would reduce the impacts, resulting in long-term, moderate, adverse, localized impacts. Development of backcountry camping areas near the Nobles and Jones grades airstrips would have similar impacts on surface water flow. Limited NPS administrative ORV use would continue to affect surface water flow in localized areas on a short-term basis.

Impacts on surface water flow due to the continued presence of roads and grades would be about the same as in the no-action alternative. Existing grades, such as Jones, Nobles, and Bear Island grades, would be maintained and converted to trails, which would continue to affect hydrologic connectivity within localized areas of the Northeast Addition. The effects could extend beyond the immediate area of impact and become Addition-wide, because impediments to water flow could affect areas beyond the boundaries of the Addition. Impacts related to the presence of facilities and structures would be long term, moderate, adverse, and localized.

Although some localized hydrological adverse impacts could occur from recreational use, in the context of the regional hydrology of south Florida, the actions of the preferred

alternative would have negligible effects on the hydrologic restoration efforts associated with the Comprehensive Everglades Restoration Plan or related projects. For example, the surface water restoration benefits that would result from the proposed L-28 interceptor project to the east of the Addition would not be adversely affected by the ORV management of the preferred alternative.

Collectively, the impact of these activities on surface water flow would be long term, moderate, adverse, and mostly localized in the Addition compared to the no-action alternative.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on surface water flow into the portion of the Addition that abuts the original Preserve at localized sites because best management practices and mitigation would maintain or improve hydrologic flow. The impact on surface water flow in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on surface water flow. If such proposals included using off-road equipment and constructing roads and pads, this would alter local hydrology. Construction and operations activities would affect the timing and intensity of surface water flows. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on surface water flow would be minor to moderate, adverse, and localized; long-term residual impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Proposals involving the Addition include the removal of the L-28 interceptor canal levee, modification of the L-28 Tie Back canal, and operational changes to various water control structures. Decompartmentalization of Water Conservation Area 3 would also improve sheet flow and hydrologic connectivity. The impact of these efforts on the hydrology of the Addition, as well as within the watershed, is expected to be long term, major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect hydrologic function and connectivity in the watershed. The impact of these activities is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on surface water flow would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be negligible on surface water flow in the watershed.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there could be a long-term, minor, adverse cumulative impact on surface water flow. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on surface water flow would be long term, moderate, adverse, and mostly localized.

There could be a long-term, minor, adverse cumulative impact on surface water flow. The

actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of surface water flow in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Water Quality

Analysis. Under the preferred alternative, impacts on water quality would be attributed primarily to the development and maintenance of facilities and ongoing visitor use. Development of new facilities such as trails, trailheads, and access points would affect water quality by causing erosion that could contribute to turbidity. Inadvertent spills of fuel or oil from construction machinery could also adversely affect water quality. Impacts from these activities would be mostly short term, minor to moderate, adverse and localized; however, some long-term impacts could occur from larger spills or from ongoing pollution due to runoff from developed sites. Development of backcountry camping areas near the Nobles and Jones grades airstrips would have similar impacts on water quality. The maintenance of roads, grades, and trails within the Addition would likely result in similar long-term adverse impacts.

Visitor use, such as ORV use, hiking, and backcountry camping, could continue to cause soil erosion and generate human waste that would affect turbidity and surface water quality. Impacts on water quality would be reduced by the designated trail system; however, they would be greater than under the no-action alternative because off-road vehicles are not allowed in alternative A. Inadvertent leaks or spills of fuel or oil from ORV use (public and NPS administrative use) could affect surface water quality by elevating chemical concentrations. Similar impacts from parked vehicles would be more common at destination sites, such as mile markers 51 and 63, or Deep Lake. The impacts of these activi-

ties would be long term, minor, adverse, and localized.

Collectively, the impact of these activities on water quality would be long term, moderate, adverse, and localized.

Cumulative Impacts. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on water quality at localized sites in the portion of the Addition that abuts the original Preserve because best management practices and other mitigation would be used to minimize soil erosion and chemical contamination. The impact of these activities on water quality in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on water quality. If such proposals included using off-road equipment and constructing roads and pads, this could degrade water quality due to turbidity and chemical contamination. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on water quality would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized. This is due to the number and complexity of the proposals and uncertainty with their levels of success.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Although the proposals would increase surface water flow and connectivity, the discharged waters are expected to have elevated chemical concentrations that would degrade water quality. Because the current condition of water resources in the Addition is cleaner than what is expected to be discharged, the impact is predicted to be long term, adverse, and Addition-wide, but the intensity is unknown. This is due to the number and complexity of the proposals and uncertainty with their levels of success. The

impact on water quality within the watershed is unknown.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Water quality would be affected by inputs from urban and suburban development, including increases in organic compounds and chemical concentrations. The impact on water quality within the watershed is expected to be adverse, but the intensity is unknown.

Collectively, adverse impacts could be expected from oil and gas operations, ecosystem restoration projects, and regional growth and development. Overall, the effects of the projects discussed above could be adverse on water quality in the watershed, but the intensity is unknown.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on water quality would be long term, moderate, adverse, and localized.

There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of water quality in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wetlands

Analysis. Under the preferred alternative, impacts on wetlands would be attributed primarily to the development and maintenance of facilities. The development of new facilities, such as trails, trailheads, access points, and specific improvements to develop Deep Lake into a day use area, would result in permanent loss of wetlands.

The designation and construction of ORV trails could also adversely impact wetland function and integrity. The proposed 130 miles of primary ORV trails under this alternative would necessitate the direct displacement of an estimated 0.70 acres of wetlands (from trail construction and treatment over a distance of 0.48 miles of trails). These impacts on wetland size and functionality from ORV trail development would be long term, minor to moderate, adverse, and localized.

The public use of the ORV trails would also have other adverse effects on wetland values in several other areas throughout the designated ORV trail network. Under the preferred alternative, an estimated 54 miles of primary ORV trails would go through wetland areas. This could amount to direct adverse impacts on wetland functions or values for approximately 79 acres of wetlands (i.e., 54 miles of trail at a 12-foot trail width). However, adverse impacts on additional acreages of wetlands would also be expected because many of the impacts on wetland values or functions would likely extend beyond the 12-foot width of the primary trail or would be associated with secondary spur trails that develop outside the alignment of the primary trail.

Some effects on wetland functions and values that would be expected along ORV trail corridors (primary or secondary) include wetland vegetation displacement, rutting, altered wetland hydrology, soil compaction, and diminished wetland habitat value or habitat displacement (loss of vegetation, ORV noise, etc.). These impacts on wetland values

and functional integrity from ORV use in the Addition would be long term, moderate, adverse, and localized.

The NPS maintenance of roads, grades, and trails could also impact wetlands. Impacts from these activities would include vegetation loss and alteration of soils, which would result in permanent effects on wetland size and integrity and impacts would be long term, moderate, adverse, and localized. Indirect impacts, such as increased runoff and sedimentation, would be long term, minor, adverse, and localized.

Collectively, compared with alternative A (no action), impacts on wetland values and functions under the preferred alternative would be long term, moderate, adverse, and localized.

The site-specific functional analysis of wetland impacts from ORV trails throughout the Addition is beyond the scope of this management plan.

However, before any action implementation, NPS staff would conduct more detailed wetland impact and mitigation analyses per NPS policy and Section 404 of the Clean Water Act (as administered by the Army Corps of Engineers). For example, NPS policy requires the development of a “Wetlands Statement of Findings,” which identifies and analyzes all wetland functions and values affected by NPS actions in a park unit. The “Wetlands Statement of Findings” for this management plan would quantify all wetland impacts from management actions specified in this management plan. Although Section 404 of the Clean Water Act pertains only to wetland filling and dredging, the NPS statement of findings policy addresses the impacts on several other wetland values, such as wildlife habitat, soils, vegetation communities, surface hydrology, aesthetics, and cultural values.

The detailed functional analysis of wetland impacts and the development of wetland avoidance and mitigation measures would be completed as part of the “Wetlands Statement

of Findings.” The effects of ORV use associated with this management plan would likely be the primary focus of the “Wetlands Statement of Findings” for the Addition. No ORV use, ORV trail development, or other actions with wetland impacts would be implemented or allowed until the appropriate wetland policy requirements are met. Also refer to table 29 in chapter 5 entitled, “Future Compliance Required for Implementation of Specific Actions under the Preferred Alternative”.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on wetlands. If such proposals included using off-road equipment and constructing roads and pads, this would alter wetland soils and vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on wetlands would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would affect wetlands by increasing the availability of water, which in turn could increase the size, integrity, and function of wetlands. The impact of these efforts on wetlands is expected to be long term, moderate to major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow and water quality would affect the size, integrity, and function of wetlands in the watershed. The impact of these activities on wetlands would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on wetlands would accrue from ecosystem restoration

projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on wetlands.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on wetlands would be long term, minor to moderate, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on wetlands. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wetlands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Soils

Analysis. Under the preferred alternative, impacts on soils would be attributed primarily to facility development and maintenance, and visitor use.

Development and maintenance of new recreational facilities, such as at mile markers 51 and 63, Bear Island Grade, and Deep Lake, would result in displacement or permanent loss of soil resources. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts on soils. Formalizing up to 130 miles of ORV trails would cause similar impacts. Frontcountry development would typically compact previously disturbed/filled areas,

while backcountry developments could impact native soils. The impacts from these activities would be long term, moderate, adverse, and localized.

Some rutting and displacement of soils might occur due to ongoing ORV use, resulting in long-term, minor, adverse, localized impacts. Nonmotorized use could also cause erosion, but the adverse impact would likely be negligible to minor.

Collectively, impacts on soils from the preferred alternative would be long term, moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on soils. If such proposals included using off-road equipment and constructing roads and pads, this would alter soils. The impacts of these activities would be reduced because NPS approval of the operation plan would require mitigative measures. Short-term impacts on soils would be adverse, moderate, and localized; long-term impacts would be minor, adverse, and localized.

Changes in the availability of water resources due to the south Florida ecosystem restoration project would affect soil properties. The integrity of hydrologic soils could be improved or restored by increases in water — a beneficial impact.

Decreases in water or permanent soil loss resulting from regional growth and development would adversely impact soils. The impact of these efforts on soils is expected to be long term, moderate to major, and adverse.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on soils. The permanent loss of soils would be

expected to outweigh any beneficial impacts that might be realized from ecosystem restoration projects. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on soils would be long term, moderate, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of soils in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Floodplains

Analysis. The preferred alternative would have no impact on floodplains. Two facilities located in the 100-year floodplain would be retained, but would cause no additional impacts on floodplains beyond what is accounted for under the no-action alternative.

Cumulative Impacts. No cumulative impacts on floodplains would occur under the preferred alternative because there would be no impacts on floodplains resulting from the actions proposed in the preferred alternative.

Conclusion. The preferred alternative would have no impact on floodplains. Two facilities located in the 100-year floodplain would be retained, but would cause no additional impacts on floodplains beyond what is accounted for under the no-action alternative.

No cumulative impacts on floodplains would occur under the preferred alternative because there would be no impacts on floodplains resulting from actions proposed in the preferred alternative.

Impacts from actions contained in this alternative would not result in impairment of floodplains in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Cypress Strands and Domes, Mixed Hardwood Swamps, and Sloughs

Analysis. Under the preferred alternative, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be attributed to new facility development, and visitor use.

Development of trailheads and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake would result in vegetation loss or injury from construction activities. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts on vegetation. Formalization and establishment of up to 130 miles of ORV trails would result in similar impacts on vegetation. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from facility development would be long term, moderate, adverse, and localized.

Impacts on this vegetation community, such as trampling, injury, or loss of plant material due to the effects of ORV traffic could occur within and along designated ORV trails. The conditions that often discourage ORV use (deep water, closely spaced trees, etc.) would continue, and adverse impacts from off-road vehicles would most often be limited to the margins of the plant community. Adverse impacts could include injury to a plant or group of trees, or might include plant loss in a discrete area due to repeated use. Impacts from nonmotorized visitor use, such as trampling from hiking and camping, would be more common at frontcountry destinations and less common in the backcountry. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from these visitor activities would be long term, moderate, adverse, and localized.

Collectively, the impact on cypress strands and domes, mixed hardwood swamps, and sloughs under the preferred alternative would be long term, moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on cypress strands and domes, mixed hardwood swamps, and sloughs would be expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on cypress strands and domes,

mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit cypress strands and domes, mixed hardwood swamps, and sloughs.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, moderate, adverse, and localized.

There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of cypress strands and domes, mixed hardwood swamps, and sloughs in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Prairies and Marshes

Analysis. Under the preferred alternative, impacts on prairies and marshes would be attributed primarily to visitor use. New

facilities (including ORV trails) would be cited to avoid prairies and marshes to the greatest extent possible, although some adverse impacts on the margins of these plant communities could occur from ORV use. The soil conditions in prairies and marshes cause poor traction for off-road vehicles, and rutting and braiding of trails is common. Adverse impacts could include injury to a plant or group of plants or might include plant loss in a discrete area due to rutting or from repeated use. Impacts on prairies and marshes from ORV use would be long term, minor, adverse, and localized.

Ongoing vegetation management, including the use of prescribed fire, and efforts to restore natural hydrologic processes would continue to improve conditions for native vegetation because water availability and connectivity would increase and competition from exotic plants would be minimized. Impacts on prairies and marshes from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Some prairies and marshes would be accessible to nonmotorized users, and therefore could be subject to impacts, such as trampling of vegetation. Impacts would be greatest and more concentrated in frontcountry locations and less common in the backcountry. Impacts on prairies and marshes from visitor use would be long term, negligible, adverse, and localized.

Collectively, the impact on prairies and marshes under the preferred alternative would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be

long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on prairies and marshes is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. Prairies and marshes on private land outside of the Addition would continue to be impacted by population growth and development. The impact of these activities on prairies and marshes is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on prairies and marshes would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on prairies and marshes would be long-term, minor, and adverse.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on prairies and marshes would be long term, minor, adverse, and localized.

There would be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of prairies and marshes in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Mangrove Forests

Analysis. Impacts on mangrove forests under the preferred alternative would generally be the same as under the no-action alternative because recreational use in this vegetation community would be the same as in alternative A. As with the no action alternative, motorized boating would continue to be allowed south of U.S. 41 in the Western Addition in the deep, open water environs, outside of the dense mangrove forests. Motorized boating could continue to cause injury to individual plants or prevent their expansion into the shallower margins of the well-travelled boating corridors. Consequently, compared to alternative A, there would be no impact on mangrove forests in the Addition under the preferred alternative.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Regional growth and development,

including waterfront development, is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Mangroves receive special protection under state law, and any adverse impacts on mangrove forests would be expected to be negligible. Because the preferred alternative would not contribute any increment, there would be no cumulative impact.

Conclusion. The preferred alternative would have no impact on mangrove forests. Impacts on mangroves would be the same as what was accounted for under the no-action alternative.

There would be no cumulative impacts on mangrove forests under the preferred alternative.

Impacts from actions contained in this alternative would not result in impairment of mangrove forests in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Pinelands

Analysis. Under the preferred alternative, impacts on pinelands would be attributed to new facility development, and visitor use.

Ongoing vegetation management, including the use of prescribed fire, would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on pinelands from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Development of trails, trailheads, and access points at mile marker 51, mile marker 63, Bear Island Grade, and Deep Lake would result in vegetation loss or injury from construction activities. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts on vegetation. Formalization and establishment of up to 130 miles of ORV trails would affect pinelands. Impacts on pinelands would likely

be proportionately greater than for the other vegetation communities because pinelands are uplands that are often targeted as appropriate development sites and trail corridors. The durability of the substrate present in pinelands (for ORV use) reduces adverse impacts from ORV use. The loss of pines from ORV use has not been documented in the original Preserve; however, wheeled use could have adverse impacts on other plant species present within these communities or within certain ecotonal areas. Adverse impacts could include injury to a plant or group of plants, reduced regeneration, or plant loss in a discrete area due to repeated use. Impacts on pinelands from facility development and trail development and use would be long term, moderate, adverse, and localized.

Impacts from nonmotorized visitor use, such as trampling due to hiking or equestrian use, would be more common at frontcountry destinations and less common in the backcountry. Although individual understory plants could be injured or killed, the integrity of the pineland community would not likely be affected due to the durable substrate and the resiliency of mature trees to relatively benign activities. Impacts on pinelands from these activities would be long term, negligible to minor, adverse, and localized.

Collectively, the impact on pinelands under the preferred alternative would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas could have adverse impacts on vegetation in the Addition; however, it is unknown what plant

communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of pinelands. The assemblage of pines and palmettos could change as a result of changes in hydrology or periods of inundation. The impact is uncertain because drying often adversely impacts pinelands, and increasing the water table could also cause a net reduction in pinelands compared to current conditions. It is expected that restoring natural hydrologic conditions would have a beneficial impact on pinelands.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Studies have shown that pinelands are the most impacted by human land conversion. Pinelands on private land in the region would continue to be lost. The impact would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on pinelands would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on pinelands in the Addition.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as

described above, there would be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on pinelands would be long term, minor, adverse, and localized.

There could be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of pinelands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Hardwood Hammocks

Analysis. Under the preferred alternative, impacts on hardwood hammocks would be attributed primarily to new facility development and visitor use.

Ongoing vegetation management would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on hardwood hammocks from vegetation management would continue to be long term, beneficial, minor to moderate, and Addition-wide.

Development of trails; trailheads; and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake could result in vegetation loss or injury from construction activities. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts on vegetation. Establishment of up to 130 miles of ORV trails would affect hardwood hammocks. Although the substrate present in hardwood hammocks is suitable for ORV use, use tends to be infrequent because of the size and density of trees present in these areas. However, this

infrequent ORV use could adversely impact understory plants. Adverse impacts could include plant injury or loss in a discrete area due to repeated use. Impacts on hardwood hammocks from facility development and ORV use would be long term, minor to moderate, adverse, and localized.

Impacts from nonmotorized visitor use, such as trampling due to hiking or equestrian use would be more common at frontcountry destinations and less common in the backcountry. Backcountry camping could cause trampling or loss of vegetation at localized sites. Although individual understory plants could be injured or killed, the integrity of the hammock community would not likely be affected due to the durable substrate and the resiliency of mature trees to relatively benign activities. Impacts on hardwood hammocks from these activities would be long term, negligible to minor, adverse, and localized.

Collectively, the impact on hardwood hammocks under the preferred alternative would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be adverse,

moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of hardwood hammocks. The impact is uncertain, but restoring natural conditions is expected to have a long-term, minor, beneficial impact.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on hardwood hammocks is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on hardwood hammocks would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on hardwood hammocks would be long term, minor, and adverse.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on hardwood hammocks. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on hardwood hammocks would be long term, minor, adverse, and localized.

There could be a long-term, minor, adverse cumulative impact on hardwood hammocks. The actions contained in the preferred

alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of hardwood hammocks in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Exotic/Nonnative Plants

Analysis. Under the preferred alternative, impacts on exotic/nonnative plants would be attributed primarily to facility development and maintenance, visitor use, and expanded NPS administrative ORV use. Ongoing vegetation management (including the use of prescribed fire and chemical and mechanical treatment) in the Addition would continue to decrease competition from exotic plants and improve the integrity of native habitats. The continuation of monitoring efforts would also help to detect and mitigate new exotic species that could affect native plant communities. Impacts on exotic/nonnative species from ongoing resource management activities would be long term, beneficial, moderate, and Addition-wide.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would create disturbed lands that would be subject to colonization by invasive plants. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts on vegetation. Construction materials and activities could also be a seed source for exotic plants and would increase the potential for their dispersion. Maintaining these facilities would also create disturbed habitats that could increase the density of exotic plants and affect the integrity of adjacent natural areas. Exotic plants can have severe effects on the integrity of native systems and habitats. The impact from these activities would be long term, moderate, adverse, and localized.

NPS administrative ORV use and expanded visitor use, including the establishment and use of up to 130 miles of ORV trails, would increase the dispersal of exotic plants and also create additional disturbed areas that would be subject to colonization by invasive plants. The impact on exotic plants from visitor use would be long term, moderate, adverse, and localized. Although the effects would be most pronounced along travel corridors and at disturbed sites, the impacts could extend beyond these immediate areas and become Addition-wide. However, ORV management includes education, prevention, and mitigation components that would limit the establishment and distribution of exotic plants in the Addition.

Collectively, impacts on exotic/nonnative plants under the preferred alternative would be long term, moderate, adverse, and potentially Addition-wide.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would help minimize the impacts of off-road vehicles on exotic plants and nonnative vegetation in the original Preserve and reduce the potential for dispersion into the Addition. The impact on exotic plants and nonnative vegetation in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on native vegetation because of the potential for the spread of exotic and nonnative plants in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would disturb soils and native vegetation. Short-term impacts could include the establishment of exotic plants on disturbed sites and the dispersal of seeds and plant stock. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on native vegetation because of the potential for the

spread of exotic and nonnative plants would be adverse, moderate, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of exotic plants. The impact on exotic plants is uncertain, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact on native plants and vegetation.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect exotic plants, as would increases in the amount of disturbed land that is available for colonization by exotic species. The impact of these activities on exotic plants and nonnative vegetation is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on native vegetation would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could be minor and adverse on exotic plants and nonnative vegetation.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on exotic plants. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on native vegetation because of the

potential for the spread of exotic and non-native plants would be long term, moderate, adverse, and potentially Addition-wide.

There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of native vegetation in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Federal Threatened and Endangered Species

Florida Panther. Under the preferred alternative, impacts on the Florida panther would be attributed to new facility development, expanded visitor use, and expanded NPS administrative ORV use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact panthers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts. Development footprints would be confined to previously disturbed areas to the greatest extent possible while also considering design needs and standards (e.g., using disturbed areas near existing access points along major highways). There would still be a loss of habitat within the panther home range. Facility development under the preferred alternative would be greater than under the no-action alternative. The impact would be long term, minor to moderate, adverse, and localized.

Public ORV use in the Addition under the preferred alternative would be substantially greater than the no-action alternative, with up to 130 miles of designated trails and 650 ORV

permits available. The ORV trails and permits would be phased in over time, depending on the results of monitoring. This approach would be more cautious and protective than the approach included under alternative B. Adverse impacts from ORV use could include displacement of panthers and their avoidance of certain areas within the Addition. Public hunting would also be allowed but is not expected to adversely impact the viability of the panther's prey base because game populations would be managed for sustainable harvests. Although no studies have shown that ORV use alone causes changes in panther behavior (NPS 2000), the Janis and Clark (1999) study on the effects of human activity in the original Preserve showed that panthers' home range shifted and they avoided designated ORV trails during higher levels of human activity associated with hunting season. Total human use and disturbance within panther habitat in the Addition would increase substantially relative to the no-action alternative. The impacts from these activities would be long term, moderate, adverse, and could be Addition-wide.

Nonmotorized visitor use (primarily back-country hiking) could continue to affect Florida panthers, potentially causing displacement of panthers and their avoidance of certain areas within the Addition. The impact would be long term, minor, adverse, and localized.

Designating lands as wilderness under the preferred alternative could result in beneficial impacts on the panther. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This could result in greater protection of panther habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the Florida panther under the preferred alternative would be long term, moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on panthers in the region, a beneficial impact (because an individual panther's range may include the Preserve as well as the Addition and other adjacent lands). In other words, improving and protecting habitat value on the original Preserve could yield a regional benefit to the species. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on panthers. Adverse impacts on panthers would still occur from ORV use in the original Preserve, but the effects on the species would be less than with no ORV management. With implementation of the terms and conditions of the U.S. Fish and Wildlife Service's "Biological Opinion" (USFWS 2000), the plan is not likely to result in jeopardy to the panther. Overall, the impact of the ORV plan on the Florida panther would be long-term, moderate, and beneficial compared to no ORV management.

Implementation of future oil and gas could have adverse impacts on Florida panthers in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could create human disturbances and result in degradation and loss of panther habitat. Short-term adverse impacts from construction could include flushing and displacement of panthers, effects on feeding and sheltering behavior, and an increase in mortality from vehicle collisions. Panthers have been seen at

existing oil and gas operations in other portions of the Preserve. The same types of adverse impacts would be experienced over the long term due to ongoing operations and maintenance activities. These adverse impacts would be minor and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the Florida panther is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because it would return vegetation communities to historic conditions and improve predator/prey relationships.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of panther habitat. Natural areas that remain are more fragmented and contain higher levels of human disturbance, both of which adversely affect panthers and their long-term survival. Increased panther mortality due to vehicle collisions could also be attributed to the effects of regional growth and development. The impact of these activities on the Florida panther is expected to be long term, moderate to major, and adverse.

Collectively, beneficial impacts on the Florida panther would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to Florida panthers in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the Florida panther. The actions contained in the preferred alternative would contribute a modest increment to this cumulative impact.

Conclusion — Impacts on the Florida panther under the preferred alternative would be long term, moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the Florida panther. The actions contained in the preferred alternative would contribute a modest increment to this cumulative impact.

Impacts from actions contained in this alternative would not likely result in impairment of the Florida panther in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

West Indian Manatee. Impacts on the West Indian Manatee under the preferred alternative would generally be the same as under the no-action alternative. However, designating new paddling trails in tidal areas south of U.S. 41 could increase displacement or avoidance behavior, which could affect feeding and other behaviors. This impact would be long term, minor, adverse, and localized.

Overall, compared to the no-action alternative, impacts on the West Indian manatee would be long term, minor, adverse, and localized. The determination of effect

under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the manatee. The quality of freshwater inputs is predicted to be less than current conditions, which could adversely impact manatee habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, minor beneficial impacts on the West Indian manatee.

Regional growth and development is expected to continue and could result in an increase in the number of recreational boaters in the region. Injury and mortality of the manatees associated with recreational boating could increase as a result of increased motorboat use. Incompatible coastal development could also adversely affect manatees by loss of habitat and feeding areas, as well as pollution discharges. These activities would adversely impact manatees and could affect their long-term survival. The impact on the West Indian manatee is expected to be long term, moderate to major, and adverse.

Overall, the effects of the projects discussed above would likely be adverse to West Indian manatees in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in the preferred

alternative would contribute a very small increment to this cumulative impact.

Conclusion — Impacts on the West Indian manatee under the preferred alternative would be long term, minor, adverse, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the West Indian manatee in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Red-Cockaded Woodpecker. Under the preferred alternative, impacts on potential habitat for the red-cockaded woodpecker would be attributed to new facility development and expanded visitor use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — could impact potential habitat for woodpeckers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible while also considering design needs and standards (e.g., using disturbed areas near existing access points along major highways). There would still be a loss of habitat. The impact would be long term, minor to moderate, adverse, and localized.

Public ORV use in the Addition under the preferred alternative would be allowed on up to 130 miles of designated trails. The ORV trails and permits would be phased in over time depending on the results of monitoring. This approach would be more cautious and protective than the approach under alternative B. Adverse impacts on woodpeckers from ORV use would include their displacement and avoidance of certain areas within the Addition. NPS administrative ORV use would add slightly to these impacts. Public hunting would also be allowed, but is not expected to adversely impact woodpecker habitat because the integrity of cavity trees and forage resources would be maintained. Total human use and disturbance in the Addition would increase substantially relative to the no-action alternative. Conditions that support woodpecker use of the area would continue to be maintained. Because there are currently no known nest sites within the Addition, effects on woodpeckers would be limited to impacts on foraging habitat and their avoidance of certain areas during periods of human activity. The impacts would be long term, minor to moderate, adverse, and localized.

Nonmotorized visitor use (primarily back-country hiking) would continue to affect woodpeckers, potentially causing displacement and their avoidance of certain areas within the Addition; the impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under the preferred alternative could result in beneficial impacts on the woodpeckers. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of woodpecker habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the red-cockaded woodpecker under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on red-cockaded woodpeckers in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on woodpeckers. Cavity trees and active clusters would be avoided as sites for the trails, thereby reducing adverse impacts. Adverse impacts on woodpeckers would still occur from ORV use in pinelands in the original Preserve, but the impact would be minor. Overall, the impact of the 2000 ORV plan on the red-cockaded woodpecker would be long term, negligible, and adverse.

Implementation of future oils and gas proposals could have adverse impacts on the red-cockaded woodpecker in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could degrade and reduce available woodpecker habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term adverse impacts could include flushing and displacement of the woodpeckers, while long-term impacts would include the loss of cavity nesting trees.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet

flow and hydrologic connectivity, which would affect vegetation communities (including pinelands) and in turn wildlife habitat. The impact on the red-cockaded woodpecker is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources should be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of woodpecker habitat (pinelands) in the region. Natural areas that remain are more fragmented and contain higher levels of human disturbance and displacement of the woodpeckers, both of which adversely affect woodpeckers and their long-term survival. The impact of these activities on the red-cockaded woodpecker is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the red-cockaded woodpecker would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to red-cockaded woodpecker in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the red-cockaded woodpecker. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion — Impacts on the potential habitat for and thus the red-cockaded

woodpecker under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the potential habitat for and thus the red-cockaded woodpecker. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the red-cockaded woodpecker in the Addition because habitat conditions would be maintained or enhanced, and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wood Stork. Under the preferred alternative, impacts on the wood stork would be attributed to new facility development and expanded visitor use

Because there are currently no known nest sites within the Addition, and they have nested in the original Preserve only sporadically since 1996, effects on wood storks would be limited to impacts on foraging habitat and avoidance of certain areas during periods of human activity.

Because new facility development, such as trailheads and access points would be confined mostly to developed corridors and areas of existing disturbance, impacts on wood stork habitat would be negligible. Establishment of up to 130 miles of ORV trails could cause adverse impacts on storks by creating short-term disturbances associated with construction activities and permanent loss of habitat. Use of the ORV trails and the increase in human occupation and disturbance in the backcountry could displace birds and cause them to avoid certain areas.

NPS administrative ORV use could add slightly to these impacts. Public hunting would also be allowed, but is not expected to adversely impact wood stork habitat because the integrity of roost and nest trees and forage resources would be maintained. Total human use and disturbance in the Addition would increase substantially relative to the no-action alternative; however, conditions that support wood stork use of the area would continue to be maintained. The impact of these activities would be long term, minor, adverse, and localized.

Nonmotorized visitor use (primarily backcountry hiking) could affect wood storks to a greater degree than under the no-action alternative due to greater use levels, potentially causing displacement and their avoidance of certain areas within the Addition. The impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under the preferred alternative would likely result in beneficial impacts on the wood stork. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of stork habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the wood stork under the preferred alternative would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original

Preserve would reduce the impacts of off-road vehicles on the wood stork's foraging habitat (prairies and marshes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on storks. Nesting habitat (cypress trees in open water) would likely not be affected because off-road vehicles typically avoid the deep, open water areas that storks commonly nest in. Consequently, the effect on nesting habitat in the region due to the actions in the ORV plan would be negligible. Overall, the impact of the ORV plan on the wood stork in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the wood stork in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of wood stork habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of the wood storks. Short-term impacts on wood storks would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply. The impact on the wood stork is unknown, but restoring natural hydrologic conditions is expected to have a long-term, minor to moderate, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources should be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect storks. The impact of these activities on the wood stork is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the wood stork would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse on wood storks in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in the preferred alternative would add a very small increment to this cumulative impact.

Conclusion — Impacts on the wood stork under the preferred alternative would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in the preferred alternative would add a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the wood stork in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to

meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Everglade Snail Kite. Under the preferred alternative, impacts on the Everglade snail kite would be attributed to new facility development, trail development, and expanded visitor use.

Because no snail kite nest sites are known within the Addition, effects on existing snail kite habitat would be limited to impacts on foraging and roosting habitat near marshes and open water bodies. However, the increased recreation and human activity associated with the preferred alternative might preclude future kite nesting in the Addition.

New facility development, such as trailheads and access points, would be confined mostly to developed corridors and areas of existing disturbance. Therefore, the impacts from construction of these facilities on snail kite habitat would be negligible. However, the establishment of 130 miles of ORV trails would cause adverse impacts on snail kite habitat. The noise and human activity associated with construction and maintenance of these trails could generate short-term disturbances on kite habitat in areas where trail segments are near marshes, lakes, and other snail kite foraging areas. These impacts would be short term, minor, adverse, and localized.

The long-term public use of the ORV trails and the increase in human presence and disturbance in the backcountry would also have adverse effects on snail kite habitat. Noise from off-road vehicles and nearby human presence and activity would disturb or flush kites that are roosting or foraging for apple snails in nearby marshes, ponds, and lakes in the Addition. Over time, this might cause snail kites to avoid foraging or roosting in certain habitat areas that are near ORV trail corridors or associated zones of human activity (which may radiate or spur off of the

designated ORV trails). Larger habitat areas that became fragmented into smaller habitat “islands” by ORV trail corridors might also be avoided because of diminished habitat value. NPS administrative ORV use could add to these impacts. Public hunting would also be allowed and could have adverse impacts on snail kite foraging habitat if the hunting takes places in or near the marshes and open water bodies. Human presence and gun noise would contribute to these hunting impacts. The total human use and disturbance in the Addition associated with the preferred alternative would be an increase relative to the no-action alternative. The impact of these activities would be long term, minor to moderate, adverse, and mostly localized.

Nonmotorized visitor use (primarily backcountry hiking) would continue to affect Everglade snail kites in a way and degree that is similar to the no-action alternative. Snail kites could avoid foraging in areas that receive high levels or repeated occurrences of human activity. The impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under the preferred alternative would likely result in beneficial impacts on the snail kite. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of kite habitat. However, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Under the preferred alternative, ongoing NPS efforts to improve natural hydrologic processes, water quality, and invasive plant control would continue as in the no-action alternative. These NPS management actions could benefit apple snail populations in the Addition, as well as improve the snail kite’s accessibility to the apple snails.

Collectively, impacts on the Everglade snail kite under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would be similar to that of the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the snail kite’s foraging, roosting, and nesting habitat (marshes and pond/lake fringes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the kites in the region. However, foraging, roosting, or possible nesting habitat for snail kites could be adversely affected in areas where ORV use is permitted under the plan, particularly in specific ORV use areas that are near marshes, ponds, or lakes. Overall, the impact of the ORV management plan on the snail kite habitat in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the snail kite habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of snail kite habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of snail kites. Short-term impacts on snail kites would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the

region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply and water quality. This would be particularly beneficial to the snail kite because its diet predominantly consists of apple snails that depend on adequate hydrological conditions. Furthermore, the return of natural hydrological conditions and improved water quality to the region would also enhance or increase the availability of quality foraging, roosting, and nesting habitat for the Everglade snail kite. The restoration of natural hydrologic conditions would have long-term, moderate, beneficial impacts.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect snail kites and their primary food source, the apple snail. The impact of these activities on the snail kite is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the snail kite would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to snail kite habitat in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the Everglade snail kite. The actions contained in the preferred alternative would add a small increment to this cumulative impact.

Conclusion — Impacts on the snail kite under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the snail kite. The actions contained in the preferred alternative would add a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the Everglade snail kite in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

American Crocodile. Impacts on the American crocodile and its habitat under the preferred alternative would generally be the same as under the no-action alternative because recreational use in and near mangrove forests of the Addition would be the same as in alternative A (no action).

Under the preferred alternative, impacts on the American crocodile and its habitat would primarily be attributed to continued human activities near mangrove forests, particularly motorized boating associated with recreational fishing in the Western Addition (airboat use is prohibited). Mangrove forests are the primary habitat for the American crocodile in south Florida, although crocodiles are generally rare in Big Cypress National Preserve. The mangrove habitat areas along creeks, canals, and estuaries south of U.S. 41 in the Western Addition are where effects would most likely occur.

In these areas, crocodiles might be affected by motorboat noise, boat wakes and waves, human noise or actions, or boat hulls or

propellers. Because most American crocodile activity occurs from just before sunset to just after sunrise, most of these human-induced actions would disturb the crocodiles when they are at rest during daytime hours. These disturbances might cause resting crocodiles to be flushed, resulting in unnecessary energy use and stress. Boating in early morning or evening hours might also alter crocodile foraging behavior or flush the possible prey of the crocodile. Depending on the level and frequency of human disturbances, crocodiles could avoid some areas entirely.

Crocodiles are not known to nest in the Addition. However, if nesting occurs, the hatching success would primarily depend on risks from flooding, predation, lack of soil moisture during incubation, and extreme storms. The nest success also depends on the female crocodile returning to the nest to excavate the hatchlings. Research suggests that some female crocodiles may abandon their nests if the area is subjected to repeated, close human presence (Kushlan and Mazzotti 1989). Once hatched, juveniles would then be affected by similar human disturbances as highlighted above. The young crocodiles would be at greatest risk during their journey through open water from their nest site to more distant nursery habitat.

Given the infrequent presence of crocodiles in the Addition, the above effects from human recreation activities such as boating would be long term, minor, adverse, and localized.

The preferred alternative would also continue current NPS vegetation management actions that would help maintain or improve habitat conditions in the Addition. These actions would help address invasive plant infestations that could degrade or displace habitat for the American crocodile. The impacts of ongoing NPS vegetation management would be long term, minor to moderate, beneficial, and localized.

Under the preferred alternative, the impacts on the American crocodile would continue to be long term, adverse, minor, and localized.

The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the American crocodile. This restoration of hydrologic flows and connectivity would be most beneficial to the crocodile in the nonnesting season when they seek inland freshwater habitats. However, the water quality of freshwater inflows is predicted to be worse than current conditions, which could adversely impact crocodile habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, moderate, beneficial impacts for the American crocodile.

Regional growth and development, including waterfront development, is expected to continue in south Florida. This would result in the alteration or displacement of natural lands and changes to the local and regional hydrology. Because mangrove forests receive special protection under state law, any direct impacts on mangrove forests would be expected to be negligible. However, even if direct impacts on mangroves are avoided, urban encroachment might diminish mangrove habitat values if human activity and development is near the mangroves. Road mortality would likely increase as development and regional population increase. Growth and development could also result in an increase in boating and other recreational activities in the area. Crocodile foraging, breeding, resting, and nesting might be affected by increases in motorboat disturbances, boat wakes and waves, and human noise or actions.

Crocodiles could avoid some areas entirely depending on the level and frequency of human disturbances. The impact on the American crocodile from urban growth and development is expected to be long term, moderate, and adverse.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Conclusion — Implementation of the preferred alternative would result in localized, long-term, minor, adverse impacts on the American crocodile. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the American crocodile in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Eastern Indigo Snake. Under the preferred alternative, impacts on the potential habitat for the eastern indigo snake would be attributed to new facility development, ORV trail development, and expanded visitor use.

New facility development, such as the construction of trailheads and access points, would be confined mostly to developed corridors and areas of existing disturbance. Therefore, the impacts from construction of these facilities on eastern indigo habitat would be negligible. However, debris and brush piles generated during site construction might be an attractant to eastern indigo snakes. This could lead to snake injury or mortality during construction, which would be an impact that is short term, minor to moderate, adverse, and very localized. Also, the establishment and designation of 130 miles of ORV trails could cause adverse impacts on the snakes and their habitat. The noise and human activity associated with construction and maintenance of these trails could generate short-term disturbances on habitat areas where trail segments are close to active snake foraging, breeding, or burrowing areas. These disturbance impacts would be short term, minor, adverse, and localized.

The long-term public use of the ORV trails, radiating spur trails, and the increase in human occupation and disturbance in the backcountry would have adverse effects on potential eastern indigo snake habitat. Noise from off-road vehicles and nearby human presence and activity would disturb or flush snakes and thus might disrupt normal foraging, breeding, or dispersing. In addition, ORV use and spur trails that extend beyond the immediate vicinity of designated ORV trails would also displace a variety of potential snake habitat types. This off-trail activity by the public could disturb or degrade vegetative groundcover and soil substrates in areas that support foraging, breeding, and snake burrows or refuges, such as pinelands or successional hardwood hammocks. The combination of these impacts could cause eastern indigos to leave the area, abandon den sites, and miss foraging and mating opportunities. NPS administrative ORV use could add to these impacts. Also, the ORV use would also have similar impacts on many prey species of the eastern indigo, which would have adverse effects on the snake. Under the preferred alternative, the ORV use and

associated human disturbances in the Addition would be an increase relative to the no-action alternative. The impact of these activities would be long term, minor to moderate, adverse, and localized.

Given the snake's large home range and need to disperse across a variety of habitat types to sustain viable populations, the eastern indigo is particularly vulnerable to habitat fragmentation and the resulting "edge effect" (Layne and Steiner 1996, Breininger et al. 2004). Unlike the no-action alternative, large habitat areas would become fragmented into smaller habitat "islands" by ORV trail corridors. This would result in diminished habitat value for the snake throughout the Addition. The effect of this habitat fragmentation would be long term, minor to moderate, adverse, and Addition-wide.

Public hunting would also be allowed (walk-in or via ORV access), and this would have adverse impacts on eastern indigo habitat if the hunting frequently takes places in or near vegetation communities that are commonly occupied by the snake (e.g., pinelands, successional hardwood hammocks, and mangrove forests).

Other nonmotorized visitor use (primarily backcountry hiking) would continue to affect eastern indigo snake habitat in a way and degree that is similar to the no-action alternative. Although increased human use would be expected with the preferred alternative, these pedestrian activities would only cause sporadic flushing of the snake. Eastern indigos could avoid foraging in areas that receive high levels or repeated occurrences of human activity. The impact would be long-term, negligible to minor, adverse, and localized.

Designating lands as wilderness under the preferred alternative would likely result in beneficial impacts on eastern indigo habitat. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum

requirements process. This would likely result in greater protection of the snake's habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Under the preferred alternative, ongoing NPS efforts to improve natural hydrologic processes, water quality, and invasive plant control would continue as in the no-action alternative. Given the snake's dependence on a mosaic of habitat types throughout its lifecycle, these active NPS management actions could benefit the eastern indigo habitat directly. The snake would also benefit indirectly because NPS management actions would also enhance habitat values for the snake's prey species.

Collectively, impacts on the potential eastern indigo snake habitat under the preferred alternative would be short term and long term, minor to moderate, adverse, and localized to Addition-wide. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under the preferred alternative would be similar to that of the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the wide variety of habitat types that support the eastern indigo. Most importantly, the improved ORV management efforts would reduce disturbance or degradation to vegetative groundcover and soil substrates in areas that provide for foraging, breeding, and snake burrows or refuges, such as pinelands or successional hardwood hammocks. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the indigo snakes in the region. However, snake habitat might be

altered or displaced and individual snakes might be disturbed, in areas where ORV use is permitted under the plan. Overall, the impact of that plan on the eastern indigo in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the eastern indigo snake habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in the loss and degradation of several habitat types that support the snake. Adverse impacts would include displacement of vegetative cover for the snake; soil and burrow disturbances; possible roadway injury/mortality; and disruption of normal foraging, breeding, and dispersal behaviors. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on the snake would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions for many species. This hydrologic restoration could benefit the eastern indigo directly during times of the year when the snake uses wetter habitats in the area. At other times, it would benefit the eastern indigo indirectly by restoring a natural system that could improve conditions and increase populations of the snake's food base. However, the reintroduction of natural flows could displace some existing upland areas. This effect could decrease available upland habitat for the eastern indigo snake and its prey that depend on upland habitat. The restoration of natural hydrologic conditions would have long-term, minor to moderate impacts that could be both beneficial and adverse to the snake.

Regional growth and development is expected to continue and result in an increase in habitat displacement for the snake. Because the eastern indigo uses a variety of habitat types and has a large home range, it is particularly susceptible to habitat loss and habitat fragmentation from urban development. In addition to habitat displacement and fragmentation, urban development also brings injury or mortality threats from domestic animals, vehicles, property owners, and pesticides and rodenticides in the food chain. All of these would adversely affect eastern indigos. The impact of these activities on the snake is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the eastern indigo snake would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to the snake's habitat in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact and a short-term, minor to moderate adverse cumulative impact on the eastern indigo snake. The actions contained in the preferred alternative would contribute a small increment to this adverse cumulative impact.

Conclusion — Impacts on the potential habitat for and thus the eastern indigo snake under the preferred alternative would be short term and long term, minor to moderate, adverse, and localized to Addition-wide. The determination of effect under Section 7 of the Endangered Species Act would be *likely to adversely affect*.

There would be a short-term and long-term, moderate, adverse cumulative impact on the potential habitat for the eastern indigo snake. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the eastern indigo snake in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Major Game Species

Analysis. Under the preferred alternative, impacts on the major game species of the Addition (white-tailed deer, feral hogs, and wild turkey) would be attributed to new facility development and expanded visitor use.

New facility development — such as trails, trailheads, and access points at mile marker 51, mile marker 63, Bear Island Grade, and Deep Lake — would impact game species by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development of backcountry camping areas near the Nobles and Jones grades airstrips could have similar impacts. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways and the interstate), but there would still be a loss of habitat. The impact would be short and long term, minor, adverse, and localized.

The formalization and establishment of up to 130 miles of ORV trails would fragment game habitat, and ongoing use of the trails would cause flushing, displacement, and avoidance of certain areas. NPS administrative ORV use could add slightly to these impacts. The impacts on game species from ORV use in the

Addition would likely be long term, minor, adverse, and localized. Game species typically adapt to changes in habitat conditions and can become habituated to the predictable use of designated ORV routes.

Public hunting would be allowed under the preferred alternative and the up to 130-mile network of ORV trails would allow hunters to access much of the Addition and increase hunting opportunities. The Addition would be expected to become part of the adjacent Big Cypress State Wildlife Management Area. As in the original Preserve, hunting would be regulated according to the requirements, seasons, and bag limits established by the Florida Fish and Wildlife Conservation Commission. Short-term, minor adverse impacts, such as flushing and displacement of game species, would continue. Long-term, moderate beneficial impacts could also occur from harvesting and management of game populations, such as disease mitigation and improvements in population genetics. Partnerships with the Florida Fish and Wildlife Conservation Commission would continue and would contribute to the monitoring and improved understanding of game populations.

Designating lands as wilderness under the preferred alternative would likely result in beneficial impacts on major game species. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of game habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on major game species under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized.

Cumulative Impacts. Cumulative impacts under the preferred alternative would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the adverse impacts of off-road vehicles on major game species in the region — a beneficial impact. Eliminating some and designating new ORV trails would make ORV noise and movement more predictable, thereby displacing animals away from travel corridors but reducing the impacts on wildlife habitat and game populations. Conducting education, best management practices, research, and mitigation called for in the ORV plan would also limit impacts on wildlife. Adverse impacts on game species would still occur from ORV use in the original Preserve, but the effects on the species would be less than with no ORV management. Overall, the impact of the ORV plan on major game species would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on major game species in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter wildlife habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of game species. Short-term impacts on major game species would be moderate, adverse and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the major game species is unknown, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a loss of wildlife habitat. The major game species are considered generalists and have demonstrated their resiliency and ability to adapt to changing conditions. Within the region, the three species (deer, hogs, and turkey) are widespread. However, continued urbanization has fragmented remaining natural areas and increased the risks and threats to these species, including automobile collisions, exotic species, and pathogens. The impact of these activities on the major game species is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on major game species would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to major game species in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the major game species. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Conclusion. Impacts on major game species under the preferred alternative would be long term, minor to moderate, adverse, and mostly localized.

There would be a long-term, minor to moderate, adverse cumulative impact on the major game species. The actions contained in the preferred alternative would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the major game species in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

WILDERNESS RESOURCES AND VALUES

Analysis

Under the preferred alternative, impacts on wilderness resources and values would be attributed primarily to ORV trail development and use, and designation of lands as wilderness. Development of up to 130 miles of ORV trails would fragment native habitat and degrade natural conditions in certain areas that were evaluated as eligible for wilderness designation. ORV use would adversely affect the natural soundscape of the area. Impacts would be reduced by the use of a designated trail system, limiting changes to natural conditions and wilderness character outside of the trail system. Impacts from visitor use would be long term, moderate, and adverse.

Approximately 47,067 acres of the Addition would be proposed for designation as wilderness (66% of those lands considered eligible and 32% of the Addition's total acreage). The special status and protection afforded to these lands under the Wilderness Act would preserve their wilderness resources and values in perpetuity — a moderate to major beneficial impact. Opportunities for solitude and primitive and unconfined recreation would continue to be preserved and available, but the extent and availability of the opportunities would be reduced compared to the no-action alternative. Overall, the impacts on wilderness resources and values would be long term, moderate, beneficial, and Addition-wide.

Cumulative Impacts

Cumulative impacts on wilderness resources and values under the preferred alternative would generally be the same as under the no-

action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the effects of off-road vehicles on wilderness resources and values by reducing the potential for dispersal and establishment of exotic plants, a beneficial impact. The impact on natural soundscapes resulting from the management of off-road vehicles in the original Preserve would be negligible because approximately the same number of off-road vehicles would be using the original Preserve and in roughly the same areas. Consequently, impacts on a visitor's wilderness experience (freedom and natural sights and sounds) resulting from the ORV plan would be negligible. Impacts on wilderness resources and values in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on wilderness resources and values. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter natural habitats. NPS approval of the operations plan would require mitigative measures to eliminate or reduce the impact of activities on natural resources. Short-term impacts on wilderness resources and values would be moderate, adverse, and localized; residual long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect natural communities. Restoring natural conditions is expected to have a long-term, moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. Increasing urbanization, fragmentation of habitat, and the loss of natural areas have led to the degradation of natural resources, ecosystem function, and natural soundscapes in the region. The impact of these activities on wilderness resources and

values is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on wilderness resources and values would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to wilderness resources and values in the region.

When the likely effects of implementing the actions contained in the preferred alternative are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in the preferred alternative would contribute a modest beneficial increment to this cumulative impact.

Conclusion

Impacts on wilderness resources and values in the preferred alternative would be long term, moderate, beneficial, and Addition-wide.

There would be a long-term, moderate, adverse cumulative impact on wilderness resources and values in the region. The actions contained in the preferred alternative would contribute a modest beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wilderness resources and values in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

CULTURAL RESOURCES

Archeological Resources

Analysis. Under the preferred alternative, impacts to archeological resources could

result from increases in motorized recreation, specifically ORV use. The construction of trails for ORVs that could also accommodate some mixed use (use by hikers, equestrians, and bicyclists), and additional trails for hiking, camping, bicycling, and equestrian use would pose the potential of impacts on archeological resources. Most of the archeological sites within the Addition are middens. These raised mound areas would be potentially attractive to ORV and backcountry users, and trampling or disturbance could result. Impacts related to these activities would be permanent, adverse, and of moderate intensity.

Increased visitor use under this alternative increases the potential for looting and vandalism. Related impacts would be permanent, adverse, and of moderate intensity.

As appropriate, archeological surveys would precede any ground disturbance for the construction of parking, restrooms, trailheads, and trails, and national register-eligible or -listed archeological resources would be avoided. No adverse impacts on archeological resources would be anticipated. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented and, if the resources cannot be preserved *in situ*, an appropriate mitigation strategy developed in consultation with the state historic preservation officer and any associated Indian tribes.

Cumulative Impacts. Current research indicates relatively little disturbance of archeological sites in the Addition resulting from past actions such as hunting and camping, logging, looting, and energy exploration. These impacts would be characterized as permanent and negligible. Implementation of future oils and gas proposals could have adverse impacts on archeological resources. If such proposals included using off-road equipment and constructing roads and pads, this could affect archeological resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the

impact of activities on archeological resources, the permanent effect of energy exploration on archeological resources should be negligible.

Large-scale water projects and commercial and residential development could pose some impacts on archeological resources in the vicinity of the Addition. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, significant archeological resources would likely be avoided to greatest extent possible, and any impacts on archeological resources would be adverse and permanent and range in intensity from minor to moderate.

When the permanent, minor to moderate effects of implementing the actions in the preferred alternative are added to the permanent, minor to moderate, adverse effects of other past, present, and reasonably foreseeable actions, there would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in the preferred alternative would contribute a smaller increment to this cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.

Conclusion. Under the preferred alternative, impacts on archeological resources would be permanent, adverse, and minor to moderate.

There would be a permanent, moderate, adverse cumulative impact on archeological resources. The actions contained in the preferred alternative would contribute a smaller increment to this cumulative impact than would the actions of other past, present, and reasonably foreseeable actions.

Section 106 Summary. As appropriate, archeological surveys would precede any ground disturbance for the construction of parking, restrooms, trailheads, and trails, and significant archeological resources would be avoided. After applying the Advisory Council

on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of the preferred alternative would result in a potential adverse effect on archeological resources.

Impacts from actions contained in this alternative would not result in impairment of archeological resources in the Addition.

Ethnographic Resources

Analysis. Under the preferred alternative, there would be limited potential for impacts to ethnographic resources resulting from increases in motorized recreation, specifically ORV use. The construction of trails for off-road vehicles that could also accommodate some mixed use (use by hikers, equestrians, and bicyclists) and additional trails for hiking, camping, cycling, and equestrian use could impact ethnographic resources through trampling, looting, and vandalism. Increased ranger patrols and education programs informing visitors of the sensitive nature of these sites would result in long-term, negligible impacts.

The National Park Service would work with traditionally associated people to identify ethnographic resources and identify appropriate protection strategies for these resources. Consultation with traditionally associated peoples would precede construction in order to avoid or mitigate potential impacts resulting from trail or facility development (such as parking areas, restrooms, and trailheads). With this mitigation, no adverse impacts on ethnographic resources would be anticipated from construction.

Cumulative Impacts. Current research indicates negligible impacts on ethnographic resources in the Addition resulting from hunting and camping and looting. Past actions, including road construction, energy exploration, logging, and agricultural development, may have impacted

ethnographic resources at Deep Lake and other sites within the Addition. Any adverse impacts would have been long term and of negligible to minor intensity.

Large-scale water projects and commercial and residential development could pose some impacts on ethnographic resources in the vicinity of the Addition. However, ethnographic resources would likely be avoided to greatest extent possible, and any impacts on ethnographic resources would be adverse and permanent and range in intensity from negligible to minor.

Implementation of future oil and gas proposals could have adverse impacts on ethnographic resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the impact of activities on ethnographic resources, the permanent effect of energy exploration on ethnographic resources should be negligible.

When the long-term, negligible, adverse effects of implementing the actions contained in the preferred alternative are added to the negligible to minor adverse effects of other past, present, and reasonably foreseeable actions, there would be a long-term, negligible to minor, adverse cumulative impact on ethnographic resources. The actions contained in the preferred alternative would contribute a very small increment to this cumulative impact.

Conclusion. Under preferred alternative, there could be long-term, negligible adverse impacts on ethnographic resources.

Combined with the impacts of past actions, including road construction and agricultural development, there would be a long-term, negligible to minor, adverse cumulative impact on ethnographic resources. The actions proposed in this alternative would contribute a very small increment to any cumulative impact.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's

criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of the preferred alternative would generally result in a no adverse effect on ethnographic resources.

Impacts from actions contained in this alternative would not result in impairment of ethnographic resources in the Addition.

VISITOR USE AND EXPERIENCE

Recreational Opportunities

Motorized Use. ORV access and opportunities to explore, sightsee, and camp would be greatly expanded with the development of up to 130 miles of primary ORV trails, issuance of a maximum of 650 annual ORV permits, providing access points and visitor information at mile markers 51 and 63 and Bear Island Grade, and allowing backcountry camping near the Nobles and Jones grades. The number of primary ORV trail miles constructed and permits issued would be phased in over time if resource impacts remain at or below acceptable limits. Beneficial impacts would result from connecting the Bear Island Grade trailhead to existing ORV trails in the original Preserve and providing more convenient ORV access to Bear Island for visitors from the north. There would also be a potential future ORV trail connection from the Northeast Addition to the existing trail system in Bear Island. The development of backcountry campsites near the Nobles and Jones grades would also have beneficial impacts. The construction of a new visitor contact station and NPS operation facility at mile marker 63 would have beneficial impacts by greatly expanding education and interpretation opportunities, services, and NPS operational capacity in the Addition. An increased NPS staff presence also would improve visitor safety and increase opportunities for interpretation. Impacts resulting from ORV access and opportunities would be long term, moderate to major, beneficial, and Addition-wide.

Allowing ORV use in the Addition, along with the construction of a new contact station, might lead to user congestion and user conflicts at trailheads and along the primary and secondary ORV trail network, resulting in long-term, minor, adverse impacts on users. But, dispersing users across multiple access points as proposed would minimize the impacts. Finally, the provision of additional commercial services and/or partner organizations, including the provision of boat tours south of U.S. 41, would enhance the number and type of visitor services provided in the Addition. Impacts resulting from increased visitor services would be long term, minor, and beneficial.

Overall, implementation of the preferred alternative would result in long-term, moderate, and beneficial impacts on motorized users.

Nonmotorized Use (including hiking, horseback riding, and bicycling). The primary and secondary ORV trail network and new access points at MM51 and MM63 would also be open to hikers, expanding both access and opportunity. The construction of a new day use area and ADA-compliant boardwalk at Deep Lake would have beneficial impacts by providing a comfortable area to enjoy the natural surrounding and provide an easy, safe route to access the lake. The development of designated camping sites in backcountry recreation zones, and where needed for resource protection in primitive backcountry zones, would have beneficial impacts. Opportunities for challenging adventure and primitive solitude would be abundant, yet land would also be zoned for a less isolated backcountry recreation experience, providing ample opportunities for all nonmotorized users. Impacts resulting from expanded access and opportunities for hikers would be long-term, moderate to major, and beneficial.

The addition of ORV users and the construction of a new visitor contact station might result in user congestion and user conflict at trailheads and along the primary and

secondary ORV trail network and would reduce the quality of the natural soundscape. The addition of hunting under the preferred alternative would likely further increase encounters, reduce the quality of the natural soundscape, and could periodically affect ease of access. Impacts on hikers would be long term, minor to moderate, and adverse. Dispersing users across multiple access points as proposed would minimize the impact. Finally, the provision of additional commercial services and/or partner organizations at Carnestown would enhance the number and type of visitor services provided in the Addition. Impacts resulting from increased services would be long term, minor, beneficial, and localized.

Access to the Addition and parking would be improved in comparison to alternative A. Although bicycling would be allowed on all designated primary and secondary ORV trails, many of them would not be conducive to bicycling; therefore, bicycling opportunities would only be slightly expanded beyond alternative A. New access points and the ability to use the primary and secondary ORV trail network would disperse bicyclists across the Addition, reducing the potential for congestion and user conflicts. Impacts resulting from an expansion of access and opportunity would be long-term, minor, beneficial, and Addition-wide. Potential conflicts between user groups at trailheads and along the primary and secondary ORV trail network and a reduction of the quality of the natural soundscape due to ORV use would detract from the experience of bicycling in a natural setting, resulting in long-term, minor, adverse impacts on bicyclists. Finally, providing commercial services and/or partner organizations at Carnestown would result in negligible to minor, long-term, beneficial impacts on bicyclists seeking additional information and services. Overall, impacts on nonmotorized users would be long term, moderate, and beneficial.

Hunting (including fishing and frogging). Nonmotorized and ORV hunting would be allowed in designated areas and seasons as

determined by the National Park Service in cooperation with the Florida Fish and Wildlife Conservation Commission in the areas zoned as primitive backcountry, backcountry recreation. Hunters using off-road vehicles, however, would not have the opportunity to operate their vehicles off designated trails. Conflict between ORV and nonmotorized hunters and with other trail users at trailheads and along primary and secondary ORV trails would likely be infrequent due to sensible facility design, resulting in long-term, minor, adverse impacts. The operation of off-road vehicles might detract from the hunting experience of those that prefer walk-in hunting and solitude. Overall, impacts on hunters in the Addition would be long term, moderate, and beneficial.

Collectively, impacts on visitor use and experience resulting from the preferred alternative would be long term, moderate, and beneficial.

Cumulative Impacts

Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* would provide up to 400 miles of designated ORV trails, 15 ORV access points, and up to 2,000 annual permits in the original Preserve. The quantity of trail miles and permits provides abundant opportunities for operating off-road vehicles. The availability of these opportunities adjacent to the Addition would have long-term, moderate, beneficial impacts on ORV users in the local area.

Implementation of future oil and gas proposals could adversely impact the experience of visitors. If included in the proposals, the construction of roads and pads and the use of off-road equipment could detract from the experience of those seeking a primitive experience and natural soundscape. Impacts resulting from a reduction in the natural settings of the Addition due to the operation of oil and gas equipment would be long term, minor, and adverse in localized areas.

The south Florida ecosystem restoration project is a large-scale effort among public, private, and nongovernmental entities to restore surface water flows within the region. Implementation of the proposals would improve sheet flows and hydrologic connectivity and likely restore natural conditions in the Addition. This effort would enhance the visitor use and experience by providing increased opportunities for wildlife viewing and experiencing natural settings. Opportunities for hunting in the Addition would also improve with more abundant, healthy wildlife populations. Impacts resulting from the effects of a healthy, fully functioning ecosystem would be long term, moderate, beneficial, and regionwide.

Regional growth and development would be expected to result in increased visitation to the Addition. More visitations over time might result in increased congestion and user conflicts at access points and along the primary and secondary ORV trail network. Impacts from growth and development would be long term, minor to moderate, and adverse as a result of increased congestion and user conflict.

Implementation of the *Commercial Services Plan* will initially only affect the original Preserve. The Addition will be addressed in an addendum to the *Commercial Services Plan* after the completion of this *General Management Plan* for the Preserve Addition. The *Commercial Services Plan* proposes to enhance the original Preserve's visitor services through the development of one or more new facilities; a new backcountry camping complex; hunting and fishing guides; buggy, van, and hiking tours; boat and bicycle rentals; and expanded opportunities for birding, wildlife viewing, and photography. Enhanced and expanded opportunities in the Preserve, before an addendum to include the Addition, would increase visitation and might result in increased congestion and user conflicts. Impacts resulting from increased visitation and congestion at access points and along the primary and secondary ORV trail network would result in long-term, minor, adverse

impacts on visitors. When the Addition is addressed in an addendum, visitor opportunities to explore and use the Addition could be expanded. If so, impacts from implementing the *Commercial Services Plan* in the Addition would be long term, minor to moderate, and beneficial as a result of expanded opportunities.

The likely effects of implementing the preferred alternative in combination with the effects of other past, present, and reasonably foreseeable actions described above, would result in long-term, moderate, beneficial cumulative impacts on visitor use and experience in the Addition. The actions contained in the preferred alternative would contribute an appreciable increment to this cumulative impact.

Conclusion

Under the preferred alternative, designated access points and abundant trail opportunities would be provided for ORV use, hunting, and nonmotorized uses. Collectively, the resulting impacts on visitor use and experience would be long term, moderate, and beneficial.

The cumulative impact on visitor use and experience in the Addition would be long-term, moderate, and beneficial. The actions contained in the preferred alternative would contribute an appreciable increment to this cumulative impact.

SOCIOECONOMIC ENVIRONMENT

Analysis of economic impacts under the preferred alternative was based on projected increases in visitation to the Preserve (including the Addition), which in turn would affect visitor spending patterns as well as estimated one-time capital expenditures due to construction activity. A total of 43,515 new visitors were estimated to visit the Preserve each year as a result of implementing this alternative. Of this total, it was assumed that 9,138 were local visitors, 16,536 were non-

local day visitors, 12,184 were motel visitors, and 5,657 were campers. In terms of capital expenditures, it was estimated that the preferred alternative would produce \$6.7 million in total construction costs.

Local Economy

Employment. As a result of increased visitor spending under the preferred alternative, a total of 45 jobs would be created, representing 39 direct jobs and six indirect jobs. These increases would generate \$665,000 in total labor income, representing \$505,000 from direct labor income effects as a result of new job growth and \$160,000 from indirect labor income effects from new job growth in tourism-related industries. Similar to alternative B, approximately half of this direct employment would be attributable to increases in NPS staff needed to operate and maintain new facilities, trails, and services in the Addition; the remaining jobs would result from partnerships at Carnestown and businesses that cater to tourists. Indirect employment increases would occur in firms that support tourist-related businesses, as well as from firms that hire additional staff as a result of changes in direct employment spending. Because total employment in Collier County is approximately 140,184 (2006 estimate), these additional jobs would only represent about a .03% increase in county employment. As such, long-term impacts related to employment would be localized, negligible, and beneficial.

In terms of short-term impacts, approximately 55 temporary jobs would be created due to construction activity in the Addition, generating about \$1.7 million in personal labor income. Most direct employment would be attributable to additional temporary construction jobs. Secondary employment increases would occur as a result of staffing increases in industries that provide goods and services to the construction sector as well as from businesses that hire additional staff due to changes in direct employee spending. Compared to total employment in Collier

County, the additional jobs would only represent a .04% increase in county employment. Consequently, as a result of the preferred alternative, short-term impacts related to employment would be localized, negligible, and beneficial.

Housing. Similar to alternative B, long-term housing impacts would be minimal, and if felt at all, would likely be concentrated in the Naples and Marco Island areas, because the creation of 45 jobs is not large enough to create a discernable impact on the housing market at a county level. Consequently, the long-term impacts related to housing would be localized, negligible, and beneficial.

Short-term housing impacts from construction activity would also likely be minimal when compared to overall changes in the county's residential housing market. Although specific areas such as Naples and Marco Island might have a temporary increase in housing demand, such effects would not likely be felt throughout the remainder of the county. Consequently, the short-term impacts related to housing would be localized, negligible, and beneficial.

Sales. Long-term sales impacts, as a result of increased visitor spending under the preferred alternative, would generate an estimated \$1.96 million annually in direct and indirect taxable sales of goods and services by businesses within Collier County. Most businesses that would benefit from these sales are in industries that cater directly to tourism, such as retail, arts, entertainment, recreation, accommodation and food services. As a total of Collier County's annual taxable sales, estimated to be more than \$6.10 billion, such changes represent only a .03% increase. Consequently, the long-term impacts related to sales under the preferred alternative would be localized, negligible, and beneficial.

Short-term sales impacts due to construction activity would also have a marginal benefit. Total annual sales were estimated to be \$4.7 million, with \$3.6 million (75%) of that amount attributable to transactions occurring

within Collier County. Most direct sales would be attributable to construction-related businesses, with indirect sales attributable to industries that support the construction industry and temporary spending by construction workers. Consequently, the short-term impacts related to economic output under the preferred alternative would be localized, negligible, and beneficial.

Tribal Impacts. In qualitatively assessing long-term impacts to the Miccosukee and Seminole tribes, it appears that both reservations would realize some degree of positive long-term economic benefits under the preferred alternative. Increased visitation to the Preserve as a result of this alternative would likely generate a small to moderate boost in sales of tourist-related goods and services provided at these reservations (i.e. gaming, dining, and entertainment). Both tribes could also directly benefit from entering into select partnership agreements with the National Park Service, as specified under this alternative. However, the magnitude of such gains is based on reasonable speculation due to the limited amount of data available on the tribes' economic activities. Consequently, the long-term impacts related to economic output under the preferred alternative would be localized, negligible to moderate, and beneficial.

New construction activity in the Addition would generate temporary construction jobs. Additional construction workers in the area would likely increase visitation to the two reservations, leading to an increase in the sales of tourist-related goods and services. Consequently, the short-term impacts related to economic activity under the preferred alternative would be localized, negligible to moderate, and beneficial.

Collectively, the long-term and short-term impacts resulting from implementing the preferred alternative would be localized, negligible, and beneficial.

Cumulative Impacts

The action area for evaluating cumulative impacts on the socioeconomic environment is Collier County. The likely effects of implementing the actions contained under the preferred alternative, in combination with the effects of other past, present, and reasonably foreseeable actions are described below.

The implementation of the Recreational Off-Road Vehicle (ORV) Plan, which provides for a maximum of 2,000 permits, 15 access points, and 400 miles of designated trails, has a strong likelihood of attracting new visitors and locals to the Preserve. Such an increase in Preserve visitation would translate into greater visitor spending in the area, resulting in positive long-term gains for Collier County in terms of employment, housing, and taxable annual sales, as well as increased economic activity for the Miccosukee and Seminole tribes. However, relative to the economy of the entire county, long-term economic impacts would likely be minimal. Short-term impacts as a result of one-time capital expenditures from building ORV trail access, facilities, and other structures are also likely to be minimal relative to the overall level of construction activity within the county. As a result, both long-term and short-term cumulative impacts would be localized, negligible, and beneficial.

Although the *Commercial Services Plan* does not include the Addition, social and economic impacts to the county as a whole would be positive due to increased visitation and visitor spending in the area, and expansion of facilities, services, and recreational opportunities in the Preserve. In particular, the implementation of the *Commercial Services Plan's* preferred alternative, which includes the potential to develop two new visitor facilities, partnership agreements for offering a variety of guided tours and equipment rentals, and the creation of a backcountry camping complex, could translate into moderate long-term gains in visitor spending at the county level. Depending on the level of construction activity generated from implementation of the *Commercial Services Plan*, short-term impacts

could be substantial at the county level. As a result, both long-term and short-term cumulative impacts would be localized, negligible to moderate, and beneficial.

The potential exists for exploration activities, as proposed under the oil and gas plan, to reduce visitation in the Preserve due to environmental disruptions from the use of off-road equipment and the development of roads and pads for oil and gas exploration. Due to multiplier effects, long-term impacts from reduced visitation could result in reductions in county employment, housing, and sales, as well as reduced economic activity for the Miccosukee and Seminole tribes. However, such effects will likely be minimal in relation to the entire county economy. Short-term impacts from construction could be both positive and substantial, depending on the level of construction and percentage of that economic activity that remains within the county. Long-term impacts would be localized, negligible, and adverse, while short-term impacts would be localized, negligible to moderate, and beneficial.

The south Florida ecosystem restoration projects would likely attract additional visitors to the region due to the rehabilitation of natural ecosystems within and near the Preserve through various water system improvements. In particular, the Big Cypress Interceptor Modification Plan would likely increase use across a variety of recreational activities offered in the Preserve, particularly for visitors interested in enjoying the natural habitat and wildlife. Collier County would also benefit from restoration efforts in nearby sites, such as Everglades National Park, because additional visitors may pass through or decide to make an additional stop at the Preserve. Because these restoration projects are relatively large in scale, are occurring at multiple sites, and are at a regional level, the long-term impacts on county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes could be substantial. Short-term impacts would also be positive because capital expenditures on water infrastructure improvements (estimated

at multi-billions of dollars) would likely generate substantial temporary gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. As a result, both long-term and short-term impacts would be localized, moderate, and beneficial.

The development of lands northwest of the Addition could increase Preserve visitation and result in positive long-term economic impacts at the county level. In particular, the availability of greater residential housing and the building of a new private and state university in the area could greatly increase the number of residents living in Collier County. The provision of additional services, goods, and facilities would also likely be expanded to accommodate these new residents, which in turn would also attract a greater number of visitors from outside the region. As a result, increased local and visitor spending would produce long-term positive gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. Short-term economic impacts could be substantial at the county level, because large scale construction activity would be needed to support new residents, the universities, and visitors. As a result, long-term and short-term impacts would be localized, moderate to major, and beneficial.

Combining the likely effects of implementing the preferred alternative with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative long-term and short-term socioeconomic impacts would be localized, moderate to major, and beneficial. The preferred alternative would contribute a very small increment to this cumulative impact.

Conclusion

Because of changes in visitor spending under the preferred alternative, long-term and short-term impacts on the socioeconomic environment would be localized, negligible, and

beneficial. As a result, county employment, housing, and sales, as well as economic activity associated with the Miccosukee and Seminole tribes, would realize some positive gains, although such increases would be minimal when compared to the county as a whole.

Long-term and short-term cumulative impacts would be localized, moderate to major, and beneficial. The preferred alternative would contribute a very small increment to this total cumulative impact.

NPS OPERATIONS AND MANAGEMENT

Analysis

The NPS preferred alternative proposes a visitor contact station, an operations center, and employee housing to be located in the Addition. The visitor contact station would allow staff to orient and educate visitors to the Addition, which would not be as easily done without a local visitor facility. An operations center, which would station employees and equipment in the Addition, would increase operational efficiency and reduce response time for fire, law enforcement, maintenance, and interpretation staff. Currently, staff must travel a minimum of an hour to reach the Northeast Addition from the original Preserve. Employee housing for three law enforcement and two fire division staff would increase efficiency and reduce response time for fire and enforcement scenarios. Having staff based at these NPS facilities in the Addition would result in moderate, long-term, beneficial impacts on NPS operations.

Oversight of design and construction processes for new facilities would require managerial and contracting staff time. Additionally, new facilities must be maintained, and this would burden maintenance staff. Campgrounds near the Nobles and Jones grades; a day use area at Deep Lake; up to 130 miles of ORV trails; trailheads; and interpretive panels are also proposed for development in the Addition.

Managing the Addition would require time and effort from administrative, visitor and resource protection, interpretation, resource management, and fire staff. Maintenance staff would be required to use the minimum requirements process to determine what kind of equipment and method to construct and maintain hiking trails in wilderness areas. Visitor protection and fire division staff would also be limited in their use of motorized vehicles in wilderness, which could reduce their effectiveness. Increased visitation due to the new facilities would also require time from all staff divisions. Therefore, management of the Addition and construction and maintenance of facilities under the preferred alternative would result in moderate, long-term, adverse impacts on NPS operations.

Cumulative Impacts

Expansion of nearby communities, including the towns of Ave Maria and Big Cypress, Everglades ecosystem restoration activities, and oil and gas exploration activities would require time and attention by senior NPS staff. The expansion of commercial services offered in the original Preserve would require time from staff spent managing the commercial service authorizations and leases. Cooperation and coordination with neighboring agencies and entities regarding planning, land use resources, and development proposals near the Preserve also would require substantial amounts of staff time and result in minor to moderate, long-term, adverse impacts.

The NPS preferred alternative would place an additional burden on NPS staff, but this burden would be lessened with adequate staffing. Combined with other past, present, and reasonably foreseeable future impacts, the NPS preferred alternative would result in moderate, long-term, beneficial impacts on NPS operations. Although the extra staff time required to manage the Addition facilities and actions taken by other entities would have an adverse impact, the new facilities would play a much larger role in the overall impact by allowing staff to be located within the

Addition and respond to operational and visitor needs in an efficient and timely manner. The preferred alternative's proposed actions would contribute a modest increment to these cumulative impacts.

Conclusion

Operational efficiencies achieved through development of new facilities in the Addition, along with the increased staffing burdens associated with managing those lands and constructing and maintaining new facilities, would have long-term, moderate, adverse and beneficial impacts on NPS operations.

The cumulative impacts of the preferred alternative and other actions would be moderate, long term, and beneficial. The preferred alternative's proposed actions would contribute a modest increment to these cumulative impacts.

EFFECTS ON ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

The construction of new facilities under the preferred alternative, such as trails, trailheads, access points, and visitor/operations facilities, would result in more energy use and consumption; however, the projects would follow NPS policies concerning sustainability and energy conservation to minimize the overall energy requirements. The carbon footprint of the facilities would be minimized through appropriate design and the use of green technology to the greatest extent possible. To maintain, operate, and protect the facilities, NPS travel to and within the Addition also would increase, and the increased travel would increase energy consumption. The fuel and energy consumed by visitors traveling to and within the Addition would increase as a result of the Addition being open to the public and the expansion of recreational opportunities.

UNAVOIDABLE ADVERSE IMPACTS

Human use and the construction of new facilities under the preferred alternative would result in minor to moderate adverse impacts to natural resources, primarily vegetation and wildlife, in some areas throughout the Addition. Impacts on certain aspects of visitor experience, namely solitude and primitive conditions, would also be unavoidable. Mitigation to reduce these impacts would be carried out where possible.

IRRETRIEVABLE OR IRREVERSIBLE COMMITMENTS OF RESOURCES

The additional energy requirements identified above would result in an irreversible commitment of resources. In addition, there would be a commitment of material used to construct new visitor facilities such as trailheads and access points and the visitor and operations facilities at mile marker 63.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

As in alternative A, most of the Addition would be protected in a natural state and would maintain its long-term productivity under the preferred alternative. Only a small percentage of the Addition would be converted to development. No actions in this alternative would jeopardize the long-term productivity of the environment. Short-term impacts might result from construction, such as local air and water pollution, as detailed in the analysis of specific impact topics. Noise and human activity from construction and restoration might displace some wildlife from the immediate area. However, these activities would not jeopardize the long-term productivity of the environment.

ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE F

NATURAL RESOURCES

Surface Water Flow

Analysis. Under alternative F, impacts on surface water flow would be attributed primarily to the development of new facilities, the maintenance of existing facilities, and restoration activities. Development of new facilities such as trails, trailheads, and access points would alter natural sheet flow, degrading hydrologic connectivity. Maintaining the Jones and Bear Island grades in their current state would continue to affect hydrologic connectivity within the Northeast Addition. Facilities and structures at Deep Lake (fill pad) and Copeland (Fire Operations Center) also would continue to affect natural hydrology in localized areas. NPS administrative ORV use also would continue to affect surface water flow in localized areas on a short-term basis. Most impacts on surface water flow are due to the presence of roads, grades, and trams. These impacts would continue to be long term, adverse, and of moderate intensity. The effects could extend beyond the boundaries of the Addition. Impacts related to the continued presence of NPS facilities and structures would be long term, minor, adverse, and localized.

The removal of the facilities at Carnestown and the rehabilitation of the site would restore hydrologic conditions and surface water flow. This would result in a long-term, minor to moderate, beneficial impact on surface water flow that would be localized. Removing and restoring Nobles Grade would improve hydrologic function in the Northeast Addition as well as perhaps across the entire Addition. Removing this road would restore natural sheet flow, resulting in a long-term, moderate to major, beneficial impact on surface water flow across the Northeast Addition.

Ongoing vegetation management could also improve surface water flow by eliminating exotic vegetation that impedes flow or reduces water availability. The impact would be long term, minor to moderate, beneficial, and Addition-wide.

Collectively, the impact of these activities on surface water flow would be long term, minor, beneficial, and mostly localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of ORVs on surface water flow into the portion of the Addition that abuts the original Preserve at localized sites because best management practices and mitigation would maintain or improve hydrologic flow. The impact on surface water flow in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on surface water flow. If such proposals included using off-road equipment and constructing roads and pads, this would alter local hydrology. Construction and operations activities would affect the timing and intensity of surface water flows. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on surface water flow would be adverse, minor to moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Proposals involving the Addition include the removal of the L-28 interceptor

canal levee, modification of the L-28 Tie Back canal, and operational changes to various water control structures. Decompartmentalization of Water Conservation Area 3 would also improve sheet flow and hydrologic connectivity. The impact of these efforts on the hydrology of the Addition, as well as within the watershed, is expected to be long term, major, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect hydrologic function and connectivity in the watershed. The impact of these activities is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on surface water flow would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would benefit surface water flow in the watershed.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, beneficial cumulative impact on surface water flow. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on surface water flow would be long term, minor, beneficial, and mostly localized.

There could be a long-term, moderate, beneficial cumulative impact on surface water flow. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of surface water flow in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Water Quality

Analysis. Under alternative F, impacts on water quality would generally be the same as under the no-action alternative. Impacts would be attributed to visitor use at a few discrete sites as well as from NPS operations and maintenance activities. Visitor use, such as hiking and backcountry camping, could continue to cause soil erosion and generate human waste that would affect turbidity and surface water quality. Inadvertent leaks or spills of fuel or oil from NPS administrative ORV use could affect surface water quality by elevating chemical concentrations. Impacts from parked vehicles would be more common at destination sites, such as mile markers 51 and 63, or Deep Lake. The maintenance of roads, grades, and trails within the Addition would likely cause erosion that could enter canals and waterways and increase turbidity. The impacts of these activities would be long term, minor, adverse, and localized. Impacts would be minor due to the limited visitation in the Addition and the limited development and maintenance that would occur under alternative F.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on water quality at localized sites in the portion of the Addition that abuts the original Preserve because best management practices and mitigation would be used to minimize soil erosion and chemical contamination. The

impact of these activities on water quality in the watershed would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on water quality. If such proposals included using off-road equipment and constructing roads and pads, this could degrade water quality due to turbidity and chemical contamination. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on water quality would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized. This is due to the number and complexity of the proposals and uncertainty with their levels of success.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. Although the proposals would increase surface water flow and connectivity, the discharged waters are expected to have elevated chemical concentrations that would degrade water quality. Because the current condition of water resources in the Addition is cleaner than what is expected to be discharged, the impact is predicted to be long term, minor, adverse, and Addition-wide, but the intensity is unknown. The impact on water quality within the watershed is unknown. This is due to the number and complexity of the proposals and uncertainty with their levels of success.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Water quality would be affected by inputs from urban and suburban development, including increases in organic compounds and chemical concentrations. The impact on water quality within the watershed is expected to be adverse, but the intensity is unknown.

Collectively, adverse impacts could be expected from oil and gas operations, ecosystem restoration projects, and regional growth and development. Overall, the effects of the projects discussed above could be adverse on water quality in the watershed, but the intensity is unknown.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on water quality would be long term, minor, adverse, and localized.

There would be a long-term, adverse cumulative impact on water quality in the watershed. The intensity of the impact is unknown. The actions contained in alternative F would contribute a very small adverse increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of water quality in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wetlands

Analysis. Under alternative F, impacts on wetlands would be attributed primarily to the retention and maintenance of existing facilities, as well as from the removal of facilities. Maintaining roads, grades, and trails could impact wetlands. Impacts would include vegetation loss and alteration of soils, which would result in permanent effects on wetland size and integrity and would be long term, minor to moderate,

adverse, and localized. Indirect impacts, such as increased runoff and sedimentation, would be long term, minor, adverse, and localized.

NPS efforts to reestablish natural ground contours and restore soil integrity would have beneficial effects on wetlands. Removing and restoring Nobles Grade would improve the hydrologic function and connectivity of wetlands in the Northeast Addition as well as create new wetlands where the road is removed and restored. The impact would be long term, moderate to major, beneficial, and localized.

Collectively, impacts on wetlands under alternative F would be long term, minor to moderate, beneficial, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on wetlands. If such proposals included using off-road equipment and constructing roads and pads, this would alter wetland soils and vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on wetlands would be adverse, moderate, and localized; long-term residual impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would affect wetlands by increasing the availability of water, which in turn could increase the size and integrity and improve the function of wetlands. The impact of these efforts on wetlands is expected to be long term, moderate to major, and beneficial.

Regional growth and development is expected to result in an increase in the

conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow and water quality would affect the size, integrity, and function of wetlands in the watershed. The impact of these activities on wetlands would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on wetlands would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be slightly adverse to wetlands.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on wetlands would be long term, minor to moderate, beneficial and localized.

There would be a long-term, minor, adverse cumulative impact on wetlands. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of wetlands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Soils

Analysis. Under alternative F, impacts on soils would be attributed primarily to facility maintenance and new facility development, NPS administrative ORV use, and NPS restoration activities.

Maintaining facilities such as access points, trails, grades, and roads requires recurring maintenance. These maintenance activities could displace soils and/or cause increased soil erosion. Development of new recreational facilities, such as at mile markers 51 and 63, Bear Island Grade, and Deep Lake, would result in displacement or permanent loss of soil resources. The impacts from these activities would be long term, minor to moderate, adverse, and localized. Front-country development would typically compact previously disturbed/filled areas, while backcountry developments could impact native soils. Some rutting and displacement of soils might occur from permitted NPS administrative ORV use as well as from illegal ORV use; however, the use would be infrequent and the impact would be long term, negligible to minor, adverse, and localized.

Nonmotorized users could also cause erosion, but the adverse impacts would likely be negligible to minor.

NPS efforts to reestablish natural ground contours and restore natural hydrologic conditions would have beneficial long-term, minor to moderate, and localized effects on soils.

Collectively, impacts on soils from alternative F would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of future oil and gas proposals could have adverse impacts on soils. If such proposals included using off-road equipment and constructing roads and pads, this would alter soils. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on soils would be adverse,

moderate, and localized; long-term impacts would be minor, adverse, and localized.

Changes in the availability of water resources due to the south Florida ecosystem restoration project would affect soil properties. The integrity of hydrologic soils could be improved or restored by increases in water — a beneficial impact.

Decreases in water or permanent soil loss resulting from regional growth and development would adversely impact soils. The impact of these efforts on soils is expected to be long term, moderate to major, and adverse.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on soils. The permanent loss of soils would be expected to outweigh any beneficial impacts that might be realized from ecosystem restoration projects. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on soils would be long term, minor, adverse, and localized.

There would be a long-term, moderate, adverse cumulative impact on soils. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of soils in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Floodplains

Analysis. Under alternative F, impacts on floodplains would be attributed to the removal of the NPS facilities at Carnestown, which is in the 100-year floodplain. The removal of this facility would restore the function, integrity, and capacity of the floodplain at this site. The impact would be long term, minor to moderate, beneficial, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Regional growth and development is expected to affect floodplains in the region. Floodplains could be physically altered, changing their capacity and altering the natural course of flood water flow. Natural flood patterns would be adversely affected, but any adverse impacts on property and life should be mitigated and eliminated through proper permitting. The impact of these activities on floodplains could be long term, minor to major (depending on the nature of the design), and adverse.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would affect floodplains by reclaiming some floodplains and improving their integrity and function – a beneficial impact. The impact of these efforts on floodplains would be long term and beneficial, but the intensity is unknown.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on floodplains would be long term, minor to moderate, beneficial, and localized.

There would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of floodplains in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Cypress Strands and Domes, Mixed Hardwood Swamps, and Sloughs

Analysis. Under alternative F, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be attributed to new facility development, visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

Development of trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake would result in vegetation loss or injury from construction activities. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from facility development would be long term, minor, adverse, and localized.

Impacts on vegetation from visitor use, such as from trampling, would be more common at frontcountry destinations and less common in the backcountry. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from visitor use would be long term, negligible to minor, adverse, and localized.

Ongoing vegetation management and efforts to restore natural hydrologic processes would continue to improve conditions for

native vegetation because water availability and connectivity would increase and competition from exotic plants would be minimized. Impacts on cypress strands and domes, mixed hardwood swamps, and sloughs from vegetation management would be long term, minor to moderate, beneficial, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would remain infrequent. The conditions that often discourage ORV use (deep water, closely spaced trees, etc.) would continue, and adverse impacts from off-road vehicles would most often be limited to the margins of the plant community. Adverse impacts could include injury to a plant or group of trees, or might include plant loss in a discrete area due to repeated use. Impacts resulting from ORV use would be long term, minor, adverse, and localized.

Collectively, the impact on cypress strands and domes, mixed hardwood swamps, and sloughs under alternative F would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be adverse,

moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on cypress strands and domes, mixed hardwood swamps, and sloughs is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit cypress strands and domes, mixed hardwood swamps, and sloughs.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on cypress strands and domes, mixed hardwood swamps, and sloughs would be long term, minor, adverse, and localized.

There could be a long-term, minor, beneficial cumulative impact on cypress strands and domes, mixed hardwood swamps, and sloughs. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of cypress strands and domes, mixed hardwood swamps, and sloughs in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Prairies and Marshes

Analysis. Under alternative F, impacts on prairies and marshes would be attributed to visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

Some prairies and marshes would be accessible to nonmotorized users, and therefore could be subject to visitor use impacts, such as trampling of vegetation. Impacts would be greatest and more concentrated in front-country locations and less common in the backcountry. Impacts on prairies and marshes from visitor use would be long term, negligible, adverse, and localized.

Ongoing vegetation management, including the use of prescribed fire, and efforts to restore natural hydrologic processes would continue to improve conditions for native vegetation because water availability and connectivity would increase and competition from exotic plants would be minimized. Impacts on prairies and marshes from vegetation management would be long term, minor to moderate, beneficial, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would remain infrequent; however, even infrequent use could produce adverse impacts. The soil conditions in prairies and marshes cause poor traction for off-road vehicles, and rutting and braiding of trails is common. Most NPS operators understand the sensitivity of prairies and marshes and know to avoid these areas. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to rutting or repeated use. Impacts on prairies and marshes from ORV use would be long term, minor, adverse, and localized. The impacts of trampling of vegetation by nonmotorized visitors (i.e., hikers) would be negligible.

Collectively, the impact on prairies and marshes under alternative F would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be moderate, adverse, and localized; long-term impacts would be minor, adverse, and localized.

The south Florida ecosystem restoration project includes several proposals for

restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect plant communities and would likely improve plant vigor, abundance, and distribution. The impact of these efforts on prairies and marshes is expected to be long term, minor to moderate, and beneficial.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. Prairies and marshes on private land outside the Addition would continue to be impacted by population growth and development. The impact of these activities on prairies and marshes is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on prairies and marshes would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on prairies and marshes would be long term, minor, and adverse.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on prairies and marshes would be long term, minor, adverse, and localized.

There could be a long-term, minor, adverse cumulative impact on prairies and marshes. The actions contained in alternative F would

contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of prairies and marshes in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Mangrove Forests

Analysis. Impacts on mangrove forests under alternative F would generally be the same as under the no-action alternative because recreational use in this vegetation community would be the same as in alternative A. As with the no-action alternative, motorized boating would continue to be allowed south of U.S. 41 in the Western Addition in the deep, open-water environs outside the dense mangrove forests. Motorized boating could continue to cause injury to individual plants or prevent their expansion into the shallower margins of the well-travelled boating corridors. Consequently, compared to the no-action alternative, there would be no impact on mangrove forests in the Addition under alternative F.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Regional growth and development, including waterfront development, is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Mangroves receive special protection under state law, and any adverse impacts on mangrove forests would be expected to be negligible. Because alternative F would not contribute any increment, there would be no cumulative impact.

Conclusion. Alternative F would have no impact on mangrove forests. Impacts on mangroves would be the same as what was

accounted for under the no-action alternative.

There would be no cumulative impacts on mangrove forests under alternative F.

Impacts from actions contained in this alternative would not result in impairment of mangrove forests in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Pinelands

Analysis. Under alternative F, impacts on pinelands would be attributed to new facility development, visitor use, NPS restoration efforts and limited NPS administrative ORV use.

Development of trails, trailheads, and access points (at mile markers 51 and 63, Bear Island Grade, and Deep Lake) would result in vegetation loss or injury from construction activities. Impacts on pinelands would likely be proportionately greater than for the other vegetation communities because pinelands are uplands that are often targeted as appropriate development sites. Impacts on pinelands from facility development would be long term, minor, adverse, and localized.

Impacts from visitor use, such as from trampling, would be more common at frontcountry destinations and less common in the backcountry. Although individual understory plants could be injured or killed, the integrity of the pineland community would not likely be affected due to the durable substrate and the resiliency of mature trees to relatively benign activities. Impacts on pinelands from visitor use would be long term, negligible to minor, adverse, and localized.

Ongoing vegetation management, including the use of prescribed fire, would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on pinelands from vegetation management would be long term, beneficial, minor to moderate, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would continue in the Addition. The durability of the substrate present in pinelands minimizes adverse impacts from ORV use. The loss of pines from ORV use has not been documented in the original Preserve; however, wheeled use could have adverse impacts on other plant species present within these communities or within certain ecotonal areas. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to repeated use. Impacts on pinelands from ORV use would be long term, adverse, minor, and localized.

Collectively, the impact on pinelands under alternative F would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-

term impacts on vegetation would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of pinelands. The assemblage of pines and palmettos could change as a result of changes in hydrology or periods of inundation. The impact is uncertain because drying often adversely impacts pinelands and increasing the water table could also cause a net reduction in pinelands compared to current conditions. It is expected that restoring natural hydrologic conditions would have a beneficial impact on pinelands.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Studies have shown that pinelands are the most impacted by human land conversion. Pinelands on private land in the region would continue to be lost. The impact would be long term, moderate to major, and adverse.

Collectively, beneficial impacts on pinelands would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would be adverse on pinelands in the Addition.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate to major, adverse cumulative impact on

pinelands. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on pinelands would be long term, minor, adverse, and localized.

There could be a long-term, moderate to major, adverse cumulative impact on pinelands. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of pinelands in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Vegetation — Hardwood Hammocks

Analysis. Under alternative F, impacts on hardwood hammocks would be attributed to visitor use, NPS restoration efforts and NPS administrative ORV use.

Impacts on vegetation from visitor use, such as from trampling, would be more common at frontcountry destinations and less common in the backcountry. Impacts could include plant injury or mortality. Backcountry camping could also cause trampling or loss of vegetation at localized sites. Impacts on hardwood hammocks from visitor use would be long term, negligible to minor, adverse, and localized.

Ongoing vegetation management would decrease competition from exotic plants and improve the integrity of native habitats. Impacts on hardwood hammocks from vegetation management would be long term, beneficial, minor to moderate, and Addition-wide.

ORV use by NPS staff (or from illegal public use) would continue in the Addition.

Although the substrate present in hardwood hammocks is suitable for ORV use, use tends to be infrequent because of the size and density of trees present in these areas. However, infrequent ORV use could continue to adversely impact understory plants. Adverse impacts could include injury to a plant or group of plants, or might include plant loss in a discrete area due to repeated use. Impacts on hardwood hammocks from ORV use would be long term, minor, adverse and localized. Impacts would be expected to be minor because areas affected would be relatively small and dispersed.

Collectively, the impact on hardwood hammocks under alternative F would be long term, minor, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts, such as trampling, injury, or loss of plant cover, of off-road vehicles on vegetation. The impact would be long term, minor to moderate, beneficial, and localized.

Implementation of future oil and gas proposals could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. If such proposals included using off-road equipment and constructing roads and pads, this would alter vegetation. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on vegetation would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet

flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of hardwood hammocks. The impact is uncertain, but restoring natural conditions is expected to have a long-term, minor, beneficial impact.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect plant communities. The impact of these activities on hardwood hammocks is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on hardwood hammocks would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above could slightly benefit hardwood hammocks.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, beneficial cumulative impact on hardwood hammocks. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on hardwood hammocks would be long term, minor, adverse, and localized.

There could be a long-term, minor, beneficial cumulative impact on hardwood hammocks. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of

hardwood hammocks in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Exotic/Nonnative Plants

Analysis. Under alternative F, impacts on exotic/nonnative plants would be attributed to facility development and maintenance, visitor use and limited NPS administrative ORV use. Ongoing vegetation management (including the use of prescribed fire and chemical and mechanical treatment) in the Addition would continue to decrease competition from exotic plants and improve the integrity of native habitats. The continuation of monitoring efforts would also help to detect and mitigate new exotic species that could affect native plant communities. Impacts on exotic/nonnative species from ongoing resource management activities would be long term, beneficial, moderate, and Addition-wide.

New facility development — such as trails, trailheads, and access points at mile marker 51, mile marker 63, Bear Island Grade, and Deep Lake — would create disturbed lands that would be subject to colonization by invasive plants. Construction materials and activities could also be a seed source for exotic plants and would increase the potential for their dispersion. Maintaining these facilities would also create disturbed habitats that could increase the density of exotic plants and affect the integrity of adjacent natural areas. Exotic plants have severe effects on the integrity of native systems and habitats. The impact of these activities would be long term, minor to moderate, adverse, and localized.

Expanded visitor use would increase the dispersal of exotic plants and also create additional disturbed areas that would be subject to colonization by invasive plants. The impact on exotic plants from visitor use

would be long term, minor, adverse, and localized.

Limited NPS administrative ORV use could continue to cause impacts on the distribution and establishment of exotic plants. Visitors and off-road vehicles can be agents for seed dispersal, increasing the threat to native plant communities. Impacts on exotic/nonnative plants from these activities would be long term, minor, and adverse. Although the effects would be most pronounced along travel corridors and at disturbed sites, the impacts could extend beyond these immediate areas and become Addition-wide.

Collectively, impacts on exotic/nonnative plants under alternative F would be long term, minor, adverse, and potentially Addition-wide.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on exotic plants and nonnative vegetation in the original Preserve and reduces the potential for dispersal into the Addition — a beneficial impact on native vegetation. Furthermore, the designated trail system would facilitate management of exotic species, including reporting and removal. The impact on exotic plants and nonnative vegetation in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on native vegetation because of the potential for the spread of exotic and nonnative plants in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would disturb soils and native vegetation. Short-term impacts could include the establishment of exotic plants on disturbed sites and the dispersal of seeds and

plant stock. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on native vegetation because of the potential for the spread of exotic and nonnative plants would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect water tables and could impact the abundance and distribution of exotic plants. The impact on exotic plants is uncertain, but restoring natural conditions is expected to have a long-term, minor to moderate, beneficial impact on native plants and vegetation.

Regional growth and development is expected to result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Changes in sheet flow, and its timing and intensity, would affect exotic plants, as would increases in the amount of disturbed land that is available for colonization by exotic species. The impact of these activities on exotic plants and nonnative vegetation is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on native vegetation would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above on exotic plants and nonnative vegetation could be minor and adverse.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described

above, there would be a long-term, minor, adverse cumulative impact on exotic plants. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion. Under alternative F, impacts on native vegetation because of the potential for the spread of exotic and nonnative plants would be long term, minor, adverse, and potentially Addition-wide.

There could be a long-term, minor, adverse cumulative impact on exotic plants and nonnative vegetation. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of native vegetation in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Federal Threatened and Endangered Species

Florida Panther. Under alternative F, impacts on the Florida panther would be attributed to new facility development, expanded visitor use, and limited NPS administrative ORV use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact panthers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways), but there would still be a loss of habitat within the panther home range. The impact would be long term, minor, adverse, and localized.

Public recreational ORV use would continue to be prohibited in the Addition under alternative F. However, public hunting would be allowed via walk-in access only. Human use and disturbance in the Addition would continue to be minimal, but would be increased relative to the no-action alternative. The hunting pressure associated with walk-in access only would be expected to be minimal, with no substantial effect on the panther's prey base. Adverse impacts, such as flushing and displacement of panthers, would continue. The impact would be long term, minor, adverse, and localized.

Ongoing vegetation management efforts would continue to improve habitat for panthers as well as for the major game species in the Addition that serve as their primary food source. Partnerships with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service would continue and would contribute to the monitoring and improved understanding of the species. Impacts on panthers from ongoing resource management activities would be long term, minor, beneficial, and Addition-wide.

Limited NPS administrative ORV use, as well as nonmotorized public use (primarily backcountry hiking), would continue to affect Florida panthers, potentially causing displacement and avoidance of certain areas within the Addition. The impact would be long term, minor, adverse, and localized.

Designating lands as wilderness under alternative F could result in beneficial impacts on the panther. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of panther habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its

wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the Florida panther under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on panthers in the region, a beneficial impact (because an individual panther's range may include the Preserve as well as the Addition and other adjacent lands). In other words, improving and protecting habitat value on the original Preserve could yield a regional benefit to the species. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on panthers. Adverse impacts on panthers would still occur from ORV use in the original Preserve, but the effects would be less than with no ORV management. With implementation of the terms and conditions of the U.S. Fish and Wildlife Service's "Biological Opinion" (USFWS 2000), the plan is not likely to result in jeopardy to the panther. Overall, the impact of the ORV plan on the Florida panther would be long term, moderate, and beneficial compared to no ORV management.

Implementation of future oil and gas could have adverse impacts on Florida panthers in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could create human

disturbances and result in degradation and loss of panther habitat. Short-term adverse impacts from construction could include flushing and displacement of panthers, effects on feeding and sheltering behavior, and an increase in mortality from vehicle collisions. The same types of adverse impacts would be long term due to ongoing operations and maintenance activities. These adverse impacts would be minor and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the Florida panther is unknown, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because it would return vegetation communities to historic conditions and improve predator/prey relationships.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of panther habitat. Natural areas that remain are more fragmented and contain higher levels of human disturbance, both of which adversely affect panthers and their long-term survival. Increased panther mortality due to vehicle collisions could also be attributed to the effects of regional growth and development. The impact of these activities on the Florida panther is expected to be long term, moderate to major, and adverse.

Collectively, beneficial impacts on the Florida panther would accrue from ORV management and ecosystem restoration

projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to Florida panthers in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the Florida panther. The actions contained in alternative F would contribute a small increment to this cumulative impact.

Conclusion — Impacts on the Florida panther under alternative F would be long term, minor, adverse, and mostly localized across the Addition. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the Florida panther. The actions proposed in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not likely result in impairment of the Florida panther in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

West Indian Manatee. Impacts on the West Indian Manatee under alternative F would generally be the same as under the no-action alternative. Impacts would be attributed primarily to continued motorboat use associated with recreational fishing

(airboat use would continue to be prohibited). Manatees in the creeks, canals, and estuarine area south of U.S. 41 in the Western Addition would be subjected to potential injury from collisions with boat hulls or propellers. Manatees would also be displaced from or avoid certain areas, which could affect feeding and other behaviors. Designating new paddling trails in tidal areas south of U.S. 41 could increase the displacement or avoidance behavior, but the impact would be negligible. The National Park Service already manages boating in this area to reduce impacts on manatees and their designated critical habitat. Partnerships with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service would continue and would help improve monitoring and recovery of the species. Essential features of critical habitat would not be impacted. Impacts on the West Indian manatee would be long term, minor, adverse, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Designating the lands south of U.S. 41 in the Western Addition as wilderness under alternative F could result in beneficial impacts on the manatee. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. Because motorboating is a permissible activity in wilderness because of its historic use there and this use would continue to be allowed in the Addition, any beneficial impact would be negligible and the area would function and be managed similar to the no-action alternative.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of

surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the manatee. The quality of freshwater inputs is predicted to be less than current conditions, which could adversely impact manatee habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, minor beneficial impacts on the West Indian manatee.

Regional growth and development is expected to continue and could result in an increase in the number of recreational boaters in the region. Injury and mortality of manatees associated with recreational boating could increase as a result of increased motorboat use. Incompatible coastal development could also adversely affect manatees by loss of habitat and feeding areas, as well as pollution discharges. These activities would adversely impact manatees and could affect their long-term survival. The impact on the West Indian manatee is expected to be long term, moderate to major, and adverse.

Overall, the effects of the projects discussed above would likely be adverse to West Indian manatees in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion — Impacts on the West Indian manatee under alternative F would be long term, minor, adverse, and

localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, moderate, adverse cumulative impact on the West Indian manatee. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the West Indian manatee in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Red-Cockaded Woodpecker. Under alternative F, impacts on potential habitat for the red-cockaded woodpecker would be attributed to new facility development, expanded visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — could impact potential habitat and thus woodpeckers by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways), but there would still be a loss of habitat. The impact would be long term, minor, adverse, and localized.

Public recreational ORV use would continue to be prohibited in the Addition under alternative F. However, public hunting would be allowed via walk-in access only. Public hunting would not be expected to impact

woodpecker habitat because the integrity of cavity trees and forage resources would be maintained. Human use and disturbance in the Addition would continue to be minimal but would be increased relative to the no-action alternative. Conditions that support woodpecker use of the area would continue to be maintained. Because there are currently no known nest sites within the Addition, effects on woodpeckers would be limited to impacts on foraging habitat and avoidance of certain areas during periods of human activity. The impacts would be long term, minor, adverse, and localized.

Nonmotorized visitor use (primarily back-country hiking) could continue to affect woodpeckers, potentially causing displacement and their avoidance of certain areas within the Addition; the impact would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative F could result in beneficial impacts on the woodpecker. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of woodpecker habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Limited NPS administrative ORV use would continue to affect woodpeckers, potentially causing displacement and avoidance of certain areas within the Addition. The impact would be long term, minor, adverse, and localized.

Collectively, impacts on the red-cockaded woodpecker under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under

Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the impacts of off-road vehicles on red-cockaded woodpeckers in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on woodpeckers. Cavity trees and active clusters would be avoided as sites for the trails, thereby reducing adverse impacts. Adverse impacts on woodpeckers would still occur from ORV use in pinelands in the original Preserve, but the impact would be minor. Overall, the impact of the 2000 ORV plan on the red-cockaded woodpecker would be long term, negligible, and adverse.

Implementation of future oil and gas could have adverse impacts on the red-cockaded woodpecker in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could degrade and reduce available woodpecker habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term adverse impacts could include flushing and displacement of woodpeckers, while long-term impacts would include the loss of cavity nesting trees.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communi-

ties (including pinelands) and in turn wildlife habitat. The impact on the red-cockaded woodpecker is uncertain, but restoring natural conditions is assumed to have a long-term, minor, beneficial impact because returning vegetation communities to historic conditions and improving foraging resources should be beneficial.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a substantial loss of woodpecker habitat (pinelands) in the region. Natural areas that remain are more fragmented and contain higher levels of human disturbance and displacement of woodpeckers, both of which adversely affect woodpeckers and their long-term survival. The impact of these activities on the red-cockaded woodpecker is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the red-cockaded woodpecker would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to red-cockaded woodpecker in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the red-cockaded woodpecker. The actions contained in alternative F would contribute a small beneficial increment to this cumulative impact.

Conclusion — Impacts on the potential habitat for and thus the red-cockaded woodpecker under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the potential habitat for and thus the red-cockaded woodpecker. The actions proposed in alternative F would contribute a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the red-cockaded woodpecker in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Wood Stork. Under alternative F, impacts on the wood stork would be attributed to expanded visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

Public ORV use would continue to be prohibited in the Addition under alternative F. However, public hunting would be allowed via walk-in access only. Nonmotorized visitor use would also be allowed. Human use and disturbance in the Addition would continue to be minimal, but would be increased relative to the no-action alternative. Conditions that support wood stork's use of the area would continue to be maintained. Because there are currently no known nest sites within the Addition, and they have nested in the original Preserve only sporadically since 1996, effects on wood storks would be limited to impacts on foraging habitat and avoidance of certain

areas during periods of human activity. The impacts would be long term, negligible to minor, adverse, and localized.

Ongoing NPS efforts to improve natural hydrologic processes would continue, but the stork's habitat parameters also would continue to be affected primarily by water levels and drying conditions resulting from natural climatic events. The impacts on the wood stork would be negligible, long term, and beneficial.

Designating lands as wilderness under alternative F could result in beneficial impacts on the wood stork. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of stork habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Limited NPS administrative ORV use could affect storks, potentially causing displacement and avoidance of certain areas within the Addition — the impact would be long term, minor, adverse, and localized.

Collectively, impacts on the wood stork under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the wood stork's

foraging habitat (prairies and marshes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on storks. Nesting habitat (cypress trees in open water) would likely not be affected because off-road vehicles typically avoid the deep, open water areas that storks commonly nest in. Consequently, the effect on nesting habitat due to the actions in the ORV plan would be negligible. Overall, the impact of the ORV plan on the wood stork in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the wood stork in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of wood stork habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of wood storks. Short-term impacts on wood storks would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply. The impact on the wood stork is unknown, but restoring natural hydrologic conditions is expected to have a long-term, minor to moderate, beneficial impact because vegetation communities would return to historic conditions and foraging resources would improve.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect storks. The impact of these activities on the wood stork is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the wood stork would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse on wood storks in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in alternative F would add a very small increment to this cumulative impact.

Conclusion — Impacts on the wood stork under alternative F would be long term, minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor, adverse cumulative impact on the wood stork. The actions contained in alternative F would add a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the wood stork in the Addition because habitat conditions would be maintained or enhanced and the NPS would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Everglade Snail Kite. Under alternative F, impacts on the snail kite would be attributed to expanded visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

Public off-road vehicle use would continue to be prohibited in the Addition under alternative F. Walk-in public hunting would be allowed. Nonmotorized human activity and disturbance in the Addition would continue to be minimal but would increase somewhat relative to the no-action alternative. Limited human activity associated with NPS administrative ORV use would occur. However, the conditions that support the snail kite's foraging and roosting in the area would continue to be maintained. Although there are no known snail kite nest sites in the Addition, kites might occasionally use marshes and open water littoral zones in the Addition for foraging on apple snails. They might also roost in the vicinity of these water bodies. Effects on snail kites would primarily be limited to impacts on foraging habitat and avoidance of certain areas during periods of human activity. Over time, under alternative F, without substantial disturbances from recreation or hydrologic alterations, it might be possible for kites to nest in the Addition. The impacts from public use associated with this alternative would be long-term, negligible to minor, adverse, and localized.

Under alternative F, ongoing NPS efforts to improve natural hydrologic processes, water quality, and invasive plant control would continue as in the no-action alternative. These NPS management actions could

benefit apple snail populations in the Addition and improve the snail kite's accessibility to the apple snails.

Designating lands as wilderness under alternative F could result in beneficial impacts on the snail kite. Potential habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of snail kite habitat; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Collectively, impacts on the Everglade snail kite under alternative F would be long term, negligible to minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the snail kite's foraging, roosting, and nesting habitat (marshes and pond/lake fringes) in the region, a beneficial impact. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the kites that inhabit the region. However, foraging, roosting, or possible nesting habitat for snail kites in the original Preserve could be adversely affected in areas where ORV use is permitted under the ORV plan in the original Preserve, particularly in specific ORV use areas that are near marshes,

ponds, or lakes. Overall, the impact of that plan on the snail kite in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the snail kite habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in loss and degradation of snail kite habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of snail kites. Short-term impacts on snail kites would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions, including food supply and water quality. This would be particularly beneficial to the snail kite because its diet predominantly consists of apple snails, which are very dependent on adequate hydrological conditions. Furthermore, the return of natural hydrological conditions and improved water quality to the region would also enhance or increase the availability of quality foraging, roosting, and nesting habitat for the Everglade snail kite. The restoration of natural hydrologic conditions would have long-term, moderate, beneficial impacts.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development and alter the hydrology of the general area. Impacts

such as the loss of wetlands and compromised water quality from discharge of urban pollutants into hydrologic systems would adversely affect snail kites and their primary food source, the apple snail. The impact of these activities on the snail kite is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on the snail kite would result from improved ORV management in the original Preserve and ecosystem restoration projects in the region. Adverse impacts would be expected from oil and gas development and regional growth and urban development. Overall, the effects of the projects discussed above would likely be adverse to snail kite habitat in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the Everglade snail kite. The actions contained in alternative F would add a small increment to this cumulative impact.

Conclusion — Impacts on the snail kite under alternative F would be long term, negligible to minor, adverse, and mostly localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor, adverse cumulative impact on the Everglade snail kite. The actions proposed in alternative F would add a small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the snail kite in the Addition

because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

American Crocodile. Impacts on the American crocodile and its habitat under alternative F would generally be the same as under the no-action alternative because recreational use in and near mangrove forests of the Addition would be the same as in alternative A (no action).

Under alternative F, impacts on the American crocodile and its habitat would primarily be attributed to continued human activities near mangrove forests, particularly motorized boating associated with recreational fishing in the Western Addition (airboat use is prohibited). Mangrove forests are the primary habitat for the American crocodile in south Florida, although crocodiles are generally rare in Big Cypress National Preserve. The mangrove habitat areas along creeks, canals, and estuaries south of U.S. 41 in the Western Addition are where effects would most likely occur.

In these areas, crocodiles might be affected by motorboat noise, boat wakes and waves, human noise or actions, or boat hulls or propellers. Because most American crocodile activity occurs from just before sunset to just after sunrise, most of these human-induced actions would disturb the crocodiles when they are at rest during daytime hours. These disturbances might cause resting crocodiles to be flushed, resulting in unnecessary energy use and stress. Boating in early morning or evening hours might also alter crocodile foraging behavior or flush the possible prey of the crocodile. Depending on the level and frequency of human disturbances, crocodiles could avoid some areas entirely.

Crocodiles are not known to nest in the Addition. However, if nesting occurs, the hatching success would primarily depend on risks from flooding, predation, lack of soil moisture during incubation, and extreme storms. The nest success also depends on the female crocodile returning to the nest to excavate the hatchlings. Research suggests that some female crocodiles may abandon their nests if the area is subjected to repeated, close human presence (Kushlan and Mazzotti 1989). Once hatched, juveniles would then be affected by similar human disturbances as highlighted above. The young crocodiles would be at greatest risk during their journey through open water from their nest site to more distant nursery habitat.

Given the infrequent presence of crocodiles in the Addition, the above effects from human recreation activities such as boating would be long term, minor, adverse, and localized.

Alternative F would also continue current NPS vegetation management actions that would help maintain or improve habitat conditions in the Addition. These actions would help address invasive plant infestations that could degrade or displace habitat for the American crocodile. The impacts of ongoing NPS vegetation management would be long term, minor to moderate, beneficial, and localized.

Under alternative F, the impacts on the American crocodile would continue to be long term, adverse, minor, and localized. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. The south Florida ecosystem restoration project includes several proposals for restoration of

surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would increase the quantity of freshwater inputs into the estuarine system, a beneficial impact on the American crocodile. This restoration of hydrologic flows and connectivity would be most beneficial to the crocodile in the nonnesting season when they seek inland freshwater habitats. However, the water quality of freshwater inflows is predicted to be worse than current conditions, which could adversely impact crocodile habitat. Overall, it is expected that restoring natural hydrologic conditions would produce long-term, moderate, beneficial impacts for the American crocodile.

Regional growth and development, including waterfront development, is expected to continue in south Florida. This would result in the alteration or displacement of natural lands and changes to the local and regional hydrology. Because mangrove forests receive special protection under state law, any direct impacts on mangrove forests would be expected to be negligible. However, even if direct impacts on mangroves are avoided, urban encroachment might diminish mangrove habitat values if human activity and development is close to the mangroves. Road mortality would likely increase as development and regional population increase. Growth and development could also result in an increase in boating and other recreational activities in the area. Crocodile foraging, breeding, resting, and nesting might be affected by increases in motorboat disturbances, boat wakes and waves, and human noise or actions. Crocodiles could avoid some areas entirely depending on the level and frequency of human disturbances. The impact on the American crocodile from urban growth and development is

expected to be long-term, moderate, and adverse.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Conclusion — Implementation of alternative F would result in localized, long-term, minor, adverse impacts on the American crocodile. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

There would be a long-term, minor to moderate, adverse cumulative impact on the American crocodile. The actions contained in alternative F would contribute a very small increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the American crocodile in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

Eastern Indigo Snake. Under alternative F, impacts on potential habitat for the eastern indigo snake would be attributed to new facility development, expanded visitor use, NPS restoration efforts, and limited NPS administrative ORV use.

The continuation of NPS vegetation management efforts would continue to improve habitat values for the indigo snake and its prey. Given the snake's dependence on a mosaic of habitat types throughout its lifecycle and its generalist nature in south Florida, the combination of these Addition-wide active management efforts and natural restoration processes (that restore previously disturbed lands) would enhance the conditions for the eastern indigo. Impacts on the snake from these ongoing resource management activities would continue to be long-term, beneficial, minor, and Addition-wide.

New facility development — such as hiking trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact potential eastern indigo habitat by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways), but there would still be a loss of habitat. The impact would be long term, minor, adverse, and localized.

Public ORV use would continue to be prohibited in the Addition under alternative F. Therefore, little or no disturbance to vegetative groundcover or soil substrates would be expected. Other impacts, such as disturbance from public ORV noises, would also be avoided. This continued effect would be particularly beneficial to the eastern indigo in the upland areas of the Addition, such as pinelands or successional hardwood hammocks, which provide habitat conditions for foraging, breeding, and snake burrows or refuges. The prohibition of ORV use under this alternative would also retain the Addition as a large, unfragmented, mosaic of undisturbed snake habitat types, which is essential for viable eastern indigo

populations (Layne and Steiner 1996, Breininger et al. 2004).

The hunting pressure associated with walk-in access only would be expected to be minimal, with negligible effect on the eastern indigo or its prey. In addition, continued enforcement of the Endangered Species Act and the Lacey Act would limit the risk of illegal snake capture for the pet trade. Other nonmotorized public use (e.g., backcountry hiking) would also continue and would be increased relative to that of the no-action alternative. However, this nonmotorized use would cause sporadic disturbance to the snake or its prey and would yield negligible to minor degradation of eastern indigo habitat. Limited administrative ORV use by NPS staff would also be an occasional, short-term disturbance. Consequently, human use and disturbance in the Addition would continue to be minimal under alternative F and would maintain habitat conditions that support the eastern indigo snake and its prey. The impact from human activity would be long term, negligible to minor, adverse, and localized.

Designating lands as wilderness under alternative F could result in beneficial impacts on potential eastern indigo habitat. The snake's habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of the snake's habitat. However, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Overall, the impacts on the potential habitat for the eastern indigo snake under alternative F would result in long-term, minor to moderate, beneficial, impacts on this species across the Addition. The determination of

effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

Cumulative Impacts — Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the impacts of off-road vehicles on the wide variety of habitat types that support the eastern indigo. Most importantly, the improved ORV management efforts in the original Preserve would reduce disturbance or degradation to vegetative groundcover and soil substrates in areas that provide for foraging, breeding, and snake burrows or refugia, such as pinelands or successional hardwood hammocks. This would benefit snakes in the region. Eliminating some and designating new ORV trails and conducting education, best management practices, research, and mitigation would limit impacts on the indigo snakes in the region. However, snake habitat might be altered or displaced, and individual snakes might be flushed in areas where ORV use is permitted under the plan. Overall, the impact of that plan on the eastern indigo in the region would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on the eastern indigo snake habitat in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this could result in the loss and degradation of several habitat types that support the snake. Adverse impacts would include displacement of vegetative cover for the snake; soil and burrow disturbances; possible roadway injury/mortality; and disruption of normal foraging, breeding, and dispersal behaviors. The impacts of these

activities would be reduced because NPS approval of the operations plan would require mitigative measures. Short-term impacts on snake would be adverse, moderate, and localized, while long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect habitat conditions for many species. This hydrologic restoration could benefit the eastern indigo directly during times of the year when the snake uses wetter habitats in the area. At other times, it would benefit the eastern indigo indirectly by restoring a natural system that could improve conditions and increase populations of the snake's food base. However, the reintroduction of natural flows could displace some existing upland areas. This effect could decrease available upland habitat for the eastern indigo snake and its prey that depend on upland habitat. The restoration of natural hydrologic conditions would have long-term, minor to moderate impacts that could be both beneficial and adverse to the snake.

Regional growth and development is expected to continue and result in an increase in habitat displacement for the snake. Because the eastern indigo uses a variety of habitat types and has a large home range, it is particularly susceptible to habitat loss and habitat fragmentation from urban development. In addition to habitat displacement and fragmentation, urban development also brings injury or mortality threats from domestic animals, vehicles, property owners, and pesticides and rodenticides in the food chain. All of these would adversely affect eastern indigos. The impact of these activities on

the snake is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on the eastern indigo snake would result from improved ORV management in the original Preserve and ecosystem restoration projects in the region.

Adverse impacts would be expected from oil and gas development and regional growth and urban development. Overall, the effects of the projects discussed above would likely be adverse to the snake's habitat in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo snake. The actions contained in alternative F would add a small beneficial increment to this cumulative impact.

Conclusion — Under alternative F, impacts on the eastern indigo snake would be long term, minor to moderate, and beneficial. The determination of effect under Section 7 of the Endangered Species Act would be *not likely to adversely affect*.

However, there would be a long-term, minor to moderate, adverse cumulative impact on the eastern indigo. The actions contained in alternative F would add a small beneficial increment to this cumulative impact.

Impacts from actions contained in alternative F would not result in impairment of the eastern indigo snake in the Addition because habitat conditions would be maintained or enhanced and the National Park Service would strive to meet the species recovery goals. (See specific definition of impairment in the

"Impairment of Addition Resources" section.)

Major Game Species

Analysis. Under alternative F, impacts on the major game species of the Addition (white-tailed deer, feral hogs, and wild turkey) would be attributed to new facility development, expanded visitor use, and limited NPS administrative ORV use.

New facility development — such as trails, trailheads, and access points at mile markers 51 and 63, Bear Island Grade, and Deep Lake — would impact game species by causing short-term disturbances associated with construction activities and permanent loss of habitat. Development footprints would be confined to previously disturbed areas to the greatest extent possible (such as at existing access points along major highways), but there would still be a loss of habitat. The impact would be long term, minor, adverse, and localized.

Public recreational ORV use would continue to be prohibited in the Addition under alternative F. However, public hunting would be allowed via walk-in access only. The Addition would be expected to become part of the adjacent Big Cypress State Wildlife Management Area. As in the original Preserve, hunting would be regulated according to the requirements, seasons, and bag limits established by the Florida Fish and Wildlife Conservation Commission. Human use and disturbance in the Addition would continue to be minimal, but would be increased relative to the no-action alternative. The hunting pressure associated with walk-in access only would be expected to be minimal, with no important effect on the viability of game populations. Short-term, minor adverse impacts, such as flushing and displacement of game species, would continue. Long-term, moderate beneficial impacts could also occur from hunting and

management of game populations, such as disease mitigation and improvements in population genetics. Partnerships with the Florida Fish and Wildlife Conservation Commission would continue and would contribute to the monitoring and improved understanding of game populations.

Designating lands as wilderness under alternative F would likely result in beneficial impacts on major game species. Habitat would be preserved, and all uses and activities in wilderness would be subject to the provisions of the Wilderness Act, including the use of the minimum requirements process. This would likely result in greater protection of habitat for major game species; however, compared to the no-action alternative and the fact that eligible land in the Addition must be maintained to preserve its wilderness characteristics and its eligibility as wilderness, the beneficial impact would be negligible.

Limited NPS administrative ORV use would continue to affect game species, potentially causing displacement and avoidance of certain areas within the Addition. The impact would be long term, minor, adverse, and localized.

Collectively, impacts on major game species under alternative F would be long term, minor, adverse, and mostly localized.

Cumulative Impacts. Cumulative impacts under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would reduce the adverse impacts of off-road vehicles on major game species in the region — a beneficial impact. Eliminating some and designating new ORV trails would make ORV noise and movement more predictable, thereby displacing animals away from travel corridors but reducing the impacts on wildlife habitat and game populations.

Conducting education, best management practices, research, and mitigation called for in the ORV plan would also limit impacts on wildlife. Adverse impacts on major game species would still occur from ORV use in the original Preserve, but the effects on the species from the actions in the 2000 ORV plan would be less than with no ORV management. Overall, the impact of implementing the ORV plan on major game species would be long term, minor, and beneficial.

Implementation of future oil and gas proposals could have adverse impacts on major game species in the Addition. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter wildlife habitat. The impacts of these activities would be reduced because NPS approval of the operations plan would require mitigative measures. Adverse impacts could include flushing and displacement of game species. Short-term impacts on major game species would be adverse, moderate, and localized; long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect vegetation communities and in turn wildlife habitat. The impact on the major game species is unknown, but restoring natural conditions is expected to have a long-term, minor, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. The loss of natural areas and the increasing urbanization of the region have led to a loss of wildlife habitat. The major game species are considered generalists and have demonstrated their resiliency and ability to adapt to

changing conditions. Within the region, the three species (deer, hogs, and turkey) are widespread. However, continued urbanization has fragmented remaining natural areas and increased the risks and threats to these species, including automobile collisions, exotic species, and pathogens. The impact of these activities on the major game species is expected to be long term, minor to moderate, and adverse.

Collectively, beneficial impacts on major game species would accrue from ORV management and ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to major game species in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative F would contribute an appreciable beneficial increment to this cumulative impact.

Conclusion. Impacts on major game species under alternative F would be long term, minor, adverse, and mostly localized.

There would be a long-term, minor, adverse cumulative impact on the major game species. The actions contained in alternative F would contribute an appreciable beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of the major game species in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

WILDERNESS RESOURCES AND VALUES

Analysis

Under alternative F, the wilderness resources and values of the Addition would be enhanced and protected compared to the no-action alternative. Ongoing NPS resource management activities, as well as natural reclamation processes, would continue to improve the long-term naturalness of the Addition, but could cause some short-term adverse impacts on soundscapes and visitor opportunities from restoration actions. Several man-made features and sites (Nobles Grade and Carnestown facilities) would be removed, improving natural hydrologic function and permanently removing remnants of man's imprint on the land, a beneficial impact. Because no public ORV use would be allowed, fragmentation of habitats would be minimized and the current condition of the natural soundscape would be preserved. Opportunities for solitude and primitive and unconfined recreation would continue to be preserved and available. Hunting, frogging, and fishing would be allowed but would be accommodated by walk-in access only.

Approximately 71,260 acres of the Addition would be proposed for designation as wilderness (100% of those lands considered eligible under the wilderness study and 48% of the Addition's total acreage). The special status and protection afforded to these lands under the Wilderness Act would preserve their wilderness resources and values in perpetuity — a beneficial impact. The portion of the Addition south of U.S. 41 would be managed consistent with adjacent designated "marine" wilderness in Everglades National Park.

Overall, the impacts on wilderness resources and values would be long term, major, beneficial, and Addition-wide.

Cumulative Impacts

Cumulative impacts on wilderness resources and values under alternative F would generally be the same as under the no-action alternative. Implementation of the 2000 *Recreational Off-road Vehicle Management Plan* within the original Preserve would minimize the effects of off-road vehicles on wilderness resources and values by reducing the potential for the dispersal and establishment of exotic plants, a beneficial impact. The impact on natural soundscapes resulting from the management of off-road vehicles in the original Preserve would be negligible because approximately the same number of off-road vehicles would be using the original Preserve and in roughly the same areas. Consequently, impacts on a visitor's wilderness experience (freedom and natural sights and sounds) resulting from implementing the 2000 ORV plan would be negligible. Impacts on wilderness resources and values in the region would be negligible.

Implementation of future oil and gas proposals could have adverse impacts on wilderness resources and values. If such proposals included using off-road equipment and constructing roads and pads, this would create human disturbances and alter natural habitats. NPS approval of the operation plan would require mitigative measures to eliminate or reduce the impact of activities on natural resources. Short-term impacts on wilderness resources and values would be adverse, moderate, and localized; residual long-term impacts would be adverse, minor, and localized.

The south Florida ecosystem restoration project includes several proposals for restoration of surface water flow within the region. The proposals would improve sheet flow and hydrologic connectivity, which would affect natural communities. Restoring natural conditions is expected to have a long-term, moderate, beneficial impact.

Regional growth and development is expected to continue and result in an increase in the conversion of natural lands to development in the general area. Increasing urbanization, fragmentation of habitat, and the loss of natural areas have led to the degradation of natural resources, ecosystem function, and natural soundscapes in the region. The impact of these activities on wilderness resources and values is expected to be long term, moderate, and adverse.

Collectively, beneficial impacts on wilderness resources and values would accrue from ecosystem restoration projects. Adverse impacts would be expected from oil and gas operations and regional growth and development. Overall, the effects of the projects discussed above would likely be adverse to wilderness resources and values in the region.

When the likely effects of implementing the actions contained in alternative F are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative F would contribute a modest beneficial increment to this cumulative impact.

Conclusion

Impacts on wilderness resources and values under alternative F would be long term, major, beneficial, and Addition-wide.

There would be a long-term, minor, adverse cumulative impact on wilderness resources and values in the region. The actions contained in alternative F would contribute a modest beneficial increment to this cumulative impact.

Impacts from actions contained in this alternative would not result in impairment of

wilderness resources and values in the Addition. (See specific definition of impairment in the "Impairment of Addition Resources" section.)

CULTURAL RESOURCES

Archeological Resources

Analysis. Under alternative F, there would be no impacts on archeological resources resulting from authorized ORV use. No ORV use would be allowed other than NPS administrative use and use by owners of inholdings operating under special permits. Illegal ORV use could displace soils and cause erosion of archeological sites. These impacts would be permanent, adverse, and of minor intensity.

Most of the archeological sites in the Addition are middens. These raised mound areas would be potentially attractive to backcountry users, and trampling or disturbance could result in a loss of surface archeological materials, alteration of artifact distribution, and a reduction of contextual evidence. Continued ranger patrol and emphasis on visitor education would help minimize adverse effects, and any adverse effects would be permanent and of minor intensity.

As appropriate, archeological surveys would precede any ground disturbance for the construction of parking, trailheads, new access points, and the operations facility and national register-eligible or -listed archeological resources would be avoided. No adverse impacts on archeological resources from such construction would be anticipated. If during construction previously unknown archeological resources were discovered, all work in the immediate vicinity of the discovery would be halted until the resources could be identified and documented. If the resources cannot be preserved in situ, an appropriate mitigation

strategy would be developed in consultation with the state historic preservation officer and any associated Indian tribes.

Cumulative Impacts. Current research indicates relatively little disturbance of archeological sites in the Addition resulting from past actions such as hunting and camping, logging, looting, and energy exploration. These impacts would be characterized as permanent and negligible.

Implementation of future oil and gas proposals could have adverse impacts on archeological resources. If such proposals included using off-road equipment and constructing roads and pads, this could affect archeological resources. However, because approval of the operations plan would require mitigation measures to eliminate or reduce the impact of activities on archeological resources, the permanent effect of energy exploration on archeological resources should be negligible.

However, significant archeological resources would likely be avoided to the greatest extent possible, and any impacts on archeological resources would be adverse, permanent, and negligible.

When the permanent, minor, adverse effects of implementing the actions in alternative F are added to the permanent, negligible, adverse effects of other past, present, and reasonably foreseeable actions, there would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative F would contribute a slightly larger increment to the cumulative impact than past, present, and reasonably foreseeable actions.

Conclusion. Under alternative F, impacts on archeological resources would be permanent, adverse, and minor.

There would be a permanent, negligible, adverse cumulative impact on archeological

resources. The actions contained in alternative F would contribute a slightly larger increment to the cumulative impact than past, present, and reasonably foreseeable actions.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative F would generally result in a no adverse effect on archeological resources.

Impacts from actions contained in this alternative would not result in impairment of archeological resources in the Addition.

Ethnographic Resources

Analysis. Under alternative F, there would be minimal potential for impacts to ethnographic resources. No ORV use would be allowed other than NPS administrative use and use by owners of inholdings operating under special permits. The construction of trails for hiking, camping, cycling, and equestrian use, parking, trailheads, and interpretive signs could have impacts on previously unknown ethnographic resources. The National Park Service would work with traditionally associated people to identify ethnographic resources and identify appropriate protection strategies for these resources. Consultation with traditionally associated peoples would precede construction in order to avoid or mitigate impacts resulting from trail, parking, or other facility development. With this mitigation, no adverse impacts on ethnographic resources would be anticipated from construction.

Cumulative Impacts. Although other past, present, and reasonably foreseeable future actions may affect ethnographic resources in the area, alternative F would have no impacts on ethnographic resources and therefore would not contribute to the effects

of other actions. Consequently, there would be no cumulative impacts on ethnographic resources under alternative F.

Conclusion. Under alternative F, there would be no impacts on ethnographic resources. Therefore there would be no cumulative impacts.

Section 106 Summary. After applying the Advisory Council on Historic Preservation's criteria of adverse effects (36 CFR part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that implementation of alternative F would generally result in a no adverse effect on ethnographic resources.

Impacts from actions contained in this alternative would not result in impairment of ethnographic resources in the Addition.

VISITOR USE AND EXPERIENCE

Recreational Opportunities

Motorized Use. ORV access and use would not be allowed under alternative F, with the exception of private property owners with a special use permit and limited NPS administrative use. The development of formal access points at Bear Island Grade and Deep Lake would provide additional pull-offs/stopping points and visitor information and interpretation opportunities for visitors passing traveling on SR 29. Compared to alternative A, an increase in pull-offs/stopping points and visitor information would have a long-term, negligible, beneficial effect.

Nonmotorized Use (including hiking, horseback riding, and bicycling). Most of the Addition would be zoned as either primitive backcountry or would be proposed wilderness. The primitive backcountry zone would be compatible with the legal requirements associated with wilderness. Backcountry hiking, horseback riding, and

dispersed camping would continue to be allowed, and result in beneficial impacts. Hikers and horseback riders would be able to experience a natural landscape and soundscape with opportunities for solitude and primitive and unconfined recreation in the Addition. The Florida National Scenic Trail would be formally designated, and new access points, including parking and visitor information, would be added at Bear Island Grade and Deep Lake. The mile marker 63 access point would be enhanced and would include parking, a trailhead, visitor information and a new NPS operation facility. An increased NPS staff presence would have beneficial impacts by improving visitor safety and increasing opportunities for interpretation. The Deep Lake access point would include the addition of a boardwalk that would provide a safe and comfortable trail to the lake for frontcountry hikers. Existing use of the Nobles Grade as a trail would be eliminated, but would be offset by new trail opportunities and improved access. Existing facilities at Carnestown would also be removed. The expansion of access, recreational opportunities, visitor information and interpretation opportunities, and NPS operations in the Addition would result in long-term, moderate, and beneficial impacts on nonmotorized users.

Existing roads and grades would be open to bicyclists, and new access points with additional visitor information and interpretation opportunities would be developed at mile markers 51 and 63 and Bear Island Grade. The trails leading from them would expand opportunities to explore and enjoy the Addition on a bike. User conflicts with other nonmotorized users at trailheads and along developed trails would be infrequent. Impacts on bicyclists would be long term, minor to moderate, and beneficial because of increased access and opportunity to enjoy the Addition.

Hunting (including fishing and frogging). Nonmotorized hunting would be allowed in

designated areas and seasons as determined by the National Park Service in cooperation with the Florida Fish and Wildlife Conservation Commission. New access points and visitor information and interpretation opportunities at mile markers 51 and 63 and Bear Island Grade would increase accessibility to many parts of the Addition and enhance understanding of the Addition's resources for nonmotorized hunters. Although hunting with the use of an ORV would not be allowed in the Addition, ORV hunters traveling through the Addition would benefit from additional stopping points. Camping access and opportunities would be the same for all nonmotorized users, including hunters as described above. The ability to hunt in the Addition and an increase in the number of access points would have a long-term, minor to moderate, beneficial impact on nonmotorized hunters and a long-term, negligible, beneficial impact on hunters with off-road vehicles because of more pull-offs/stopping points.

Collectively, implementation of alternative F would result in long-term, minor, beneficial impacts on visitor use and experience.

Cumulative Impacts

Implementation of the 2000 *Final Recreational Off-road Vehicle Management Plan* would provide up to 400 miles of designated primary ORV trails, 15 ORV access points, and up to 2,000 annual permits in the original Preserve. This quantity of trail miles and permits provides abundant opportunities for operating off-road vehicles and results in long-term, moderate, beneficial, impacts on ORV users in the local area.

Implementation of future oil and gas proposals for exploration activities could adversely impact the experience of visitors. Noise and human activity from the construction of roads and pads and the use of off-road equipment, if included in the proposals,

could detract from the experience of those seeking a primitive experience and natural soundscape. Impacts resulting from a reduction in the natural settings of the Addition due to the operation of oil and gas equipment would be long term, minor, and adverse in localized areas.

The south Florida ecosystem restoration project is a large-scale effort among public, private, and nongovernmental entities to restore surface water flows within the region. Implementation of the proposals would improve sheet flows and hydrologic connectivity and likely restore natural conditions to the Addition. This effort would enhance the visitor use and experience by providing increased opportunities for wildlife viewing and experiencing natural settings. Opportunities for hunting in the Addition would also improve with more abundant, healthy wildlife populations. Impacts resulting from the effects of a healthy, fully functioning ecosystem would be long term, moderate, beneficial, and regionwide.

Regional growth and development would be expected to result in increased visitation to the Addition. More visitations over time might result in increased congestion and user conflicts at access points and along trails. Resulting impacts from growth and development would be long term, minor to moderate, and adverse.

Implementation of the *Commercial Services Plan* will initially only affect the original Preserve. The Addition will be addressed in an addendum to the *Commercial Services Plan* after the completion of this *General Management Plan* for the Preserve Addition. The *Commercial Services Plan* proposes to enhance the original Preserve's visitor services through the development of one or more new facilities — a new backcountry camping complex; hunting and fishing guides; buggy, van, and hiking tours; boat and bicycle rentals; and expanded oppor-

tunities for birding, wildlife viewing, and photography. Enhanced and expanded opportunities in the Preserve, before an addendum to include the Addition, would increase visitation and might result in increased congestion and user conflicts. Impacts resulting from increased visitation and congestion at access points would result in long-term, minor, adverse impacts on visitors. When the Addition is addressed in an addendum, visitor opportunities to explore and use the Addition could be expanded, but only minimally given the lack of motorized access. If so, impacts from implementing the *Commercial Services Plan* in the Addition would be long term, negligible, and beneficial as a result of expanded opportunities.

Combining the likely effects of implementing alternative F with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative impact on visitor use and experience in the Addition would be long-term, minor, and beneficial. The actions contained in alternative F would contribute an appreciable increment to this cumulative impact.

Conclusion

Under alternative F recreational ORV riding and ORV hunting opportunities would be unavailable, whereas designated nonmotorized access and opportunities would increase. Collectively, the resulting impacts on visitor use and experience would be long term, minor, and beneficial.

The cumulative impact on visitor use and experience in the Addition would be long-term, minor, and beneficial. The actions contained in alternative F would contribute an appreciable increment to this cumulative impact.

SOCIOECONOMIC ENVIRONMENT

Analysis of economic impacts under alternative F were based on projected increases in visitation to the Preserve (including the Addition) (which in turn would affect visitor spending patterns), as well as estimated one-time capital expenditures because of construction activity. A total of 18,656 new visitors were estimated to visit the Preserve each year as a result of implementing this alternative. Of this total, it was assumed that 3,918 were local visitors, 7,089 were non-local day visitors, 5,224 were motel visitors, and 2,425 were campers. In terms of capital expenditures, it was estimated that alternative F would produce \$4.9 million in total construction costs.

Local Economy

Employment. The long-term impacts on employment as a result of implementing alternative F would be the creation of 19 new jobs (17 direct and two indirect) in Collier County. This additional employment would generate a total labor income of \$285,000 annually (covering wages, salaries, and payroll benefits), representing \$216,000 in direct labor income effects as a result of new job growth and \$69,000 in indirect labor income effects from new job growth in tourism-related industries. Approximately half of this direct employment would be attributable to increases in staff needed to operate and maintain new facilities, trails, and services in the Addition; the remainder of new jobs would be created at businesses that cater to tourist-related activities. Indirect employment increases would be found in firms that support tourist-related businesses, as well as in firms that hire additional staff because of changes to direct employment spending. Because employment in Collier County is approximately 140,184 (2006 estimate) these additional jobs would only increase county employment by .01%. Consequently, as a result of alternative F,

long-term impacts related to employment would be localized, negligible, and beneficial.

In terms of short-term impacts, approximately 37 temporary jobs would be created due to construction activity in the Addition, generating about \$1.1 million in labor income. Most direct employment would be temporary labor during the construction period. Secondary employment increases would be the result of staffing increases in industries that provide goods and services to the construction sector as well as from businesses that hire additional employees as a result of changes in direct employee spending. The temporary jobs only represent a .02% increase in county employment. Consequently, as a result of alternative F, short-term impacts related to employment would be localized, negligible, and beneficial.

Housing. Similar to alternative B and the preferred alternative, long-term housing impacts would be minimal due to such a small increase in employment, and if felt at all, would likely be concentrated in the Naples and Marco Island areas. Consequently, the long-term impacts related to housing would be localized, negligible, and beneficial.

Short-term impacts from construction activity would also likely be minimal compared to total housing impacts at the county level. Although specific areas such as Naples and Marco Island might have a temporary increase in residential housing demand, such effects would not be felt throughout the rest of the county. Consequently, short-term impacts related to housing would be localized, negligible, and beneficial.

Sales. Long-term sales impacts, as a result of increased visitor spending under alternative F, would generate a total of \$839.0 million annually in taxable sales of goods and

services by businesses in Collier County. This represents the smallest increase in county sales of all the alternatives (aside from alternative A which would have no impact at all). Most businesses realizing these financial gains are within tourist-related industries, such as retail, arts, entertainment, recreation, accommodation and food services. As a total of Collier County's annual taxable sales, estimated to be more than \$6.10 billion, such a change roughly translates into a .01% increase. Consequently, the long-term impacts related to sales under alternative F would be localized, negligible, and beneficial.

Short-term sales impacts related to construction activity would also be positive. Total annual sales under alternative F were estimated to be \$3.1 million, with \$2.5 million (80%) of that amount attributable to transactions occurring within Collier County. Most direct sales would be linked to construction-related businesses, with indirect sales linked to industries that support the construction industry as well as spending by construction workers. Consequently, short-term impacts related to sales under alternative F would be localized, negligible, and beneficial.

Tribal Impacts. In qualitatively assessing long-term economic impacts to the Miccosukee and Seminole tribes, both reservations would realize some positive long-term benefits under alternative F. Increased visitation to the Preserve as a result of this alternative would likely generate a small to moderate boost in sales of tourist-related goods and services provided at these reservations. However, the magnitude of such gains is based on reasonable speculation due to the limited amount of data available on the tribes' economic activities. It can be assumed that any economic benefits realized under this alternative would be less than the gains realized under alternatives B and the preferred. This is in part because there would be no new partnership oppor-

tunities in the Addition under this alternative and the tribes would not realize any benefits as third-party vendors. Consequently, long-term impacts related to economic activities under alternative F would be localized, negligible to moderate, and beneficial.

New construction activity in the Addition would generate temporary construction jobs. Additional construction workers in the area would likely increase visitation to the two reservations, leading to an increase in the sales of tourist-related goods and services. Positive affects would likely be less under this alternative than under alternatives B and the preferred. Consequently, short-term impacts related to economic activity under alternative F would be localized, negligible to moderate, and beneficial.

Collectively, the long-term and short-term impacts resulting from implementing alternative F would be localized, negligible, and beneficial.

Cumulative Impacts

The action area for evaluating cumulative impacts on the socioeconomic environment is Collier County. The likely effects of implementing the actions contained under alternative F, in combination with to the effects of other past, present, and reasonably foreseeable actions are described below.

The implementation of the *Final Recreational Off-Road Vehicle Plan*, which provides for a maximum of 2,000 permits, 15 access points, and 400 miles of designated trails, has a strong likelihood of attracting new visitors and locals to the Preserve. Such an increase in Preserve visitation would translate into greater visitor spending in the area, resulting in positive long-term gains for Collier County in terms of employment, housing, and taxable annual sales, as well as increased economic activity for the Miccosukee and Seminole tribes. However, relative to the

economy of the entire county, long-term economic impacts would likely be minimal. Short-term impacts as a result of one-time capital expenditures from building ORV trail access, facilities, and other structures are also likely to be minimal relative to the overall level of construction activity within the county. As a result, both long-term and short-term cumulative impacts would be localized, negligible, and beneficial.

Although the *Commercial Services Plan* does not include the Addition, social and economic impacts to the county as a whole would be positive due to increased visitation and visitor spending in the area, and expansion of facilities, services, and recreational opportunities in the Preserve. In particular, the implementation of the *Commercial Services Plan's* preferred alternative, which includes the potential to develop two new visitor facilities, partnership agreements for offering a variety of guided tours and equipment rentals, and the creation of a back-country camping complex, could translate into moderate long-term gains in visitor spending at the county level. Depending on the level of construction activity generated from implementation of the *Commercial Services Plan*, short-term impacts could be substantial at the county level. As a result, both long-term and short-term cumulative impacts would be localized, negligible to moderate, and beneficial.

The potential exists for exploration activities, as proposed under the oil and gas plan, to reduce visitation in the Preserve due to environmental disruptions from the use of off-road equipment and the development of roads and pads for oil and gas exploration. Due to multiplier effects, long-term impacts from reduced visitation could result in reductions in county employment, housing, and sales, as well as reduced economic activity for the Miccosukee and Seminole tribes. However, such effects will likely be minimal in relation to the entire county economy. Short-term impacts from

construction could be both positive and substantial, depending on the level of construction and percentage of that economic activity that remains within the county. Long-term impacts would be localized, negligible, and adverse, while short-term impacts would be localized, negligible to moderate, and beneficial.

The south Florida ecosystem restoration projects would likely attract additional visitors to the region due to the rehabilitation of natural ecosystems within and near the Preserve through various water system improvements. In particular, the Big Cypress Interceptor Modification Plan would likely increase use across a variety of recreational activities offered in the Preserve, particularly for visitors interested in enjoying the natural habitat and wildlife. Collier County would also benefit from restoration efforts in nearby sites, such as Everglades National Park, because additional visitors may pass through or decide to make an additional stop at the Preserve. Because these restoration projects are relatively large in scale, are occurring at multiple sites, and are at a regional level, the long-term impacts on county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes could be substantial. Short-term impacts would also be positive because capital expenditures on water infrastructure improvements (estimated at multi-billions of dollars) would likely generate substantial temporary gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. As a result, both long-term and short-term impacts would be localized, moderate, and beneficial.

The development of lands northwest of the Addition could increase Preserve visitation and result in positive long-term economic impacts at the county level. In particular, the availability of greater residential housing and the building of a new private and state university in the area could greatly increase

the number of residents living in Collier County. The provision of additional services, goods, and facilities would also likely be expanded to accommodate these new residents, which in turn would also attract a greater number of visitors from outside the region. As a result, increased local and visitor spending would produce long-term positive gains to county employment, housing, and sales, as well as economic activity for the Miccosukee and Seminole tribes. Short-term economic impacts could be substantial at the county level, because large scale construction activity would be needed to support new residents, the universities, and visitors. As a result, long-term and short-term impacts would be localized, moderate to major, and beneficial.

Combining the likely effects of implementing the no-action alternative with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative long-term and short-term socioeconomic impacts would be localized, moderate to major, and beneficial. The preferred alternative would represent a very small increment to this cumulative impact.

Conclusion

Because of changes in visitor spending under alternative F, long-term and short-term impacts to the socioeconomic environment would be localized, negligible and beneficial. As a result, county employment, housing, sales, and economic activity associated with the Miccosukee and Seminole tribes would realize some positive gains, although such increases would be minimal when viewed at a county level.

In terms of cumulative effects, long-term and short-term impacts would be localized, moderate to major, and beneficial. Alternative F would contribute a very small increment to this total cumulative impact.

NPS OPERATIONS AND MANAGEMENT

Analysis

Alternative F proposes an operations center and employee housing to be located in the Addition. An operations center, which would station employees and equipment in the Addition, would increase operational efficiency and reduce response time for fire, law enforcement, maintenance, and interpretation staff. Currently, staff must travel a minimum of an hour to reach the Northeast Addition from the original Preserve. Employee housing for three law enforcement and two fire division staff would increase efficiency and reduce response time for fire and enforcement scenarios. Alternative F also proposes interpretive panels to orient and educate visitors to the Addition, which would reduce staff time required to orient visitors. These new facilities would result in moderate, long-term, beneficial impacts on NPS operations.

However, the new facilities must be built, and oversight of design and construction processes would require managerial and contracting staff time. Additionally, new facilities must be maintained, and this would burden maintenance staff. Formalized trailheads at Deep Lake and Bear Island Grade and interpretive panels are also proposed for development in the Addition. Managing the Addition would require time and effort from administrative, visitor and resource protection, interpretation, resource management, and fire division staff. Maintenance and resource management in areas proposed as wilderness would require the use of the minimum requirements process, which would require staff time and, in some cases, could increase the cost of management actions. Increased visitation due to the new facilities would also require time from all staff divisions. Therefore, management of the Addition and construction and maintenance of facilities under alternative F

would result in moderate, long-term, adverse impacts on NPS operations.

Cumulative Impacts

Expansion of nearby communities, including the towns of Ave Maria and Big Cypress, Everglades ecosystem restoration activities, and oil and gas exploration activities, would require time and attention by senior NPS staff. The expansion of commercial services offered in the original Preserve would require time from staff spent managing the commercial service authorizations and leases. Cooperation and coordination with neighboring agencies and entities regarding planning, land use resources, and development proposals near the preserve also would require substantial amounts of staff time and result in minor to moderate long-term adverse impacts. Alternative F would place an additional burden on NPS staff, but this burden would be lessened with adequate staffing. Combined with other past, present, and reasonably foreseeable future impacts, alternative F would result in minor to moderate, long-term, beneficial cumulative impacts on NPS operations. Although the extra staff time required to manage the Addition facilities and actions taken by other entities would have adverse impact, the new facilities would play a much larger role in the overall impact by allowing staff to be located within the Addition and respond to operational and visitor needs in an efficient and timely manner. Alternative F's proposed actions would contribute a modest increment to these cumulative impacts.

Conclusion

Operational efficiencies achieved through development of new facilities in the Addition, along with the increased staffing burdens associated with managing those lands and constructing and maintaining new facilities, would have overall moderate, long-

term, beneficial and adverse impacts on NPS operations.

The cumulative impacts of alternative F and other actions would be minor to moderate, long term, and beneficial. Alternative F's proposed actions would contribute a modest increment to these cumulative impacts.

EFFECTS ON ENERGY REQUIREMENTS AND CONSERVATION POTENTIAL

The construction of new facilities under alternative F, such as trails, trailheads, access points, and an operations center, would result in more energy use and consumption; however, the projects would follow NPS policies concerning sustainability and energy conservation to minimize the overall energy requirements. The carbon footprint of the facilities would be minimized through appropriate design and the use of green technology to the greatest extent possible. To maintain, operate, and protect the facilities, NPS travel to and within the Addition also would increase, and the increased travel would increase energy consumption. The fuel and energy consumed by visitors traveling to and within the Addition would increase because visitation would be expected to increase slightly as a result of the Addition being open to the public and the offering of new nonmotorized recreational opportunities.

UNAVOIDABLE ADVERSE IMPACTS

Human use and the construction of new facilities under alternative F would result in minor adverse impacts on natural resources in some areas throughout the Addition. The impacts on wildlife, vegetation, and the visitor experience, which are discussed in detail under each of the impact topics, would be unavoidable. Although all these impacts

would be unavoidable, mitigation to reduce them would be carried out where possible.

IRRETRIEVABLE OR IRREVERSIBLE COMMITMENTS OF RESOURCES

The additional energy requirements identified above would result in an irreversible commitment of resources. In addition, there would be a commitment of material used to construct new visitor facilities such as trailheads and access points and the operations center at mile marker 63.

RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

As in alternative A, most of the Addition would be protected in a natural state and

would maintain its long-term productivity under alternative F. Only a small percentage of the Addition would be converted to development. No actions in this alternative would jeopardize the long-term productivity of the environment. Short-term impacts might result from construction, such as local air and water pollution, as detailed in the analysis of specific impact topics. Noise and human activity from construction and restoration might displace some wildlife from the immediate area. However, these activities would not jeopardize the long-term productivity of the environment.



CHAPTER 5

CONSULTATION AND COORDINATION

PUBLIC AND AGENCY INVOLVEMENT

This *Final General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* for the Big Cypress National Preserve Addition was based on input from the National Park Service, other agencies, American Indian tribes, and the public. Consultation and coordination among these groups were vitally important throughout the planning process. The public had several available avenues to provide comments during the development of the plan, including public meetings, postal mail, email, and the Internet.

PUBLIC MEETINGS AND NEWSLETTERS

Public meetings and seven newsletters were used to keep the public informed and involved in the planning process for the Addition. A mailing list was compiled that consisted of governmental agencies, nongovernmental organizations, businesses, legislators, local governments, and interested citizens.

The notice of intent to prepare an environmental impact statement was published in the *Federal Register* on June 12, 2001.

The first newsletter concerning the general management plan for the Addition was issued in July 2001, and it outlined the purpose of the Preserve and the Addition. It also stated the Addition's significance, including its natural and cultural heritage, and outlined the planning process for completing the general management plan. It urged the public to actively participate in the process by commenting on the purpose and significance statements and by attending one of the four public scoping meetings held during the summer of 2001 in Everglades City, Naples, Miami, and the Big Cypress Seminole Reservation.

The public was engaged in the project as shown by the number of responses received following the release of the first newsletter. Approximately 90 people attended the scoping meetings, and more than 100 comments and suggestions were received from individuals, organizations, and agencies.

Comments received following publication of the first newsletter focused on the Addition's role in the Comprehensive Everglades Restoration Plan (CERP); the need to implement science-based resource management; restoration of previously disturbed lands; and the need to address exotic species, fire, threatened and endangered species recovery, and protection of contemporary cultural sites.

The planning staff paid close attention to comments and suggestions received. In addition, the Addition's enabling legislation, legislative history, and federal law and policy were carefully reexamined. This process resulted in the revision of the purpose and significance statements proposed in the first newsletter.

The second newsletter was issued in August 2002 and included revised purpose and significance statements, an overview of the issues and comments received in response to the first newsletter, and a description of the next steps for the project.

The third newsletter, issued in October 2005, outlined the preliminary alternatives and management zones for the Addition. Three public meetings were held in December 2005 in Everglades City, Naples, and Weston to discuss and receive feedback on the preliminary alternatives. A total of 794 individuals provided comments in response to this newsletter, with more than 70% of the responses attributed to commenters from outside Florida. The comments indicated

support for both ends of the spectrum of preliminary alternatives — from full motorized ORV access to little or no ORV access.

A fourth newsletter was released in May 2006 outlining the need for a wilderness study and off-road vehicle management plan for the Addition. The expansion of the scope of the planning process was a result of the strong response received from interested individuals, organizations, and public agencies as well as legal requirements. The notice of intent to expand the scope of the plan was published in the *Federal Register* on April 25, 2006. Three public meetings were announced and held in May 2006 in Everglades City, Naples, and Fort Lauderdale to gather comments on expanding the scope of the project to include the additional planning elements.

A fifth newsletter was released in April 2007 that outlined the revised preliminary alternatives and management zones for the Addition, incorporating proposed wilderness and ORV trails. Three public meetings were held in May 2007 in Everglades City, Naples, and Weston to gather input concerning the revised preliminary alternatives. Public interest was again significant, with about 4,800 responses. Common issues and concerns included impacts of off-road vehicles on wildlife and vegetation; level of ORV access provided for recreational riding, hunting, and game management; trailhead parking capacities; impacts on the Florida panther from motorized use at Bear Island; and spending on proposed visitor facilities.

A sixth newsletter published in February 2008 provided a status update, with emphasis on how the general management plan would address access to the Addition from I-75.

A seventh and final newsletter was issued in July 2010 updating the public on the next steps of the project and the expected dates for release of the final management plan and the agency's "Record of Decision" on the project.

RELEASE OF THE DRAFT GENERAL MANAGEMENT PLAN / WILDERNESS STUDY / OFF-ROAD VEHICLE MANAGEMENT PLAN / ENVIRONMENTAL IMPACT STATEMENT

The *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* was released to the public on July 10, 2009. Four public meetings/wilderness hearings were held across south Florida to review the draft plan and receive public input: August 10, 2009, in Miami, Florida; August 11, 2009, in Naples, Florida; August 12, 2009, in Everglades City, Florida; and September 22, 2009, in Weston, Florida. The public comment period closed on September 30, 2009.

A total of four wilderness hearings were held in the project area. These hearings were held in conjunction with the public meetings for the draft plan, but included a specific opportunity to provide input and comments on the wilderness study and proposal. A total of 104 individuals spoke and provided oral comments. A hearing officer presided over the hearings and moderated the public comment session. A certified court reporter attended all four meetings, recorded all testimony, and prepared an official transcript of the meetings.

A total of 16,912 pieces of correspondence about the draft plan were received from individuals, organizations, tribes, and agencies:

- 15,481 pieces of correspondence were received from individuals responding to an e-mail action alert produced by the National Parks Conservation Association. Of these, 14,326 were form letters (where the text content was the same as what was included in the action alert message) and 1,155 were personalized.
- 778 form letters were received from individuals using language prepared

by the Big Cypress Sportsmen's Alliance.

- 653 comments were received via the NPS online comment system (Planning, Environment, and Public Comment (PEPC), through e-mail, or from comment forms or letters submitted via postal mail.

All comment letters received from agencies and organizations, as well as the transcripts from the wilderness hearings, are posted to the PEPC Internet site (<http://parkplanning.nps.gov/bicy>) for public inspection. A report was also prepared that summarized the comments that were received during the review period for the draft plan; it was posted to the PEPC site in December 2009.

RELEASE OF THE FLOODPLAINS STATEMENT OF FINDINGS

To comply with Executive Order 11988, "Floodplain Management" and NPS Director's Order 77-2, a "Floodplain Statement of Findings" was prepared and released to the public on May 11, 2010. The document was posted to the PEPC site and was available for review and comment for three weeks. A direct mailing was sent to all parties that received a copy of the draft plan informing them of the availability of the "Floodplain Statement of Findings" and inviting their review and comment. A news release was also prepared and was issued.

No comments were received on the document, and it was approved by the NPS southeast regional director on June 22, 2010 (see appendix D).

CONSULTATION WITH AGENCIES, TRIBES, AND ORGANIZATIONS

National Historic Preservation Act Section 106 Consultation

Federal agencies that have direct or indirect jurisdiction over historic properties are required by Section 106 of the National Historic Preservation Act of 1966, as amended (16 *United States Code* 270, et seq.) to take into account the effect of any undertaking on properties eligible for listing in the National Register of Historic Places. To meet the requirements of 36 *Code of Federal Regulations* 800, the National Park Service mailed a letter to the Florida state historic preservation officer on February 22, 2001, inviting their participation in the planning process.

The National Park Service determined that the draft plan would have no adverse effect on cultural resources and mailed a copy of the draft management plan to the state historic preservation officer with a request for written concurrence with that determination.

In a letter dated September 18, 2009, from the Florida Department of State, Division of Historical Resources, the state historic preservation office stated that cultural and historical resources were adequately addressed by the draft plan and that they agreed that the preferred alternative has the potential to adversely affect cultural resources (see appendix C). Therefore, continued consultation will be required before the initiation of ground-disturbing activities.

Endangered Species Act Section 7 Consultation

During the preparation of this document, NPS staff coordinated with the U.S. Fish and Wildlife Service (USFWS), Vero Beach, Florida office, and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA-NMFS). A

letter was sent to the U.S. Fish and Wildlife Service on August 21, 2001 (see appendix C), initiating informal consultation and requesting a species list.

The USFWS South Florida Ecological Services Office provided comments throughout the planning process, including a response in June 2007 on the revised preliminary alternatives issued in newsletter #5. The list of threatened and endangered species included in this plan was compiled using lists and information received from the U.S. Fish and Wildlife Service and the National Marine Fisheries Service.

In accordance with the Endangered Species Act and relevant regulations at 50 CFR Part 402, the National Park Service determined that the preferred alternative is *likely to adversely affect* four listed species — the Florida panther, red-cockaded woodpecker, Everglade snail kite, and eastern indigo snake; and *not likely to adversely affect* another three listed species — the West Indian manatee, wood stork, and American crocodile. NPS managers sent a copy of the draft management plan to the U.S. Fish and Wildlife Service with a request to initiate formal consultation. The letter included references to the sections and pages of the draft plan that contain a description of the impacts on listed species and will serve as the “Biological Assessment.”

The National Park Service determined that the draft plan would have no effect on listed species that are under the jurisdiction of the National Marine Fisheries Service and also mailed a copy of the draft plan to the National Marine Fisheries Service in accordance with section 7 (a)(2) of the Endangered Species Act.

In addition, the National Park Service has committed to consult on future actions conducted under the framework described in this management plan to ensure that such actions are not likely to adversely affect threatened or endangered species.

In a letter dated October 9, 2009, the USFWS South Florida Ecological Services Office stated that the draft plan did not contain sufficient analysis of the potential effects of the alternatives on federally listed species, especially the Florida panther (see appendix C). They indicated that additional information was needed for the plan and the “Biological Assessment.” In particular, they indicated that three species, the Everglade snail kite, eastern indigo snake, and American crocodile could be affected by the actions included in the plan and that these species should be included in the environmental impact analysis and “Biological Assessment.”

In response to their letter, the National Park Service has continued to consult with the U.S. Fish and Wildlife Service on information needs for appropriate analysis of effects on federal threatened and endangered species. In particular, the two agencies have been working collaboratively to evaluate the applicability of certain studies and data to be used in evaluating impacts on the Florida panther. A study is to be completed by the University of Florida evaluating historical data and the correlation between ORV use and panther impacts. Another analysis being done using GIS evaluates the relationship between the NPS proposed ORV trail system and panther habitat. Both studies are being completed to assist the U.S. Fish and Wildlife Service in evaluating effects on the Florida panther and developing their “Biological Opinion” (see chapter 4 for more information). Several conference calls and in-person meetings have been conducted with the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission since the release of the draft plan to discuss data needs and potential improvements to the plan. USFWS staff also accompanied NPS staff on field trips to further evaluate the trail system.

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their

comments, the NPS response, and how the document was revised to address their concerns.

National Environmental Policy Act (NEPA) and Clean Air Act Compliance

The Environmental Protection Agency (EPA) has the authority and duty to evaluate federal agency compliance with the National Environmental Policy Act and the Clean Air Act. A copy of the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* was mailed to the Environmental Protection Agency with a request for their review and concurrence.

In a letter dated September 3, 2009, the Environmental Protection Agency, Region 4, stated that the draft plan did not contain sufficient information to fully assess the environmental impacts that should be avoided in order to protect the environment (see appendix C). They rated the draft plan EC-2 (Environmental Concerns, additional information requested) and indicated that additional information should be included in the final plan.

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their comments, the NPS response, and how the document was revised to address their concerns.

Coastal Zone Management

The Coastal Zone Management Act was enacted in 1972 to preserve, protect, develop, and where possible, to restore and enhance the resources of the nation's coastal zone. The act requires federal agency activities (i.e., "direct" agency activities) to be fully consistent with a state's approved coastal

management program, unless full consistency is prohibited by federal law. The Florida coastal management program was approved by the National Oceanic and Atmospheric Administration in 1981 and is codified at Chapter 380, Part II, F.S. The Florida Coastal Management Program consists of a network of 23 Florida statutes that are administered by eight state agencies and five water management districts. This framework allows the state to make integrated, balanced decisions that ensure the wise use and protection of the state's water, property, cultural, historic, and biological resources; protect public health; minimize the state's vulnerability to coastal hazards; ensure orderly, managed growth; protect the state's transportation system; and sustain a vital economy.

The National Park Service proposes no development in any area of the Addition that would conflict with the coastal zone management program.

A copy of the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* was mailed to the Florida State Clearinghouse with a request for their review and concurrence.

In a letter dated September 29, 2009, the Florida Department of Environmental Protection, on behalf of all state agencies that reviewed the draft plan, stated that the draft plan was inconsistent with the state's coastal management program (see appendix C). They stated that for the plan to receive a "consistency determination," two specific conditions must be met.

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their comments, the NPS response, and how the document was revised to address their concerns.

The State of Florida

The Preserve's enabling legislation, PL 93-440, as amended by the Addition Act, PL 100-301, requires the National Park Service to consult and cooperate with the state of Florida on such issues as implementation of hunting restrictions and the establishment of recreational access points into the Preserve along I-75. During preparation of this document, NPS staff conducted several meetings with the Florida Department of Transportation and the Florida Fish and Wildlife Conservation Commission (FFWCC) to gather input and to ensure that facilities and activities contemplated in the alternatives were consistent with the plans, standards, and regulatory requirements of these agencies. The 1990 *I-75 Recreational Access Plan* called for two access points in the Addition, and NPS staff met several times with the transportation department concerning planning of these sites to ensure consistency with that plan and the alternatives described in this document. Because hunting is mandated by the enabling legislation and regulated by the Florida Fish and Wildlife Conservation Commission, close consultation with that agency was essential to consider expanding hunting opportunities in the Addition. The Florida Fish and Wildlife Conservation Commission was regularly briefed on the status of this management plan at commission meetings, and a two-day workshop attended by several state and regional FFWCC representatives was held at the Preserve in November 2008 to review and comment on the draft document.

A copy of the *Draft General Management Plan/Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* was mailed to the Florida State Clearinghouse with a request for their review and concurrence. The draft plan was distributed to the following state agencies for review: Department of Environmental Protection; Department of Agriculture and Consumer Services, Division of Forestry; Fish and Wildlife Conservation Commission;

Department of Community Affairs; South Florida Water Management District; Southwest Florida Regional Planning Council; and the Department of State.

In a letter dated September 29, 2009, the Florida Department of Environmental Protection, on behalf of all of the state agencies that reviewed the draft plan, stated that the draft plan was inconsistent with the department's statutory authorities under Chapters 253, 259 and 373 of Florida Statute. (see appendix C). The letter included a number of concerns, requests, and recommendations that reflect the consensus position of the state on this project.

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their comments, the NPS response, and how the document was revised to address their concerns.

Consultation with Native Americans

The National Park Service recognizes that indigenous peoples may have traditional and contemporary interests and ongoing rights in lands now under NPS management, as well as concerns and contributions to make for the future via the scoping process for general management plans and other projects. Related to tribal sovereignty, the need for government-to-government Native American consultations stems from the historic power of Congress to make treaties with American Indian tribes as sovereign nations.

Consultations with American Indians and other Native Americans, such as Alaska Natives and Native Hawaiians, are required by various federal laws, executive orders, regulations, and policies. For example, such consultations are needed to comply with Section 106 of the National Historic Preservation Act of 1966, as amended. Implementing regulations

of the Council on Environmental Quality (CEQ) for the National Environmental Policy Act of 1969), as amended, also call for Native American consultations.

Letters were sent to the Seminole Tribe of Florida, the Seminole Nation of Oklahoma, and the Miccosukee Tribe of Indians of Florida on December 12, 2001, to invite their participation in the planning process. Each tribe was invited to meet at his or her convenience, at a tribally selected place such as the headquarters of the tribe. The purpose of the meeting was to discuss the general management planning process underway and any concerns the tribal government, on behalf of the members of the tribe, might have about protecting, preserving, and managing Big Cypress National Preserve's cultural and natural resources.

The tribes were briefed on the scope of the planning project and the preliminary alternatives by newsletter and follow-up telephone calls soliciting comments. Oral comments by the tribes included recommendations to adopt alternative A with hunting and no proposed wilderness. Conversations have been ongoing throughout the planning process to inform the tribes about the progress of the plan and identify how and to what extent they would like to be involved.

The rights, privileges, concerns, and interests of the Preserve's American Indian neighbors are very important to consider; it is equally important to work out mutually acceptable arrangements on particular issues. The tribes have been kept fully informed throughout the planning process and have been sent all newsletters and a copy of the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement*.

Seminole Tribe of Florida. A number of concerns, requests, and recommendations were stated in a letter dated September 30, 2009, from the law firm of Lewis, Longman &

Walker, P.A. representing the Seminole Tribe of Florida (see appendix C).

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their comments, the NPS response, and how the document was revised to address their concerns.

Seminole Nation of Oklahoma. No comments were received from the Seminole Nation of Oklahoma.

Miccosukee Tribe of Indians of Florida. A consultation meeting was held with the Miccosukee Tribe for this project on September 24, 2009, where several concerns were raised.

The plan has been revised to meet their requirements and respond to their comments and concerns. Please see the next section of this chapter for detailed information on their comments, the NPS response, and how the document was revised to address their concerns.

Communications with Other Native Americans

In addition to consulting with federally recognized tribes, the National Park Service met with the Council of the Original Miccosukee Simanolee Nation, Aboriginal People in September 2009. The National Park Service received and considered comments from the council as well as from the Independent Traditional Seminole Nation of Florida and posted them on the NPS PEPC website.

Other Outreach Efforts

In addition to consultation required by law, Preserve staff conducted outreach with

various stakeholder groups and agencies. In April 2006 Preserve staff convened a focus group meeting attended by representatives of the Florida-based recreational and environmental groups closely involved in the planning process. The purpose was to seek common ground between the polarized groups. In spring 2008 Preserve staff met separately with stakeholder groups, congressional staff, agencies, and tribes, concluding with a joint stakeholder meeting in May 2008. Additional outreach with interested or affected parties

will be continued until the plan is approved and also during its implementation.

FUTURE COMPLIANCE REQUIREMENTS

The National Park Service will comply with all appropriate laws in implementing the preferred alternative. In the following table the specific future compliance requirements of the preferred alternative are listed. Other compliance, as appropriate, is also listed.

TABLE 29: FUTURE COMPLIANCE REQUIRED FOR IMPLEMENTATION OF SPECIFIC ACTIONS UNDER THE PREFERRED ALTERNATIVE

Action	Compliance Requirement
<ul style="list-style-type: none"> • Routinely monitoring and stabilizing archeological sites. • Monitoring cultural landscapes and historic structures to protect, preserve, maintain, and research them. 	<p>These items are programmatically excluded from future Section 106 review and state historic preservation officer consultation.</p>
<ul style="list-style-type: none"> • If eligible for the National Register of Historic Places, discovery of archeological sites that cannot be avoided via surveying new trails or formalizing existing trails. 	<p>Future Section 106 review and state historic preservation officer consultation would likely be necessary and required before construction at the project implementation planning or design stages. Consultations with associated American Indian groups would also be necessary.</p>
<ul style="list-style-type: none"> • I-75 recreational access facility design and levels of ORV use by area 	<p>Before any access facilities are built and open to the public, compliance with Section 7 of the Endangered Species Act would be required for the proposed recreation access points that are included in the preferred alternative. Although NEPA compliance for the I-75 access points was completed in 1991 with the <i>I-75 Recreational Access Plan Environmental Assessment</i>, this Section 7 compliance would include consideration and assessment of appropriate levels of ORV use, by area, within the Addition. Any new research and data regarding special status species, such as the Florida panther, would be incorporated into the Section 7 compliance and access decisions. This compliance would also include consultation with the U.S. Fish and Wildlife Service, the Florida Fish and Wildlife Conservation Commission, and other appropriate resource agencies.</p>

<ul style="list-style-type: none"> • Ground-disturbing activities and construction associated with new trail development, formalizing existing social trails, trailhead and parking lot development, and the development of visitor facilities such as visitor contact stations and interpretive facilities. 	<p>Relevant permits, such as Section 404 permits from the U.S. Army Corps of Engineers, would be required for construction in jurisdictional wetlands.</p> <p>Also, according to NPS policies, the National Park Service would be required to develop a “Wetlands Statement of Findings” that quantifies all wetland impacts from trail and facility development in the Addition. This analysis would be completed before any NPS facilities or trail development were constructed that could affect wetland resources in the Addition. The “Wetlands Statement of Findings” would include a functional analysis of wetland impacts throughout the Addition. As per NPS policy, this analysis would address a wide variety of wetland values and functions (i.e., beyond the areas that are directly dredged or filled, as per Clean Water Act, Section 404 requirements). The “Wetlands Statement of Findings” would also identify all possible impact mitigation measures to be included in facility or trail development. These environmental documents will tier from this management plan and include additional site-specific data needed for impact assessment and mitigation.</p> <p>Threatened and endangered species surveys and coordination with the U.S. Fish and Wildlife Service would be required before, during, and after implementation of new developments within the Addition.</p>
<ul style="list-style-type: none"> • Hunting management in the Addition 	<p>Before the Addition is open for hunting, the National Park Service would develop a hunting management plan that would follow NEPA compliance requirements. The environmental impact analysis in this compliance process would include an assessment of the effects of hunting activities on special status species such as the Florida panther. This would include both the effects of human presence (i.e., hunters dispersed throughout the Addition) and the effects of white-tailed deer management on the panther’s primary food source. Any new research and data regarding special status species, such as the Florida panther, would be incorporated into the hunting management decisions. This NEPA compliance would also necessitate consultation with the appropriate resource agencies. The National Park Service would work closely with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service in the development of the hunting management plan.</p>

COMMENTS ON, CHANGES TO, AND RESPONSES TO COMMENTS ON THE DRAFT PLAN

INTRODUCTION

This section of the plan describes the comments that the National Park Service received on the *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* (the Draft GMP/EIS, DGMP/EIS, the general management plan, the draft EIS, or the draft plan). It includes a list of commenters, an overview of the range of comments received, a summary of the changes and clarifications made to the plan as a result of the comments, and specific responses to substantive comments.

COMMENTERS ON THE DRAFT PLAN

The *Draft General Management Plan / Wilderness Study / Off-road Vehicle Management Plan / Environmental Impact Statement* was made available for public review on July 10, 2009. The public comment period ended on September 30, 2009. The document was sent to about 60 agencies, tribes, organizations, businesses, and elected officials. Other copies were also provided to individuals upon request. The draft plan was also posted on the Internet and distributed at meetings. Nearly 17,000 comments were received.

Federal Government Agencies

The following government agencies submitted comments on the draft plan. Copies of all letters received from agencies are posted to the NPS planning (PEPC) website at <http://parkplanning.nps.gov/bicy>.

Environmental Protection Agency
U. S. Fish and Wildlife Service

American Indian Tribes

The following American Indian tribes submitted comments on the draft plan. Copies of all letters received from tribes are posted to the PEPC website.

Miccosukee Tribe of Indians of Florida
Seminole Tribe of Florida

Comments were also received from the Council of the Original Miccosukee Simanolee Nation, Aboriginal People and the Independent Traditional Seminole Nation of Florida.

State Agencies

The following state government agencies submitted comments on the draft plan. Copies of all letters received from agencies are posted to the PEPC website.

Florida Department of Environmental Protection (Florida State Clearinghouse)

Organizations

The following organizations submitted comments on the draft plan. Copies of all letters received from organizations are posted to the PEPC website.

Allied Sportsmen's Associations of Florida
Audubon of Florida and Collier County
Audubon Society
Big Cypress Sportsmen's Alliance
Collier Sportsmen and Conservation Club, Inc.
Collier Resources Company
Conservancy of Southwest Florida

Council of the Original Miccosukee
Simanolee Nation, Aboriginal People
Defenders of Wildlife
Everglades Coordinating Council
Florida Trail Association
Florida Wildlife Federation
Independent Traditional Seminole Nation
of Florida
Jetport Conservation and Recreation Club
National Parks Conservation Association
National Wild Turkey Federation —
Everglades Longbeards Chapter
National Wild Turkey Federation —
Florida State Chapter
North American Butterfly Association —
Miami Blue Chapter
Pegasus Foundation
Public Employees for Environmental
Responsibility
Safari Club International
Sierra Club
The Future of Hunting in Florida, Inc.
Tropical Audubon Society

Individuals

More than 16,000 individuals provided comments on the draft plan. Copies of all comments received from individuals are posted to the NPS PEPC website.

RANGE OF COMMENTS

A summary of the public comments received on the draft plan was prepared and posted to the PEPC website (at <http://parkplanning.nps.gov/bicy>) in December 2009. This report summarized the range and nature of comments received from individuals, organizations, government agencies, and American Indian tribes.

Commenters expressed both support and opposition to motorized access in the Addition for a variety of reasons. Commonly cited concerns included ORV access and trail opportunities, hunting, ORV administration,

impacts to wildlife including federally listed species, wilderness preservation, exotic species management, and visitor experience. Commenters also expressed both support and opposition to wilderness designation in the Addition. Commonly cited reasons included ORV access, fire management, exotic species management, and opportunities for solitude.

CHANGES AND CLARIFICATIONS TO THE DOCUMENT

Changes to the Alternatives

In response to comments received on the draft plan, the following key changes were made to the alternatives.

1. Wilderness

A final “Wilderness Eligibility Determination” was completed (see appendix B). The amount of wilderness proposed in each of the alternatives was updated based on the findings of this process. Wilderness proposed in the preferred alternative is limited to the Northeast Addition south of I-75 only.

2. ORV Trails and Permits

Additional field investigation of the sustainable ORV trail system was conducted, which resulted in minor changes to the trail system. The number of miles of trail in the preferred alternative was reduced to further limit impacts to sensitive species and their habitats. The number of miles included in alternative B was adjusted to correlate to the number of sustainable trail miles available for ORV use. The number of permits included in alternative B and the preferred alternative was reduced to correspond to the reduction in the number of trail miles included in each of the alternatives.

3. ORV Management and Administration

The user capacity section was revised to better explain and justify the proposed system of indicators and standards.

4. Future Compliance Requirements
Additional details were added to the “Future Studies and Implementation Plans Needed” section, as well as to the table 29 in “Chapter 5: Consultation and Coordination” that describes future compliance requirements so that the public and agencies are clear on what decisions would be made by this plan and which actions would need future compliance (and/or permits).

The next section, “Responses to Comments on the Draft Plan,” includes more detail on specific changes made to the alternatives chapter, including sections and page numbers that were revised.

Changes to the Affected Environment and Environmental Consequences

Changes were made throughout the document to clarify language and respond to questions and concerns that were raised by comments received on the draft plan. Sections that include the most new information include water resources (surface water flows, wetlands, and floodplains), wildlife (protected wildlife species and exotic and nonnative wildlife species), and cultural resources (archeological resources and ethnographic resources). The next section, “Responses to Comments on the Draft Plan,” includes more detail on specific changes made to the “Affected Environment” and “Environmental Consequences” chapters, including sections that were revised.

RESPONSES TO COMMENTS ON THE DRAFT PLAN

All comments submitted by government agencies, American Indian tribes, organizations, and members of the public were carefully reviewed. Substantive comments were identified, and categories were developed to organize similar comments. A

substantive comment is defined by NPS Director’s Order 12 (Section 4.6A) as one that does one or more of the following:

- Questions, with a reasonable basis, the accuracy of information in the environmental impact statement;
- Questions, with a reasonable basis, the adequacy of the environmental analysis;
- Presents reasonable alternatives other than those presented in the EIS; and/or
- Causes changes or revisions in the proposal.

The substantive comments have been summarized below along with NPS responses. The comments are presented as summaries or paraphrases of the original comments.

Comments from, and responses to, government agencies and American Indian tribes are presented first, followed by comments and responses from state agencies, organizations, and individuals. Comments from individuals and nongovernmental organizations are presented and organized by broad categories. The comments included are intended to characterize the concern and sentiment of individual respondents.

Responses to the substantive comments are provided only once. For example, if an individual and an organization raise the same concern or substantive comment, then it is presented only once along with the NPS response.

Agency and tribal letters are reprinted in appendix C.

COMMENTS FROM FEDERAL GOVERNMENT AGENCIES

Environmental Protection Agency (EPA)

1. **Comment:** *“The FEIS should identify how it was determined that 140 miles of ORV trails is*

the least amount necessary in order to provide access throughout the site and still maintain an ecological balance within the Addition. Also, information on the use of the remaining 113 miles of ORV trails located within the Addition should be provided. EPA recommends that any trails not used be restored to its natural community type.”

Response: As stated in the draft plan on page 100, NPS staff evaluated the existing trails in the Addition to determine if they were sustainable for ORV use. NPS staff also considered the presence and needs of sensitive species in the design of the conceptual primary trail system. Based on comments received, the NPS staff reevaluated certain areas of the conceptual trail system and determined that the number of miles of sustainable trails should be reduced to 135. The miles of trails proposed in the ORV trail system were determined by the planning team to meet public access needs while affording necessary environmental protection. The amount of trails included in the preferred alternative was reduced from 140 miles to 130 miles to further minimize impacts on wetlands and sensitive species.

As stated in the draft plan on page 108, the remaining trails that would not be used for public ORV use would be reclaimed (natural elevations and plant communities restored) as funding permits.

2. Comment: *“The DEIS did not include information on efforts taken to avoid or minimize wetland and other waters of the US impacts. EPA requests that the FEIS provide information on measures that have been taken to avoid or minimize onsite waters of the US impacts.”*

Response: Trail siting criteria, as described on page 100 of the draft plan, included avoidance and minimization of impacts on wetlands. Evaluation of

substrate was a component of the trail sustainability evaluation. Impacts on wetlands were further minimized by locating most of the ORV trails in upland areas north of I-75 where the substrate is more suitable for ORV riding. South of I-75, the trail system was limited to existing roads and trails. The NPS planning team evaluated trail conditions in the field again in January 2010 in certain areas south of I-75 and made adjustments to the proposed trail system to further minimize impacts on wetlands and the environment.

Furthermore, ORV access is limited to designated trails only. Based on initial evaluations, the National Park Service has determined that less than 1 acre of direct impact on wetlands would occur from needed trail treatment activities. The National Park Service would apply to the South Florida Water Management District and U.S. Army Corps of Engineers for the necessary permits to accomplish this activity and would work cooperatively with them to further minimize impacts on wetlands. As described in table 29 of this plan, a “Wetlands Statement of Findings” would also be prepared that describes measures to avoid or minimize wetland impacts.

Additional information on wetland impacts and mitigation actions, as well as future compliance activities, has been added to the document in chapter 4 in the “Wetlands” topic for each alternative. Mitigation would be completed as required.

3. Comment: *“The DEIS did not include information on the total amount of wetland impacts that will occur per alternative and the mitigation necessary to offset those impacts. The FEIS should provide a description of the wetland impacts which will occur by alternative and how those impacts will be mitigated. In addition, a wetland functional analysis for all proposed wetland impacts and mitigation*

necessary to offset those impacts should be provided. Technical rationale for each score should also be included.”

Response: Wetland impacts for each of the alternatives have been quantified to the degree possible at this stage of planning (see chapter 4 in the “Wetlands” topic for each alternative. Additional mitigation measures have been added and existing ones clarified to ensure proper mitigation. Based on initial evaluations, NPS staff has determined that less than 1 acre of direct impact to wetlands would occur from needed trail treatment activities. The National Park Service would apply to the U.S. Army Corps of Engineers for the necessary permits to accomplish this activity and would work cooperatively with them to further minimize impacts on wetlands.

A wetlands functional analysis, although not completed as part of this GMP/EIS process, would be completed before implementation of any action that would affect wetlands, as required by Executive Order 11990, “Protection of Wetlands.” A “Wetlands Statement of Findings” (as required by NPS Director’s Order 77-1) would be prepared and released to the public for review and comment before initiation of any ORV trail or facility development that could impact wetlands. Mitigation of wetland impacts would be completed as required.

4. Comment: *“The DEIS lacked detailed information on the cumulative impacts the proposed alternatives would have on the environment. EPA requests that the FEIS provide a cumulative impact analysis for the entire Big Cypress National Preserve, including the Addition.”*

Response: The EIS does include an analysis of cumulative impacts (see chapter 4). According to Council on

Environmental Quality implementing regulations for the National Environmental Policy Act, a cumulative effect is derived by assessing the impacts of the actions proposed in the alternatives in combination with the impacts of other present, past, and reasonably foreseeable future actions in the project area. The scope of this plan is the Addition of Big Cypress National Preserve. To determine cumulative effects, the planning team identified several projects (see pages 246-249 in the draft plan) in the original Preserve that could affect the resource topics to be analyzed. Accordingly, the document includes an analysis of how these projects and actions, in combination with the actions proposed in the alternatives, would affect the resources of the project area and the impact topics included in the EIS. A cumulative impact analysis was not completed based on the notion of the NPS Preserve boundary, but rather was completed for the action area determined to be appropriate for each of the impact topics. Often, this action area greatly exceeds the physical boundary of the Preserve.

5. Comment: Page 80 of the DEIS — *“The DEIS states that a maximum of 700 ORV permits would be issued annually for the Addition. How was it determined that the issuance of 700 ORV permits would not have a negative impact on the aquatic environment?”*

Response: As stated on pages 98–100 of the draft plan, the approach that was used to develop the ORV permit cap was based on the ratio of trail miles to permits (5:1 ratio) in the original Preserve. In the original Preserve, where this ratio has been used in on-the-ground management for nearly 10 years, monitoring results indicate that ecological conditions are acceptable and actually improving for certain sensitive species. Therefore, the National Park Service applied this ratio to the Addition to determine the total number of permits.

Monitoring and adaptive management are a component of the preferred alternative that would ensure that unacceptable impacts to the aquatic environment do not occur.

6. Comment: Page 108 of the DEIS — *“The DEIS states that the NPS would restore areas that have been impacted by off-road vehicles within the Addition. The FEIS should document the total number of acres impacted by off-road vehicles, the restoration efforts proposed, and how future off-road impacts will be restricted.”*

Response: Approximately 244 miles of ORV trails have been documented in the Addition. These trails were established and used before the federal government became the owner and the National Park Service became manager of the Addition. A formal quantification of the extent of impacts attributed to these trails has not been conducted. However, given that an average ORV trail is about 12 feet wide, the National Park Service estimates that about 355 acres have been impacted by prior ORV use. As stated in the draft plan, the National Park Service intends to reclaim the trails that would not be used as part of the ORV trail system. Future impacts from ORV use would be restricted by requiring ORV use on designated trails only, by monitoring and adjusting management actions, and through education of ORV users and enforcement of regulations.

7. Comment: Page 200 of the DEIS — *“The DEIS states that no developed campgrounds currently exist in the Addition. It is unclear if the NPS is proposing to develop these types of campgrounds within the Addition. The FEIS should be clear on this point and identify any ecological impacts should developed campgrounds be proposed.”*

Response: Currently, dispersed camping is allowed in the Addition. The preferred

alternative includes a proposal for providing designated camping opportunities at the terminus of Jones and Nobles grades. Primitive backcountry group campsites (see “Preferred Alternative” section on Nobles and Jones grades) would be established in previously disturbed locations. These campsites would not be accessible by street legal vehicles, only by backcountry motorized and nonmotorized users. The environmental consequences of this action have been evaluated in the EIS.

8. Comment: Page 336 of the DEIS — *“The DEIS did not provide any discussions on the proposed authorization of horseback riding within the Addition. EPA believes that the FEIS should include restrictions on horseback riding to insure it does not have an adverse impact on the aquatic functions of the Addition.”*

Response: Horseback riding restrictions are given in the descriptions of the alternatives. Horseback riding is currently allowed in the Preserve, including the Addition, except in developed areas and on the Florida National Scenic Trail. Very little horseback riding occurs, and this is not expected to change because the terrain, substrate, and water conditions are generally not conducive to this activity. Because of the low level of activity, environmental impacts would be negligible for all alternatives. The environmental consequences section for each alternative has been revised accordingly.

U. S. Fish and Wildlife Service (USFWS)

9. Comment: *“While we agree with most of the “topics” that are dismissed, we believe that some topics should be evaluated further. The Everglade snail kite, American crocodile, and eastern indigo snake should be retained and analyzed because the description in Table 1 suggests a “may affect, not likely to adversely affect” determination. In order to fulfill the*

requirement of the implementing regulations (50 CFR Section 402), an informal consultation is likely to be necessary for those species. Therefore, a complete analysis of the potential effects should be documented in either the GMP or a Biological Evaluation.”

Response: The Everglade snail kite, American crocodile, and Eastern indigo snake were added as impact topics in the final plan, along with a complete analysis of the potential effects on these species (see chapter 4 in the final plan).

10. Comment: *“The draft GMP does not include information on administrative (NPS, FWC, researchers, oil and gas operators, contractors) ORV use. Please include information on the type of administrative ORV use that would be allowed in each of the alternatives.”*

Response: Administrative ORV use by NPS staff, its agency partners, and cooperators would be managed the same as it is in the original Preserve, except that activities in eligible or proposed wilderness would be consistent with requirements of the Wilderness Act and NPS *Management Policies 2006*. See “ORV Administration and Management” subsection of Chapter 2 (under “The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness”) for more information.

11. Comment: *“Information presented on the Florida panther (*Puma concolor coryi*) is dated. This section should present the most current science on the species as well as its status and the status of recovery actions taking place within BICY. Please update the science of the species to enable the NPS to make informed decisions regarding the potential effects of the alternatives on the Florida panther. Updated information on the Florida panther may be*

found in the 2008 revision of the Florida panther recovery plan (Service 2008).”

Response: The “Affected Environment” (chapter 3, pages 170-174 in the draft plan) and “Environmental Consequences” (chapter 4, pages 262-264, 291-293, 324-326, and 358-360 in the draft plan) sections for the Florida panther were revised to include more recent information and data. The National Park Service consulted with the U.S. Fish and Wildlife Service on their information requirements and worked collaboratively with them to prepare updated material for inclusion in the final plan. See “Chapter 5: Consultation and Coordination” in the final plan for more information.

12. Comment: *“Level of use restrictions such as management unit quotas for hunting or ORV use, are not mentioned in the draft GMP. As noted in our June 13, 2007, memorandum providing comments on the alternatives described in NPS' Newsletter 3, we recommend determining management unit quotas by vehicle type and number of permits appropriate for a given management unit. We recommend level of use quotas to be established for all management units in BICY, which will help in assessing the effects of specific levels of use on federally-listed species and their habitats.”*

Response: Management units and quotas were not included in the plan; however, the plan does include a maximum number of ORV permits that could be issued for the entire Addition. Although NEPA compliance for the I-75 access points was completed in 1991 with the *I-75 Recreational Access Plan Environmental Assessment*, the National Park Service has committed to assessing levels of ORV use in the Addition through future compliance with Section 7 of the Endangered Species Act that is required for the development of the I-75 recreational access points (see table 29 in the final plan. The access points along I-75

will accommodate visitor entry into the Addition, and ORV use levels could be established for areas based on entry site. The National Park Service would consult with the U.S. Fish and Wildlife Service and prepare the required materials to support analysis of effects to federal listed species.

The Addition would not be opened to public hunting until a hunting management plan is developed. The National Park Service has committed to developing such a plan in consultation with the Florida Fish and Wildlife Conservation Commission and U.S. Fish and Wildlife Service. The hunting management plan would determine appropriate game harvest levels by evaluating species population status and trends, hunter densities, and impacts on the Florida panther. Best practice game management techniques would be used as needed in the development of proposed regulations by the Florida Fish and Wildlife Conservation Commission.

The Addition would not be opened to public ORV use until the recreational access points are developed and trails are treated (as needed), designated, and adequately marked. This could be accomplished in phases; but areas that do not meet this standard would not be opened for public motorized use.

13. Comment: *“We recommend greater analysis of the impact of non-native animals on fish and wildlife resources in the Addition Lands. Most discussion of impacts of non-native species is limited to plants. Non-native animals, such as the Mexican bromeliad weevil (Metamasius callizona), have an impact on rare native plant species. Additionally, the proliferation of exotic fish in south Florida impacts the aquatic ecosystems in the area. Please address the potential impacts of the spread of invasive non-native animals by human activity in the Addition.”*

Response: Additional information on nonnative animals was added to “Chapter 3: Affected Environment” and to the mitigation measures included in chapter 2. The “Guiding Principles for Management” subsection included in chapter 1 also references the need and desire to eliminate and manage nonnative/exotic species.

14. Comment: *“Climate change is not mentioned in the draft GMP. Please clarify how climate change was considered in the development of the alternatives and the analysis of the environmental consequences for each alternative.”*

Response: Climate change was included in the “Guiding Principles for Management” subsection of chapter 1 of the draft plan (see page 28). A climate change action plan was also included as one of the “Future Studies and Implementation Plans Needed” in chapter 2 (see page 124 of the draft plan). This climate change action plan would provide a more detailed, specific evaluation of climate science, predicted impacts to Preserve resources, and potential adaptation responses or strategies. Climate change was considered in the development of the alternatives by limiting new facility development, using sustainable design and development principles in the facility proposals, and developing a balance of actions that afford recreational access and protect the conservation values of the Addition. The resource management activities that are a part of the alternatives would increase the resiliency and integrity of the resources in the Addition so that they will better adjust and respond to future impacts from climate change. The environmental impact analysis included in chapter 4 was developed with these assumptions in mind.

15. Comment: *“Page 64 — The section describing how the alternatives were developed*

should include a description of the analyses used to develop the different alternatives.”

Response: Additional language was added to chapter 2 that explains the process and analyses used to develop the alternatives.

16. Comment: *“Pages 75 and 81 — Please describe the methodology used to conclude that 140 miles of designated trail system was appropriate for the Addition Lands. We recommend using an analysis similar to that developed during the development of the ORV Plan. This analysis included the resiliency of the substrate, sensitivity of the resources present, and proximity to sensitive resources among other parameters. Also, please specify how many miles of secondary trails may be created or opened in the Addition Lands under Alternative B and the Preferred Alternative.”*

Response: The process used to evaluate the sustainability of ORV trails and determine the number of trail miles was included on page 100 of the draft plan. No maximum number of miles of secondary trails was established for the alternatives; however, secondary trails are intended to be short spur trails that receive less use than the primary trail system and would be allowed only within the backcountry recreation management zone. Trails allowing motorized use would be prohibited in the primitive backcountry zone.

17. Comment: *“Pages 80 and 81 — The Preferred Alternative does state that connecting trails from the Addition Lands to Bear Island would require additional NEPA, but Alternative B does not include this statement. Please clarify why this statement was not included in the description of Alternative B or include it in the description of this alternative. Please specify in greater detail how 700 permits were derived and what the environmental effects of issuance of these permits would be on natural resources.*

The amount of additional parking proposed for the access areas is not enumerated in this alternative either.”

Response: This statement has been added to alternative B. The process for determining the ORV permit cap is described on page 98 of the draft plan, and the potential impacts on natural resources from ORV use are analyzed in chapter 4 for each of the relevant resource topics. The amount of parking spaces proposed for access points or trailheads was described in the *I-75 Recreational Access Plan* (1990). Additional detail would be determined at the site planning and design stage.

18. Comment: *“Page 105 — The wood stork (*Mycteria americana*) and Florida panther criteria lacks supporting scientific citations. Please ensure that the most current guidelines are referenced and include them in an appendix. In addition, if the guidelines are revised, the version used during development of this document needs to be clear to future readers. For the Florida panther, what research or data were used to determine that a trail would be closed if a den was located within 0.5 miles? Please provide information or citations on the development of these criteria.”*

Response: Citations and clarifying language were added to the final plan. For the wood stork and the Florida panther, pages 574 and 575 respectively of the *Final Recreational Off-Road Vehicle Management Plan and Supplemental Environmental Impact Statement: Big Cypress National Preserve* (NPS 2000) contains the USFWS “Biological Opinion” concurring with the NPS plans to use the *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (USFWS 1990) “to ensure that setbacks for ORV trails from colony sites are consistent with the recommendations in the referenced document.” Page 46 of the 2000 *Recreational ORV Management Plan* prescribes the determination

method for wood storks using the revised guidelines being prepared (at that time) by Rodgers. The ORV plan “Biological Opinion” similarly prescribes a change in the extent of designated trails in the Bear Island Unit of the Preserve that could provide additional buffer in popular denning areas.

19. Comment: *“Page 121 — We suggest the last word of the first sentence should be changed from ‘plants’ to ‘species’ since nonnative plants are not the only invasive species present within the Preserve.”*

Response: The wording has been updated in the same section of the final plan.

20. Comment: *“Page 121 — Under the ‘Wildlife’ section, please change the word ‘spawning’ to ‘breeding’ as not all species are considered to spawn.”*

Response: The wording has been updated in the same section of the final plan.

21. Comment: *“Page 121 — Under the Threatened and Endangered Species section, second bullet, we do not believe any of the alternatives would completely eliminate human disturbance.”*

Response: We have revised the mitigation measure to acknowledge that human disturbance would be eliminated to the greatest extent possible, in accordance with USFWS recommendations.

22. Comment: *“Page 137 — Summary of Key Impacts Table. ...the eastern indigo snake (Drymarchon corais couperi) should be added to this list.”*

Response: The table has been updated in the same section of the final plan.

23. Comment: *“Page 170 — This section should be updated with information contained in the 2008 Florida Panther Recovery Plan.”*

Response: The wording has been updated in the same section of the final plan.

24. Comment: *“Page 240 — In Table 28, the categories of Negligible, Minor, Moderate, and Major are used to categorize the intensity levels of the potential effects the proposed alternatives may have on different resources. For threatened or endangered species, the resulting effect determination included in these columns may not correlate to the Endangered Species Act (16 U.S.C, 1531 et seq. as amended, in 1988) definition of minor. For an activity to be “not likely to adversely affect,” the effects of the activity must be insignificant and discountable, that is, they should not be measurable. If this was the intention, then the text should be clarified.”*

Response: Language has been added and clarified in the same table in the final plan.

25. Comment: *“Page 263 — The first paragraph described effects including “flushing and displacement” of panthers. These types of effects are measurable and not likely insignificant or discountable; therefore, they would not qualify as minor effects to the panther. Also, the mention of the 2000 ORV Management Plan is confusing with respect to its relevance to this GMP. The ORV Management Plan specifically excluded the Addition Lands since a GMP was not in place. Please clarify its relevance or remove references to the 2000 ORV Management Plan.”*

Response: The impact intensity was revised from minor to minor to moderate. References and analysis of the relationship and effects of the 2000 Recreational ORV Management Plan are included because it is part of the cumulative impacts analysis

required by the National Environmental Policy Act.

26. Comment: *“Page 292 — Under Cumulative Impacts, the 2000 ORV Management Plan is referenced without any clarification on its relevance to the GMP. In addition, the Collier Resources Company Oil and Gas Plan of Operations is mentioned but no details or indication of its relevance to the GMP is included. In the second to last paragraph on this page, reference is made to regional growth and development. How is this a cumulative effect of the proposed alternative? Please provide clarification on these points.”*

Response: An analysis of cumulative effects is required by the National Environmental Policy Act and the Council on Environmental Quality’s implementing regulations. Pages 246-249 of the draft plan included a description of the projects or actions that would be included in the cumulative effects analysis. The 2000 *Recreational ORV Management Plan* was one of the cumulative projects listed because it was an action or past project that could influence resource conditions in the Addition or in the region. Consequently, each of the resource impact topics includes an analysis of cumulative impacts that may be attributed to ORV management in the original Preserve. The same is true for the “future oil and gas operations” and “regional growth and development projects.” Furthermore, the relationship of these plans to this general management planning effort was described on pages 34 and 42 of the draft plan.

27. Comment: *“Page 368 — In the environmental consequences section for this alternative and all the alternatives, there is insufficient analysis of the potential effects of the actions on federally listed threatened or endangered species. We look forward to discussing the information necessary for a*

complete analysis of the potential effects of the alternatives on threatened and endangered species that should be included in the GMP or Biological Evaluation.”

Response: Since the time of releasing the draft plan and receiving the USFWS response letter, the National Park Service has consulted with the U.S. Fish and Wildlife Service to further discuss their concerns and requirements. Additional language and analysis of potential impacts has been added to all of the alternatives to further describe the potential effects on listed species. Further consultation and compliance with Section 7 of the Endangered Species Act for listed species would be necessary for certain actions included in this plan, including the development of the I-75 recreational access points and the opening of the Addition to public hunting.

COMMENTS FROM AMERICAN INDIAN TRIBES

Miccosukee Tribe of Indians of Florida

A consultation meeting was held on September 24, 2009. The following comment came from that meeting.

28. Comment: *There was a concern about impacts to the Reservation from public access into the Addition from the L-28 Canal.*

Response: The National Park Service would work with the tribe and the South Florida Water Management District to define and implement public access strategies to ensure that Reservation lands are not accessed by the public without permission from the tribe. Public access to the L-28 exists already, and it is anticipated that this can be managed in a manner similar to the existing locked gate system.

Seminole Tribe of Florida

29. Comment: *Public use of the area will disrupt the migration patterns of large mammals (Florida panthers, black bears, deer, turkey) traveling between the Preserve and the Addition, adversely impact wood stork rookeries and potential nesting habitat for the red-cockaded woodpecker near the Reservation's southern border, degrade browse and ground cover that are needed to support game and panther prey habitat, and degrade panther denning habitat.*

Response: Although Janis and Clark (1999) did find that the average distance of panther locations from trails increased, and that the frequency of panther use in one area decreased when human presence in the area increases during the hunting season, they surmised that those changes in behavior were biologically minor and probably related to prey behavior. Although eight variables were examined — (1) morning activity, (2) movement, (3) predation success, (4) home range size, (5) home range shifts, (6) habitat selection, (7) distance from trails, and (8) frequency of use in Bear Island — the authors failed to detect any relationship between ORV use and the first six variables. There is no evidence that supports the comment above with regard to the areas comprising the original Preserve boundary; in fact with regard to Florida panthers, they demonstrate a high tolerance to human presence, to the point of lingering around developed areas in east Naples, Florida. Limiting the levels of use in the Addition, through implementation of permitting and temporal and spatial closures, and using conservation measures derived through consultation with the U.S Fish and Wildlife Service should mitigate the potential for adverse impacts on listed species.

30. Comment: *Surface water flow and wetlands will be adversely impacted by ORV use*

and would degrade the investment that the Tribe and Army Corps of Engineers have put into the restoration of natural sheet flow. The plan should more specifically describe impacts to surface water flow and wetlands and identify best management practices and compensatory mitigation.

Response: The plan acknowledges that localized (site-specific) impacts to water resources could occur from ORV use. However, the actions included in the plan would not adversely affect water resources on a regional scale and would not adversely affect the investments that the Tribe or any government agencies have made in hydrologic and ecosystem restoration in the Everglades system. It is important to note that ORV use would be restricted to existing trails, and that trails not designated for use would be eventually restored to natural elevations and vegetation. Furthermore, the National Park Service would strive to add additional water conveyance structures to existing raised grades where appropriate. Additional language was added to further describe and evaluate potential impacts to surface water flow and wetlands in each of the alternatives. The mitigative measures for water resources were also revised to include additional conservation measures.

COMMENTS FROM THE STATE OF FLORIDA

31. Comment: *“Ongoing south Florida ecosystem restoration projects include several proposals for the restoration of surface water flows in the region, including the Big Cypress/L-28 Interceptor Modifications and the Seminole Tribe Big Cypress Water Conservation Plan, designed to reestablish sheet flow and restore the more natural water flows from the Big Cypress Reservation and into the Big Cypress National Preserve. The final Plan/EIS must evaluate the potential effects that ORV trail development will have on restoration benefits expected from these*

projects. The selected plan should detail the proposed activities to facilitate the Department's determination of anticipated adverse impacts to south Florida ecosystem restoration projects identified under 373.470, F.S., and whether the proposed activities comply with the requirements of Chapters 373 and 403, F.S.

Response: Additional information was added to the cumulative impact analysis of each of the alternatives to indicate that the actions proposed in the alternatives would have only localized adverse effects on surface water flow and hydrology (i.e., limited to the Addition and to site-specific areas) and that the overall effects on ecosystem restoration projects included in 373.470 Florida Statutes would be negligible. The investment that the state is making in projects near the Preserve would not be adversely affected by the actions included in this general management plan. The National Park Service would apply to the state for the necessary permits and licenses that are required to implement actions that are a part of this plan and would work cooperatively to ensure that the actions are consistent with Florida statute. It is also important to note that the National Park Service is not developing a new trail network, but rather intending to allow use on trails that already exist. Actions associated with the south Florida ecosystem restoration effort are also scheduled for implementation beyond the intended life of this plan. Nothing proposed would inhibit the federal, state, or local efforts to engage in comprehensive ecosystem restoration.

32. Comment: *“In addition to the foregoing, the Department has several other concerns that should be addressed in the final plan and prior to the commencement of any activity that would require the issuance or renewal of a state license under Chapters 373 and 403, F.S. Final agency action on an application (i.e., issuance or renewal of a license) for any activity regulated*

by the Department shall constitute the state's final determination on whether an activity is consistent with the federally approved Florida Coastal Management Program. See Sections 373.428 and 380.23, F.S. The Department has the following additional concerns:

- A. *Paragraph 2 of the Department's letter dated August 27, 2001, identified several important issues, including the designation of waters and wetlands as “special waters” — a category of Outstanding Florida Waters that prohibits dredge-and-fill activities not clearly in the public interest. Public access features that involve adverse impacts to wetlands should be avoided. A copy of the 2001 letter is available upon request.*
- B. *The Florida Scenic Trail traverses the northeast portion of the Addition land and the portion of the Preserve that begins south of I-75. The maps for Alternative B and the Preferred Alternative depict some overlap between ORV and other trails. Potential conflicts should be evaluated and explained in the final Plan/EIS.*
- C. *Typically, in draft federal actions related to projects or plans of this importance, the NPS consults with the FWC and the U.S. Fish and Wildlife Service regarding Section 7 of the Endangered Species Act. The Department was unable to find in Appendix C any letters or comments from either agency addressing compliance with the Endangered Species Act.”*

Response: The National Park Service recognizes that the Addition is classified as Outstanding Florida Waters. The National Park Service has avoided and minimized impacts to wetlands in developing its proposed ORV trail system. Preliminary analysis included in the plan indicates that dredge-and-fill needs for trail treatment would be limited to less than 1 acre. The National Park Service would apply to the state for the necessary permits and licenses that are required to implement actions that

are a part of this plan and would work cooperatively to ensure that the actions are in the public interest and are consistent with Florida statute.

The National Park Service has documented the potential for user conflict on multiuse trails and has developed a system of indicators and standards to ensure that conflicts are minimized and that the quality of the visitor experience is maintained (see the “User Capacity” subsection (under “The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness”) in chapter 2 of the final plan. Furthermore, the plan specifically states that the National Park Service would work cooperatively with the Florida Trail Association and U.S. Forest Service to establish a route for the Florida National Scenic Trail that minimizes trail conflicts. This route would be formally designated through the Addition and the Preserve.

The National Park Service has been working cooperatively with the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service for more than 10 years on this project. The planning process has included many public and agency comment opportunities. Both the Florida Fish and Wildlife Conservation Commission and the U.S. Fish and Wildlife Service have provided extensive comments on the general management plan. These comments are included in the administrative record of the project. Informal consultation under Section 7 of the Endangered Species Act has occurred to date. A consultation response letter from the U.S. Fish and Wildlife Service (dated October 9, 2009 and included in appendix C) indicated that additional information was necessary to complete consultation requirements for listed species. The National Park Service has completed the necessary information for the “Biological Assessment” required by the U.S. Fish and

Wildlife Service and has responded to all concerns and requests that were included in the USFWS response letter. USFWS staff will evaluate the information included in this final plan and prepare a “Biological Opinion” necessary to complete Section 7 consultation under the Endangered Species Act.

33. Comment: *“In accordance with 15 C.F.R. § 930.4, the Draft Plan/EIS will be consistent with the enforceable policies of the Florida Coastal Management Program and the Department will concur with the NPS’ determination that the Draft Plan/EIS is consistent with the previously cited provisions of state law (in Chapters 253, 259 and 373, F.S.), if and only if the following conditions are satisfied:*

- I. Any Wilderness designation in the Addition must include specific language that directs the Park Superintendent of Big Cypress National Preserve to work with other federal, state and local agencies to eradicate exotic plants and animals and prevent their spread into and out of the Addition; to use prescribed fire as a management tool for restoring and maintaining native plant communities; and to conduct necessary law enforcement activities. Any Wilderness designation must also include language directing the Park Superintendent to use the most effective and timely methods for conducting these critical management activities, including the use of mechanized equipment. In addition, any Wilderness designation must allow the Park Superintendent and cooperating agencies to suppress and contain fires that threaten adjacent natural or built areas using the most effective and timely methods, including the use of mechanized equipment.*
- II. The final Plan/EIS must evaluate the potential effects that recreational development activities, including ORV trail modifications, will have on the surface hydrology of the area and the anticipated*

benefits of the south Florida ecosystem restoration projects identified in § 373.470, F.S. The selected alternative must provide details regarding proposed trail development and improvement activities, so the Department can determine whether the activities will adversely impact south Florida ecosystem restoration projects and whether the activities may be eligible for licensing under Chapters 373 and 403, F.S. The Department's evaluation of the trail development or improvement activities during its review of the final Plan/EIS will not bind or prejudice any future determination of the Department or the South Florida Water Management District in their evaluation of applications submitted pursuant to Chapters 373 and 403, F.S., nor shall the fulfillment of this condition for the purpose of the final Plan/EIS's consistency with state law be considered the final consistency determination for any of those applications."

Response: Appropriate language was added to the description of proposed wilderness for all action alternatives that directs the National Park Service (and other parties involved in the wilderness designation process) to include certain language in the wilderness transmittal package (and ultimately the bill that seeks to designate wilderness in the Addition). Wilderness is created and designated by Congress; therefore, the language included by the National Park Service in this plan must be considered a recommendation that would require Congress to include and act upon. As discussed in *NPS Management Policies 2006*, the National Park Service would apply the minimum requirement concept to determine the techniques and types of equipment needed to ensure that impacts on wilderness resources and character are minimized.

Additional language was added to the plan that further describes the impact that the plan would have on surface water flow and ecosystem restoration projects included in

Florida statutes. The National Park Service would apply to the state (or its designee) for the necessary permits and licenses that are required to implement actions that are a part of this plan and would work cooperatively to ensure that the actions are consistent with the Florida Coastal Management Program.

COMMENTS FROM INDIVIDUALS AND NONGOVERNMENTAL ORGANIZATIONS

Analysis and Use of Scientific Data and Supporting Information

34. Comment: *The Addition should not be subject to seasonal or nightly closures because there is no science that supports these limitations on use.*

Response: The plan allows for an annual 60-day seasonal closure to allow resources a time free from any pressures related to ORV use (this does not apply to landowners who hold special use permits to access their private properties via a designated route through the Addition). The Addition would be closed to ORV use between the hours of 10 p.m. and 5 a.m. to ensure visitor safety. These temporal and spatial closures would minimize impacts on wildlife by reducing the potential for direct mortality, increased legal and illegal harvest, disturbance, and habitat loss.

Seasonal and nightly closures were a part of the 2000 *Recreational ORV Management Plan* and have been used by the National Park Service in the original Preserve since that time. These conservation and safety measures are supported by scientific literature and the professional judgment of agency staff.

35. Comment: *The National Park Service has failed to adequately study the effects of ORV use*

on natural resources in the Addition and use the best available science to develop the plan.

Response: It is acknowledged that ORV use in the Addition would have an effect on the natural resources of that area. The plan for ORV use is designed to minimize and mitigate those effects so that the use does not represent a detriment to the purposes of the Preserve. It was the intent of Congress in creating the Preserve that certain uses of this landscape be authorized, even though those uses may be consumptive in nature and may not necessarily represent the same experience one might have had in other national park system units. The objective of the Addition ORV plan is to fulfill the will of Congress and provide diverse visitor use experiences while conserving those values articulated in the legislation establishing the Preserve. ORV use would also be restricted to designated trails, would be monitored, and would be modified to conform to the standards developed for balancing sustained use while providing natural resource protection.

Several studies recommended in the 2000 *Recreational ORV Management Plan* and the corresponding U.S. Fish and Wildlife Service's "Biological Opinion" have been completed or are in progress. Florida-panther-related research includes an ongoing study of levels of ORV use and panther response in Bear Island. In addition, the National Park Service has established 20 permanent water quality and water monitoring stations that could alert NPS staff to changing conditions resulting from not only ORV use but also from other land uses. The monitoring of endangered/threatened species began before the ORV planning process started. The National Park Service would continue to rely on science to support management decisions and update and refine its plans and actions with new science and information as it becomes available.

36. Comment: *The National Park Service should not open panther habitat to ORV use because research has shown that ORV traffic impacts panther habitat and use of an area.*

Response: NPS staff has consulted with the U.S. Fish and Wildlife Service regarding all listed species within the Addition to determine if the actions proposed would have any potential adverse affect on them or their habitats. Conservation measures would be followed in accordance with the USFWS recommendations if and when the actions in this management plan are implemented. Although Janis and Clark (1999) did find that the average distance of panther locations from trails increased, and that the frequency of panther use in one area decreased when human presence in the area increases during the hunting season, they surmised that those changes in behavior were biologically minor and probably related to prey behavior. Although eight variables were examined — (1) morning activity, (2) movement, (3) predation success, (4) home range size, (5) home range shifts, (6) habitat selection, (7) distance from trails, and (8) frequency of use in Bear Island — the authors failed to detect any relationship between ORV use and the first six variables. NPS and USFWS staff are currently working on at least two projects that will assist them in evaluating human use impacts on panthers. NPS staff would work with USFWS staff to mitigate any adverse impacts on the panther from the actions in the plan.

37. Comment: *ORV use and hunting should not be allowed in the Addition because studies have shown that these uses will have significant adverse effects on the Florida panther and its prey base.*

Response: Per Public Law 100-301 the National Park Service is required to allow for hunting, fishing, and frogging in the

Addition and to cooperate with the state of Florida to establish the rules and regulations associated with such activities. Accordingly, the agencies involved in panther management in south Florida have agreed that panther recruitment can be improved in part by reducing hunting pressure on panther prey species, especially deer and hogs. The National Park Service would cooperate and work closely with the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission (FFWCC) to manage panther prey species as appropriate. Furthermore, the National Park Service has committed to developing a hunting management plan, in cooperation with USFWS and FFWCC staff. This hunting management plan would evaluate impacts on the Florida panther and its prey and establish game harvest limits. The Florida Fish and Wildlife Conservation Commission would then develop appropriate hunting regulations for hunting in the Addition before opening the area to public hunting. These measures would ensure that the panther and its prey are adequately protected.

38. Comment: *The Draft EIS lacks the necessary scientific data to make the decision to open the Addition to ORV use and has not demonstrated proper consultation with the U.S. Fish and Wildlife Service on endangered species.*

Response: The original Preserve has been open to ORV use since 1974. No specific adverse impacts on wildlife, including the panther, have been documented and attributed to ORV use. The National Park Service has evaluated all relevant scientific data on the relationship between ORV use and impacts to wildlife and has incorporated conservation planning measures to minimize adverse impacts into the general management plan. NPS staff has been working collaboratively with the USFWS staff on this planning effort since 2001.

Endangered Species Act consultation has been initiated, and USFWS staff will prepare a “Biological Opinion.” The National Park Service would complete all necessary actions to complete Endangered Species Act consultation.

39. Comment: *The National Park Service has not adequately used scientific data to analyze impacts to endangered species.*

Response: NPS staff have identified and used a number of scientific and scholarly studies, reports, and data in the development of the plan and its analysis of the potential effects to listed species. The National Park Service worked with the U.S. Fish and Wildlife Service to expand the analysis of federally listed species and incorporated several of the USFWS recommendations, especially for the preferred alternative, that would reduce impacts to listed species. At the request of the U.S. Fish and Wildlife Service, the National Park Service added additional citations, all of which can be found in the “References” section of the plan.

40. Comment: *The number of sustainable trails miles identified is not accurate and will not be sustainable over time.*

Response: NPS staff used a methodical process to evaluate existing ORV trails in the Addition and determine which of the trails were appropriate for inclusion in the primary ORV trail network (see page 100 in the draft plan). As defined on page 100 in the draft plan, a sustainable trail would still require some level of treatment over time to accommodate continued recreation use; however, its use should not substantially impact the soil resources and flora and fauna of the area. The National Park Service would monitor trail use and use adaptive management to ensure that the

trail system is functional and sustainable over time.

41. Comment: *Additional justification is needed for the standards established in the draft plan.*

Response: General management plans are required by law to address user capacity — the types and extent of visitor use that can be accommodated while sustaining the quality of resources and visitor opportunities consistent with an NPS unit’s legislative purpose. This general management plan looks at 16 of what are considered to be the most important user capacity indicators and standards. These indicators and standards are grounded in the desired conditions for the proposed management zones and acknowledge that the evaluating process is continuous and may be adjusted based on the monitoring results. The indicators and standards included in the plan were developed by evaluating the resources and determining the most important potential impacts to resource and social conditions. Standards were developed by considering the desired conditions, data on existing conditions, relevant research studies, staff management experience, and scoping on public preferences. Additional language was added to further explain and justify the indicators and standards included in the plan (see “User Capacity subsection of Chapter 2 (under “The Alternatives and User Capacity, Adaptive Management, ORV Administration and Management, and Wilderness”).

42. Comment: *Additional data and supporting information is needed regarding energy consumption and carbon footprint as a result of the proposed action.*

Response: Impacts on air quality due to greenhouse gas emissions resulting from

actions included in the plan would be minor, as stated in the rationale for dismissing air quality as an impact topic (see page 52 of the draft plan). Emissions resulting from facility development and operation would be minimized through sustainable design and development practices. Proposed facilities would be developed to minimize construction and operations costs. Emissions from ORV use would be minimized through the ORV inspection program, which would ensure that all vehicles have proper exhaust apparatus.

43. Comment: *The Florida panther does not inhabit the Addition anymore.*

Response: NPS panther telemetry data shows that panthers have been using and inhabiting the Addition each of the last 25 years, when systematic monitoring began. Historical data also confirms that panthers have been present in the Addition since before the Preserve’s creation.

44. Comment: *The “Hydrology of the Addition” map (Map 11) improperly depicts the flow of surface water.*

Response: The flows on this map, as labeled, correctly depict the general direction of surface water flow. Details specific to characterizing surface water flows are captured in the accompanying text of the “Water Resources” section of the plan’s “Chapter 3: Affected Environment.”

45. Comment: *The DGMP/EIS does not contain adequate guidance for near- and long-term management of the Addition because it does not meet the scientific needs of the Addition and does not contain an adequate analysis of the direct, indirect, and cumulative threats to Addition resources.*

Response: The DGMP/EIS is not intended to be a science plan for the Addition. The plan provides adequate guidance for management of the Addition because it addresses the planning issues identified in chapter 1 of the plan. Chapter 2 identifies certain science and planning needs; however, a future resource stewardship strategy would be the vehicle in which specific science, research, and resource management strategies would be identified. The plan discusses threats and stressors to Addition resources and includes an analysis of direct, indirect, and cumulative impacts as required by the National Environmental Policy Act (see chapter 4).

46. Comment: *The plan did not properly address, and include an analysis of the impacts to, the Gladesman culture.*

Response: Although the DGMP/EIS is not intended to be an ethnographic study of the Addition, the National Park Service analyzed the potential for impacts on cultural resources related to the Gladesmen. The National Park Service has determined that the actions in the DGMP/EIS pose no impacts on resources associated with the Gladesmen. NPS staff have consulted with the Florida state historic preservation officer on this plan under the framework of Section 106 of the National Historic Preservation Act and the state historic preservation officer concurred with the analysis and determinations of potential effects to cultural resources included in the plan (see appendix C).

47. Comment: *The plan does not contain adequate information on invertebrate species and their contribution to the values of the Preserve.*

Response: Although the plan does not specifically discuss invertebrates, they are

indeed an important component of the ecology of the Addition. The National Park Service is not aware of any quantitative sampling of invertebrates in south Florida that would provide information for a substantive analysis of these species. The actions and guidance included in the plan seek to conserve these species and protect the natural values of the Addition.

48. Comment: *The Florida panther should not be retained as an impact topic because no data exists to prove that ORV use (or other human use) adversely impacts the species.*

Response: Although the body of scientific literature and data on impacts to panther from ORV use is limited, the Endangered Species Act requires the National Park Service to evaluate potential impacts to listed species. Because some of the actions proposed in the plan could have a potential effect on the behavior of panthers in the Addition, the National Park Service must retain the panther as an impact topic and consult with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act.

Compliance with Addition Act, the National Environmental Policy Act (NEPA), the Wilderness Act, or Other Legal Mandates

49. Comment: *The Addition should not be proposed as wilderness because it does not meet wilderness eligibility criteria because of prior land uses and it does not meet the intent and spirit of the Wilderness Act.*

Response: A final “Wilderness Eligibility Determination” was completed as required by the Addition Act (Public Law 100-301) and NPS *Management Policies 2006* (see appendix B of the final plan). Prior land use practices and impacts do not affect an

area's eligibility as long as the criteria are met at the time of the assessment.

50. Comment: *The draft plan violates the National Environmental Policy Act and the National Historic Preservation Act because it does not assess potential impacts to the "Gladesmen culture" and provide for the continuation of "traditional use" of the Addition.*

Response: The National Environmental Policy Act and the National Historic Preservation Act require agencies to evaluate potential impacts to cultural resources, including ethnographic resources and traditional peoples. The plan evaluates impacts to known cultural resources. There would be no impacts anticipated to cultural resources associated with the Gladesmen. The plan calls for allowing traditional uses in the Addition, such as hunting, fishing, frogging, and ORV access, which would be available to the public under reasonable rules and regulations administered by the National Park Service.

51. Comment: *The draft GMP does not include a reasonable range of alternatives as required by the National Environmental Policy Act.*

Response: The general management planning process was initiated in 2001 and has included a number of potential management alternatives. The range of alternatives included in the draft and final plans is responsive to the issues that were identified in scoping and through the extensive public involvement process conducted for this project. The alternatives present a range of reasonable alternatives that respond to the project issues and objectives and meet the project's purpose and need.

52. Comment: *The Draft GMP does not provide enough detail regarding impacts associated with the development of visitor parking areas.*

Response: A general management plan is intended to provide a broad decision-making framework for NPS managers over the next 15 to 20 years. Actual construction of the visitor contact station, trailheads, and parking spaces would require additional planning and design to determine the specific facility features. Site planning and future environmental analysis would be needed to implement and construct some of the proposed facilities included in this plan.

53. Comment: *The Draft GMP mentions the affiliated American Indian tribes, but it does not address unaffiliated Indians or aboriginal peoples that also have certain rights to use the area.*

Response: The two federally recognized tribes named in the legislation establishing the Preserve who lawfully retain customary use and occupancy rights, subject to reasonable regulation, are the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida. The National Park Service consulted with these two tribes, as well as a third federally recognized tribe, the Seminole Tribe of Oklahoma, on a government-to-government basis in accordance with Executive Order 13175, *Consultation with Indian Tribal Governments* (2000); Executive Memorandum, *Government-to-Government Relationship with Tribal Governments* (2004); and the National Historic Preservation Act (16 USC § 470a(d)(6)(B) and 470h (1992)).

The views of the Independent Traditional Seminole Nation of Florida and other native peoples, who are not represented by a federally recognized tribe, were solicited

as members of the public. The Independent Traditional Seminole Nation of Florida were notified of the scoping process, received the planning newsletters and invitations to public meetings, and were provided a copy of the Draft GMP/EIS for review and comment. Throughout the planning process, the Independent Traditional Seminole Nation of Florida and others were provided a reasonable opportunity to identify their concerns about historic properties; advise on the identification and evaluation of historic properties, including those of traditional religious and cultural importance to them; and articulate their views on any potential effects to such properties. The planning team considered the views of the Independent Traditional Seminole Nation of Florida and other native peoples throughout the planning process and in the development of the changes to the alternatives that are included in this final plan.

54. Comment: *The Draft GMP does not adequately address climate change and the anticipated impacts to Preserve resources.*

Response: Climate change was included in the “Guiding Principles for Management” subsection of chapter 1 of the Draft GMP (see page 20 of the draft plan). A climate change action plan was also included as one of the “Future Studies and Implementation Plans Needed” section in chapter 2 (see page 124 of the draft plan). This future plan would provide a more detailed evaluation of climate science, predicted impacts to Preserve resources, and potential adaptation responses or strategies. Climate change was considered in the development of the alternatives by limiting new facility development, using sustainable design and development principles in the facility proposals, and developing a balance of actions that afford recreational access and protect the

conservation values of the Addition. The resource management activities that are a part of the alternatives would increase the resiliency and integrity of the resources in the Addition so that they would better adjust and respond to future impacts from climate change. The actions proposed in the plan also have the capacity to adapt for managing natural and cultural resources and infrastructure under a changing climate. The environmental impact analysis included in chapter 4 was developed with these assumptions in mind.

55. Comment: *The proposal to build facilities at the intersection of I-75 and SR 29 violates the terms of the settlement agreement entered into between the state of Florida and National Audubon Society, which prohibits development at this interchange.*

Response: The development would be located on SR 29 approximately 1 mile south of the interchange, putting it out of the scope of the settlement agreement.

56. Comment: *The National Park Service is violating Section 10 of the Addition Act by not providing ORV trails that connect to the existing trails in the original Preserve.*

Response: Section 10 of the Addition Act requires access for and continuation of traditional opportunities in the Addition. It does not specify the placement of ORV trails.

Visitor Experience, Opportunities, and Safety

57. Comment: *The plan should include designated camping areas, individual backcountry campsites, and primitive campsites along ORV trail routes.*

Response: The primitive backcountry and backcountry recreation management zones allow for dispersed camping and designated campsites where necessary for resource protection. Backcountry group campsites are proposed at the terminus of Jones and Nobles grades in the preferred alternative.

58. Comment: *Development of an access point and parking lot at MM51 on I-75 is not feasible because of the lack of law enforcement capacity, especially because a parking area already exists at MM63.*

Response: The Addition Act requires the establishment of three access points along I-75 in the Preserve. The *I-75 Recreational Access Plan* (1990) identified mile markers 53 and 61 (MM53 and MM61) as the preferred access point locations. This GMP proposes additional NPS staffing, including law enforcement personnel, who would enable the National Park Service to manage these sites and patrol and enforce regulations as necessary.

59. Comment: *Existing trails and roads should be used to the greatest extent possible to provide for a comprehensive system of trails for pedestrian access and other multiple uses.*

Response: The National Park Service has used as much of the existing road and trail system as possible to provide ORV trails and nonmotorized recreation opportunities while ensuring that the ecological values of the Addition are protected.

60. Comment: *The entire Addition should be zoned backcountry recreation to allow maximum opportunities for traditional uses (hunting, fishing, frogging, dispersed camping, and ORV use).*

Response: To zone the entire Addition as “backcountry recreation” would not achieve the range of visitor opportunities and experiences that the National Park Service is striving to provide. The National Park Service used a combination of management zones to provide reasonable access while ensuring that the ecological values of the Addition are protected. In the preferred alternative, traditional opportunities (including hunting, frogging, fishing, and ORV use) are all accommodated.

61. Comment: *Alternative B should be modified to remove all proposed wilderness, zone the entire Addition as backcountry recreation, and eliminate any restrictions on the amount of ORV trails allowed.*

Response: The National Park Service used a combination of management zones and levels of proposed wilderness and ORV trails to provide reasonable access while ensuring that the ecological values of the Addition are protected.

62. Comment: *The plan would adversely affect opportunities to establish and designate a permanent route for the Florida National Scenic Trail because it proposes motorized use along the trail route, which conflicts with the requirements of the National Trails System Act. An alternative would be to prohibit off-road vehicles from using the Florida National Scenic Trail except for designated crossings and establish a buffer of at least 1 mile along the scenic trail to protect the trail and the wilderness experiences of hikers.*

Response: The existing route of the Florida National Scenic Trail in the Addition is not certified in part because of the lack of a general management plan for the area. The stated objective of the scenic trail and National Park Service for the management of the trail is to “maximize the

primitive, undisturbed experience.” As a result, over time it was planned to reroute the trail as needed to meet primitive trail standards as defined by the U.S. Forest Service on Page 144, Appendix L, *Forest Service Recreation Opportunity Spectrum*, Table 1. These standards state (on page 147, Evidence of Humans Criteria (Primitive) — “Setting is essentially an unmodified natural environment. Evidence of humans would be unnoticed by an observer wandering through the area. Evidence of trails is acceptable, but should not exceed standard to carry expected use. Structures are extremely rare.” Thus, it has always been contemplated that the scenic trail would be moved off the obvious human-built raised grade. As stated in this general management plan, the National Park Service would work cooperatively with the Florida Trail Association to identify, designate, and obtain certification for a route for the Florida National Scenic Trail through the Addition. The National Park Service would work with the association to identify a route that minimizes trail conflicts and maximizes the solitude and experience of hikers.

63. Comment: *The National Park Service should include improvements to signs for the Florida National Scenic Trail in its plan, especially along the trail as it passes through the MM63 rest area and under I-75.*

Response: The National Park Service would work with the Florida Trail Association and U.S. Forest Service to develop a sign plan and implement recommended improvements for the portion of the scenic trail that is in the Addition. Specifically in the section passing through the rest area at MM63 the National Park Service would work with the trail association and Florida Department of Transportation to develop adequate signs and safe passage.

64. Comment: *If the National Park Service retains the backcountry recreation management zone, they should allow for dispersed camping in the zone.*

Response: The list of permitted activities for the backcountry recreation management zone was revised to allow dispersed camping.

Protected Species and Endangered Species Act (ESA) Compliance

65. Comment: *The preferred alternative in the Draft EIS should not be allowed because it causes significant adverse impacts to federally protected species, including the Florida panther, red cockaded woodpecker, and the wood stork.*

Response: An analysis of the impacts and potential effects to federally listed species is included in the plan and determines no major adverse impacts to federally protected species. The U.S. Fish and Wildlife Service will issue a separate “Biological Opinion” in response to the information and conclusions included in this plan. Their “Biological Opinion” will likely include specific conservation measures that must be implemented to ensure protection of listed species and ensure compliance with the Endangered Species Act.

Management Objectives and Funding

66. Comment: *The NPS analysis of impacts on Preserve operations from ORV use is inaccurate because they did not account for the significant time and financial resources that will be necessary to monitor resource impacts, restore areas, and provide proper management and enforcement of ORV use.*

Response: The analysis of impacts on NPS operations did include an evaluation of NPS staff time needed to manage and

enforce public use of the Addition. The cost estimates for each of the alternatives includes the cost of employees needed to properly manage recreation use in the Addition. The cost estimates also included the costs of capital construction projects. Costs for research and monitoring associated with the indicators included in table 7 and the activities included in table 8 are not included in the cost estimates presented in table 6.

Surface Water Flow and Water Quality

67. Comment: *The National Park Service has not properly analyzed potential impacts on surface water flow from the introduction of ORV use in the Addition, including cumulative impacts on hydrologic restoration efforts already underway in the region.*

Response: Additional language was added to the plan that further describes the localized and temporary impact that actions could have on surface water flow. Additional information was also added to the cumulative impact analysis of each of the alternatives to indicate that the actions proposed in the alternatives would have only localized adverse effects on surface water flow and hydrology (i.e., limited to the Addition and to site-specific areas) and that the overall effects on ecosystem restoration projects in south Florida would be negligible.

68. Comment: *The National Park Service incorrectly states that ORV use may affect water quality because there is no evidence that ORVs cause water pollution.*

Response: There is evidence of water quality impacts (such as turbidity and contamination from oils and fuel) from ORV use. The analysis included in the plan discusses and discloses the potential for

impacts on water quality that might result from ORV use in the Addition.

Monitoring, Restoration, and Research

69. Comment: *The National Park Service has not adequately explained how and when monitoring would occur to guide adaptive management and limit or eliminate impacts on flora and fauna in the Addition.*

Response: The indicators and standards included in table 7 would be the tools used to monitor important resource and social conditions and provide information on when management actions need to be adjusted. The management strategies and actions discussed in the “User Capacity” and “ORV Administration and Management” sections of the plan would be taken when needed to minimize impacts on flora and fauna. As noted on page 93 of the draft plan, the rigor of monitoring the indicators (e.g., frequency of monitoring cycles, amount of geographic area monitored) might vary depending on how close existing conditions are to the standards, how fast conditions are changing, whether specific and important values are threatened by visitation, and/or if the effects of management actions taken to address impacts are uncertain. Further, page 106 in the draft plan includes a general description of the methods for monitoring and a note that more detailed monitoring protocol and techniques would be developed as part of the phase I implementation of the ORV trail system. Monitoring protocol and techniques are detailed and often need to be adjusted as indicators are tested in the field, so this type of information is better suited to the implementation phases of the general management plan rather than being included in the plan itself.

Vegetation

70. Comment: *The impact conclusion identified for “prairies and marshes” does not correlate with the individual impact analysis that is presented for each of the topical areas.*

Response: The overall impact determination for prairies and marshes is accurate. The analysis of direct and indirect impacts resulting from the actions included in the plan is made up of individual analyses of impacts that would accrue from certain activities proposed in the plan, each with a different magnitude and intensity. The same is true for cumulative impacts. When the effects of the actions included in the plan are combined with the effects of actions from other past, present, and reasonably foreseeable future projects, there would be a long-term, minor, adverse cumulative impact to prairies and marshes.

Scope of the Plan

71. Comment: *The plan does not provide any guidance on “acquisition-deferred” or exempt properties in the Addition. If this issue is beyond the scope of this plan, then a reference to the proper document or plan should be added to the plan.*

Response: This issue is outside the scope of this plan. Exempt properties are referenced on page 8 of the draft plan. Additional language was added to further explain the relationship of this topic to this general management plan (see section on “Issues and Concerns Not Addressed in this General Management Plan” in chapter 1).

**AGENCIES, ORGANIZATIONS, AND INDIVIDUALS RECEIVING A COPY OF
THIS DOCUMENT**

FEDERAL AGENCIES

Advisory Council on Historic Preservation
Department of Agriculture
 Forest Service
 Natural Resources Conservation Service
Department of Defense
 Army Corps of Engineers
Department of the Interior
 Bureau of Indian Affairs
 National Park Service
 Everglades National Park
 Biscayne National Park
 Southeastern Archeological Center
 Fish and Wildlife Service
 South Florida Ecological Services
 Office
 Florida Panther National Wildlife
 Refuge
 Geological Survey
 South Florida Ecosystem Restoration
 Task Force
Environmental Protection Agency

STATE OF FLORIDA

Department of Community Affairs
Department of Environmental Protection
 Office of the Secretary
 South District Office
 Fakahatchee Strand Preserve State Park
Department of Transportation
 District One Office
Fish and Wildlife Conservation Commission
Office of the Governor
South Florida Water Management District
 Executive Director
 Lower West Coast Service Center
 Big Cypress Basin
State Historic Preservation Office

COUNTY/LOCAL GOVERNMENT

Collier County
 Manager
 Commission
 Sheriff
Everglades City
 Mayor
 Council
Miami-Dade County Commissioner, José
 “Pepe” Diaz
Southwest Florida Regional Planning Council

AMERICAN INDIAN TRIBES

Seminole Tribe of Florida
Seminole Nation of Oklahoma
Miccosukee Tribe of Indians of Florida

**FLORIDA CONGRESSIONAL
DELEGATION**

U.S. House of Representatives
 Mario Diaz-Balart

U.S. Senate
 Bill Nelson
 George LeMieux

FLORIDA STATE LEGISLATURE

Florida House of Representatives
 David Rivera
 Matt Hudson
 Ron Saunders

Florida Senate
 Larcenia Bullard

ORGANIZATIONS AND BUSINESSES

Allied Sportsmen's Associations of Florida
Audubon of Florida and Collier County
Big Cypress Sportsmen's Alliance
BreitBurn Energy Partners L.P.
Collier Resources Company
Collier Sportsmen & Conservation Club
Conservancy of Southwest Florida
Council of the Original Miccosukee
 Simanolee Nation, Aboriginal People
Defenders of Wildlife
Everglades Coordinating Council
Florida Biodiversity Project
Florida Outdoor Alliance
Florida Trail Association
Florida Wildlife Federation
Fort Myers News-Press
Independent Traditional Seminole Nation of
 Florida
Jetport Conservation & Recreation Club
Miami Herald
Naples Daily News
National Audubon Society
National Parks Conservation Association

National Wild Turkey Federation –
 Everglades Longbeards Chapter
National Wild Turkey Federation - Florida
 State Chapter
North American Butterfly Association –
 Miami Blue Chapter
Pegasus Foundation
Public Employees for Environmental
 Responsibility
Safari Club International
Sierra Club
South Florida Sun-Sentinel
The Humane Society of the United States
The Future of Hunting in Florida, Inc.
The Wilderness Society
Tropical Audubon Society
Wildlands CPR

INDIVIDUALS

There is an extensive list of individuals; these individuals will be notified of the availability of the final plan.



APPENDIXES, GLOSSARY, SELECTED REFERENCES,
PREPARERS AND CONSULTANTS, AND INDEX

APPENDIX A: LEGISLATION

PUBLIC LAW 93-440, AN ACT TO ESTABLISH BIG CYPRESS NATIONAL PRESERVE, AS AMENDED BY PUBLIC LAW 100-301, THE BIG CYPRESS NATIONAL PRESERVE ADDITION ACT

Note: All underlined sections are from the 1988 Addition Act

An Act to establish the Big Cypress National Preserve in the State of Florida, and for other purposes. (88 Stat. 1255) (P.L. 93-440)

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That (a) in order to assure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed in the State of Florida and to provide for the enhancement and public enjoyment thereof, the Big Cypress National Preserve is hereby established.

(b) The Big Cypress National Preserve (hereafter referred to as the "preserve") shall comprise the area generally depicted on the map entitled "Big Cypress National Preserve", dated November 1971 and numbered BC-91,001, which shall be on file and available for public inspection in the Offices of the National Park Service, Department of the Interior, Washington, District of Columbia, and shall be filed with appropriate offices of Collier, Monroe, and Dade Counties in the State of Florida. The Secretary of the Interior (hereafter referred to as the "Secretary") shall, as soon as practicable, publish a detailed description of the boundaries of the preserve in the Federal Register which shall include not more than five hundred and seventy thousand acres of land and water.

(c) The Secretary is authorized to acquire by donation, purchase with donated or appropriated funds, transfer from any other Federal agency, or exchange, any lands, waters, or interests therein which are located within the boundaries of the preserve or the Addition: *Provided*, That any lands owned or acquired by the State of Florida, or any of its subdivisions, in the preserve may be acquired by donation only and any land acquired by the State of Florida, or any of its subdivisions, in the Addition shall be acquired in accordance with subsection (d): *Provided further*, That no Federal funds shall be appropriated until the Governor of Florida executes an agreement on behalf of the State which (i) provides for the transfer to the United States of all lands within the preserve previously owned or acquired by the State and (ii) provides for the donation to the United States of all lands acquired by the State within the preserve pursuant to the provision of "the Big Cypress Conservation Act of 1973" (Chapter 73-131 of the Florida Statutes) or provides for the donation to the United States of any remaining moneys appropriated pursuant to such Act for the purchase of lands within the preserve. No improved property, as defined by this Act, nor oil and gas rights, shall be acquired without the consent of the owner unless the Secretary, in his judgment, determines that such property is subject to, or threatened with, uses which are, or would be, detrimental to the purposes of the preserve. The Secretary may, if he determines that the acquisition of any other subsurface estate is not needed for the purposes of the preserve and the Addition, exclude such interest in acquiring any lands within the preserve and the Addition. Notwithstanding the provisions of section 301 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (84 Stat. 1894, 1904) the Secretary (i) may evaluate any offer to sell land within the preserve or the Addition by any landowner and may, in his discretion, accept any offer not in excess of \$10,000 without an appraisal and (ii) may direct an appraisal to be made of any unimproved property within the preserve or the Addition without notice to the owner or owners thereof. Notwithstanding any other provision of law, any federally owned lands within the preserve or the Addition shall, with the concurrence of the head of the administering agency, be transferred to the administrative jurisdiction of the Secretary for the purposes of this Act, without transfer of funds. Nothing in this Act shall be construed to interfere with the right of the State of Florida to acquire such property rights as may be necessary for Interstate 75.

(d) (1) The aggregate cost to the United States of acquiring lands within the Addition may not exceed 80 percent of the total cost of such lands.

(2) Except as provided in paragraph (3), if the State of Florida transfers to the Secretary lands within the Addition, the Secretary shall pay to or reimburse the State of Florida (out of funds appropriated for such purpose) an amount equal to 80 percent of the total costs to the State of Florida of acquiring such lands.

(3) The amount described in paragraph (1) shall be reduced by an amount equal to 20 percent of the amount of the total cost incurred by the Secretary in acquiring lands in the Addition other than from the State of Florida.

(4) For purposes of this subsection, the term 'total cost' means that amount of the total acquisition costs (including the value of exchanged or donated lands) less the amount of the costs incurred by the Federal Highway Administration and the Florida Department of Transportation, including severance damages paid to private property owners as a result of the construction of Interstate 75.

SEC. 2. (a) In recognition of the efforts of the State of Florida in the preservation of the area, through the enactment of chapter 73-131 of the Florida statutes, "The Big Cypress Conservation Act of 1973", the Secretary is directed to proceed as expeditiously as possible to acquire the lands and interests in lands necessary to achieve the purposes of this Act.

(b) Within one year after the date of the enactment of this Act, the Secretary shall submit, in writing, to the Committee on Interior and Insular Affairs and to the Committees on Appropriations of the United States Congress a detailed plan which shall indicate:

- (i) the lands and areas which he deems essential to the protection and public enjoyment of this preserve.
- (ii) the lands which he has previously acquired by purchase, donation, exchange or transfer for administration for the purpose of this preserve, and
- (iii) the annual acquisition program (including the level of funding) which he recommends for the ensuing five fiscal years.

(c) It is the express intent of the Congress that the Secretary should substantially complete the land acquisition program contemplated by this Act within six years after the date of its enactment.

SEC. 3. (a) The owner of an improved property on the date of its acquisition by the Secretary may, as a condition of such acquisition, retain for himself and his heirs and assigns a right of use and occupancy of the improved property for a definite term of not more than twenty-five years or, in lieu thereof, for a term ending at the death of the owner or the death of his spouse, whichever is later. The owner shall elect the term to be reserved. Unless this property is wholly or partially donated to the United States, the Secretary shall pay the owner the fair market value of the property on the date of acquisition less the fair market value, on that date, of the right retained by the owner. A right retained pursuant to this section shall be subject to termination by the Secretary upon his determination that it is being exercised in a manner inconsistent with the purposes of this Act, which shall include the exercise of such right in violation of any applicable State or local laws and ordinances, and it shall terminate by operation of law upon the Secretary's notifying the holder of the right of such determination and tendering to him an amount equal to the fair market value of that portion of the right which remains unexpired.

(b) As used in this Act, the term "improved property" means:

(i) a detached, one family dwelling, construction of which was begun before November 23, 1971, with respect to the preserve and January 1, 1986, with respect to the Addition which is used for noncommercial residential purposes, together with not to exceed three acres of land on which the dwelling is situated and such additional lands as the Secretary deems reasonably necessary for access thereto, such land being in the same ownership as the dwelling, and together with any structures accessory to the dwelling which are situated on such lands and

(ii) any other building, construction of which was begun before November 23, 1971, with respect to the preserve and January 1, 1986, with respect to the Addition which was constructed and is used in accordance with all applicable State and local laws and ordinances, together with as much of the land on which the building is situated, such land being in the same ownership as the building, as the Secretary shall designate to be reasonably necessary for the continued enjoyment and use of the building in the same manner and to the same extent as existed in November 23, 1971, or January 1, 1986, as the case may be, together with any structures accessory to the building which are situated on the lands so designated. In making such designation the Secretary shall take into account the manner of use in which the building, accessory structures, and lands were customarily enjoyed prior to November 23, 1971 or January 1, 1986, as the case may be.

(c) Whenever an owner of property elects to retain a right of use and occupancy as provided in this section, such owner shall be deemed to have waived any benefits or rights accruing under sections 203, 204, 205, and 206 of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (84 Stat. 1894), and for the purposes of such sections such owner shall not be considered a displaced person as defined in section 101(6) of such Act.

SEC. 4. (a) The area within the boundaries depicted on the map referred to in section 1 shall be known as the Big Cypress National Preserve. Such lands shall be administered by the Secretary as a unit of the National Park System in a manner which will assure their natural and ecological integrity in perpetuity in accordance with the provisions of this Act and with the provisions of the Act of August 25, 1916 (39 Stat. 535; 16 U.S.C. 1-4), as amended and supplemented.

(b) In administering the preserve, the Secretary shall develop and publish in the Federal Register such rules and regulations as he deems necessary and appropriate to limit or control the use of Federal lands and waters with respect to:

- (1) motorized vehicles,
- (2) exploration for and extraction of oil, gas, and other minerals,
- (3) grazing,
- (4) draining or constructing of works or structures which alter the natural water courses,
- (5) agriculture,
- (6) hunting, fishing, and trapping,
- (7) new construction of any kind, and
- (8) such other uses as the Secretary determines must be limited or controlled in order to carry out the purposes of this Act: *Provided*, That the Secretary shall consult and cooperate with the Secretary of Transportation to assure that necessary transportation facilities shall be located within existing or reasonably expanded rights-of-way and constructed within the reserve in a manner consistent with the purposes of this Act.

SEC. 5. The Secretary shall permit hunting, fishing, and trapping on lands and waters under his jurisdiction within the preserve and the Addition in accordance with the applicable laws of the United States and the State of Florida, except that he may designate zones where and periods when no hunting, fishing, trapping, or entry may be permitted for reasons of public safety, administration, floral and faunal protection and management, or public use and enjoyment. Except in emergencies, any regulations prescribing such restrictions relating to hunting, fishing, or trapping shall be put into effect only after consultation with the appropriate State agency having jurisdiction over hunting, fishing, and trapping activities. Notwithstanding this section or any other provision of this Act, members of the Miccosukee Tribe of Indians of Florida and members of the Seminole Tribe of Florida shall be permitted, subject to reasonable regulations established by the Secretary, to continue their usual and customary use and occupancy of Federal or federally acquired lands and waters within the preserve and the Addition, including hunting, fishing, and trapping on a subsistence basis and traditional tribal ceremonials.

SEC. 6. Notwithstanding any other provision of law, before entering into any contract for the provision of revenue producing visitor services,

(i) the Secretary shall offer those members of the Miccosukee and Seminole Indian Tribes who, on January 1, 1972 (January 1, 1985, in the case of the Addition), were engaged in the provision of similar services, a right of first refusal to continue providing such services within the preserve and the Addition subject to such terms and conditions as he may deem appropriate, and

(ii) before entering into any contract or agreement to provide new revenue-producing visitor services within the preserve or within the Addition, the Secretary shall offer to the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida the right of first refusal to provide such services, the right to be open for a period of ninety days. Should both tribes respond with proposals that satisfy the terms and conditions established by the Secretary, the Secretary may allow the Tribes an additional period of ninety days in which to enter into an inter-Tribal cooperative agreement to provide such visitor services, but if neither tribe responds with proposals that satisfy the terms and conditions established by the Secretary, then the Secretary shall provide such visitor services in accordance with the Act of October 9, 1965 (79 Stat. 969, 16 U.S.C. 20). No such agreement may be assigned or otherwise transferred without the consent of the Secretary.

SEC. 7. Within five years from the date of the enactment of this Act with respect to the preserve and five years from the date of the enactment of the Big Cypress National Preserve Addition Act with respect to the Addition, the Secretary shall review the area within the preserve or the area within the Addition (as the case may be) and shall report to the President, in accordance with section 3 (c) and (d) of the Wilderness Act (78 Stat. 891; 16 U.S.C. 1132 (c) and (d)), his recommendations as to the suitability or unsuitability of any area within the preserve or the area within the Addition (as the case may be) for preservation as wilderness, and any designation of any such areas as a wilderness shall be accomplished in accordance with said subsections of the Wilderness Act.

SEC. 8. (a) Except as provided in subsection (b), there are authorized to be appropriated such sums as may be necessary to carry out the provisions of this Act, but not to exceed \$116,000,000 for the acquisition of lands and interests in lands and not to exceed \$900,000 for development. Any funds donated to the United States by the State of Florida pursuant to chapter 73-131 of the Florida statutes shall be used solely for the acquisition of lands and interests in land within the preserve.

(b) There is hereby authorized to be appropriated from the Land and Water Conservation Fund not to exceed \$49,500 000 for the acquisition of lands within the Addition. There is hereby authorized to be appropriated such sums as may be necessary for development in the Addition.

Approved October 11, 1974.

(The following are completely new sections added from Addition Legislation)

SEC. 9. (a) In order to --

(1) achieve the purposes of the first section of this Act;

(2) complete the preserve in conjunction with the planned construction of Interstate Highway 75; and

(3) insure appropriately managed use and access to the Big Cypress Watershed in the State of Florida,

the Big Cypress National Preserve Addition is established.

(b) The Big Cypress National Preserve Addition (referred to in this Act as the 'Addition') shall comprise approximately 146,000 acres as generally depicted on the map entitled Big Cypress National Preserve Addition, dated April, 1987, and numbered 176-91000C, which shall be on file and available for public inspection in the Office of the National Park Service, Department of the Interior, Washington, D.C., and shall be filed with appropriate offices of Collier County in the State of Florida. The Secretary shall, as soon as practicable, publish a detailed description of the boundaries of the Addition in the Federal Register.

(c) The area within the boundaries depicted on the map referred to in subsection (b) shall be known as the 'Big Cypress National Preserve Addition' and shall be managed in accordance with section 4.

(d) For purposes of administering the Addition and notwithstanding section 2(c), it is the express intent of the Congress that the Secretary should substantially complete the land acquisition program contemplated with respect to the Addition in not more than five years after the date of the enactment of this paragraph.

SEC. 10. The Secretary and other involved Federal agencies shall cooperate with the State of Florida to establish recreational access points and roads, rest and recreation areas, wildlife protection, hunting, fishing, frogging, and other traditional opportunities in conjunction with the creation of the Addition and in the construction of Interstate Highway 75. Three of such access points shall be located within the preserve (including the Addition).

SEC. 11. Not later than two years after the date of the enactment of this section, the Secretary shall submit to the Congress a detailed report on, and further plan for, the preserve and Addition including --

(1) the status of the existing preserve, the effectiveness of past regulation and management of the preserve, and recommendations for future management of the preserve and the Addition;

(2) a summary of the public's use of the preserve and the status of the access points developed pursuant to section 10;

(3) the need for involvement of other State and Federal agencies in the management and expansion of the preserve and Addition;

(4) the status of land acquisition; and

(5) a determination, made in conjunction with the State of Florida, of the adequacy of the number, location, and design of the recreational access points on I-75/Alligator Alley for access to the Big Cypress National Preserve, including the Addition.

The determination required by paragraph (5) shall incorporate the results of any related studies of the State of Florida Department of Transportation and other Florida State agencies. Any recommendation for

significant changes in the approved recreational access points, including any proposed additions, shall be accompanied by an assessment of the environmental impact of such changes.

SEC. 12. (a) Within nine months from the date of the enactment of the Big Cypress National Preserve Addition Act, the Secretary shall promulgate, subject to the requirements of subsections (b)-(e) of this section, such rules and regulations governing the exploration for and development and production of non-Federal interests in oil and gas located within the boundaries of the Big Cypress National Preserve and the Addition, including but not limited to access on, across, or through all lands within the boundaries of the Big Cypress National Preserve and the Addition for the purpose of conducting such exploration or development and production, as are necessary and appropriate to provide reasonable use and enjoyment of privately owned oil and gas interests, and consistent with the purposes for which the Big Cypress National Preserve and the Addition were established. Rules and regulations promulgated pursuant to the authority of this section may be made by appropriate amendment to or in substitution of the rules and regulations respecting non-Federal oil and gas rights (currently codified at 36 CFR 9.30, et seq. (1986)).

(b) Any rule or regulation promulgated by the Secretary under subsection (a) of this section shall provide that --

(1) exploration or development and production activities may not be undertaken, except pursuant to a permit issued by the National Park Service authorizing such activities or access; and

(2) final action by the National Park Service with respect to any application for a permit authorizing such activities shall occur within 90 days from the date such an application is submitted unless --

(A) the National Park Service and the applicant agree that such final action shall occur within a shorter or longer period of time; or

(B) the National Park Service determines that an additional period of time is required to ensure that the National Park Service has, in reviewing the application, complied with other applicable law, Executive orders and regulations; or

(C) the National Park Service, within 30 days from the date of submission of such application, notifies the applicant that such application does not contain all information reasonably necessary to allow the National Park Service to consider such application and requests that such additional information be provided. After receipt of such notification to the applicant, the applicant shall supply any reasonably necessary additional information and shall advise the National Park Service that the applicant believes that the application contains all reasonably necessary information and is therefore complete, whereupon the National Park Service may --

(i) within 30 days of receipt of such notice from the applicant to the National Park Service determine that the application does not contain all reasonably necessary additional information and, on that basis, deny the application; or

(ii) review the application and take final action within 60 days from the date that the applicant provides notification to the National Park Service that its application is complete.

(c) Such activities shall be permitted to occur if such activities conform to requirements established by the National Park Service under authority of law.

(d) In establishing standards governing the conduct of exploration or development and production activities within the boundaries of the Big Cypress National Preserve or the Addition, the Secretary shall take into consideration oil and gas exploration and development and production practices used in similar habitats or ecosystems within the Big Cypress National Preserve or the Addition at the time of

promulgation of the rules and regulations under subsection (a) or at the time of the submission of the application seeking authorization for such activities, as appropriate.

(e) Prior to the promulgation of rules or regulations under this section, the Secretary is authorized, consistent with the purposes of which the Big Cypress National Preserve Addition was established, to enter into interim agreements with owners of non-Federal oil and gas interests governing the conduct of oil and gas exploration, development or production activities within the boundaries of the Addition, which agreements shall be superseded by the rules and regulations promulgated by the Secretary when applicable: Provided, That such agreement shall be consistent with the requirements of subsections (b)-(d) of this section and may be altered by the terms of rules and regulations subsequently promulgated by the Secretary: Provided further, That this provision shall not be construed to enlarge or diminish the authority of the Secretary to establish rules and regulations applicable to the conduct of exploration or development and production activities within the Big Cypress National Preserve or the Addition.

(f) There is hereby authorized to be established a Minerals Management Office within the Office of the Superintendent of the Big Cypress National Preserve, for the purpose of ensuring, consistent with the purposes for which the Big Cypress National Preserve was established, timely consideration of and final action on applications for the exploration or development and production of non-Federal oil and gas rights located beneath the surface of lands within the boundaries of the Big Cypress National Preserve and the Addition.

(g) There are hereby authorized to be appropriated such sums as may be necessary to carry out the activities set forth in this section.

Legislative History.

House Report No. 93-502 (Comm. on Interior and Insular Affairs).

Senate Report No. 9-1128 (Comm. on Interior and Insular Affairs).

Congressional Record:

Vol. 119 (1973): Oct 3, considered and passed House.

Vol. 120 (1974); Sept 9, considered and passed Senate, amended.

Sept. 24, House concurred in Senate amendments with amendments.

Oct 1, Senate concurred in House amendments to Senate amendments.

APPENDIX B: WILDERNESS ELIGIBILITY DETERMINATION



United States Department of the Interior



NATIONAL PARK SERVICE
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, Florida 34141-1000

IN REPLY REFER TO:
L48 (BICY-S)

April 20, 2010

To: Jonathan Jarvis, Director
Thru: David Vela, Southeast Regional Director
From: Pedro Ramos, Superintendent
Re: BICY Addition Wilderness Eligibility Assessment

Per Public Law 100-301 and NPS Management Policies 2006 6.2.1, Big Cypress National Preserve has completed a wilderness eligibility assessment for the 147,000 acres of the Addition.

An internal wilderness eligibility assessment was completed in 2006 by the Preserve. This assessment was included in the Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement (GMP/EIS) released to the public in 2009. Based on the public input received, staff consideration, and consultation with WASO, SERO, DSC, and EQD, a revised wilderness eligibility assessment has been prepared.

Of the 147,000 acres assessed, 71,263 acres meet the wilderness eligibility criteria in the Wilderness Act of 1964 and NPS Management Policies 2006 6.2.1.1 and 6.2.1.2 and are eligible for wilderness designation.

With your approval, this eligibility assessment will be used as part of the wilderness study accompanying the final GMP/EIS.

Southeast Regional Director Concurrence:
Agree [Signature] Disagree _____ Date 4-20-10

for Director Approval:
Approve [Signature] Disapprove _____ Date 5/12/2010

Wilderness Eligibility Assessment - April 2010

Big Cypress National Preserve Addition



INTRODUCTION

This wilderness eligibility assessment has been prepared in accordance with legislative and policy mandates requiring an assessment of the wilderness eligibility of all lands administered by the National Park Service. This assessment does not propose wilderness, potential or otherwise, nor does it recommend wilderness boundaries. The purpose is solely to assess the eligibility of lands pursuant to the Wilderness Act of 1964 (Public Law 88-577), the Big Cypress National Preserve Addition Act (Public Law 100-301), and NPS Management Policies 6.2.1.

The eligibility assessment represents a combination of the eligibility assessment report completed in 2006 and the revised eligibility assessment completed in 2010. The 2010 eligibility assessment was undertaken as a result of comments received from the public, organizations, and agencies on the *Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement*. Wilderness eligibility determinations were made by analyzing each area relative to the wilderness criteria in the Wilderness Act of 1964 and the primary eligibility criteria in NPS Management Policies 6.2.1, with consideration for the criteria in 6.2.1.2.

WILDERNESS CRITERIA

The following criteria were used to evaluate all lands in the Big Cypress Addition for wilderness eligibility:

- The area is at least 5,000 acres or of sufficient size to make practicable its preservation and use in an unimpaired condition.
- The earth and its community of life are untrammelled by humans, where humans are visitors and do not remain.
- The area is undeveloped and retains its primeval character and influence without permanent improvements or human habitation.

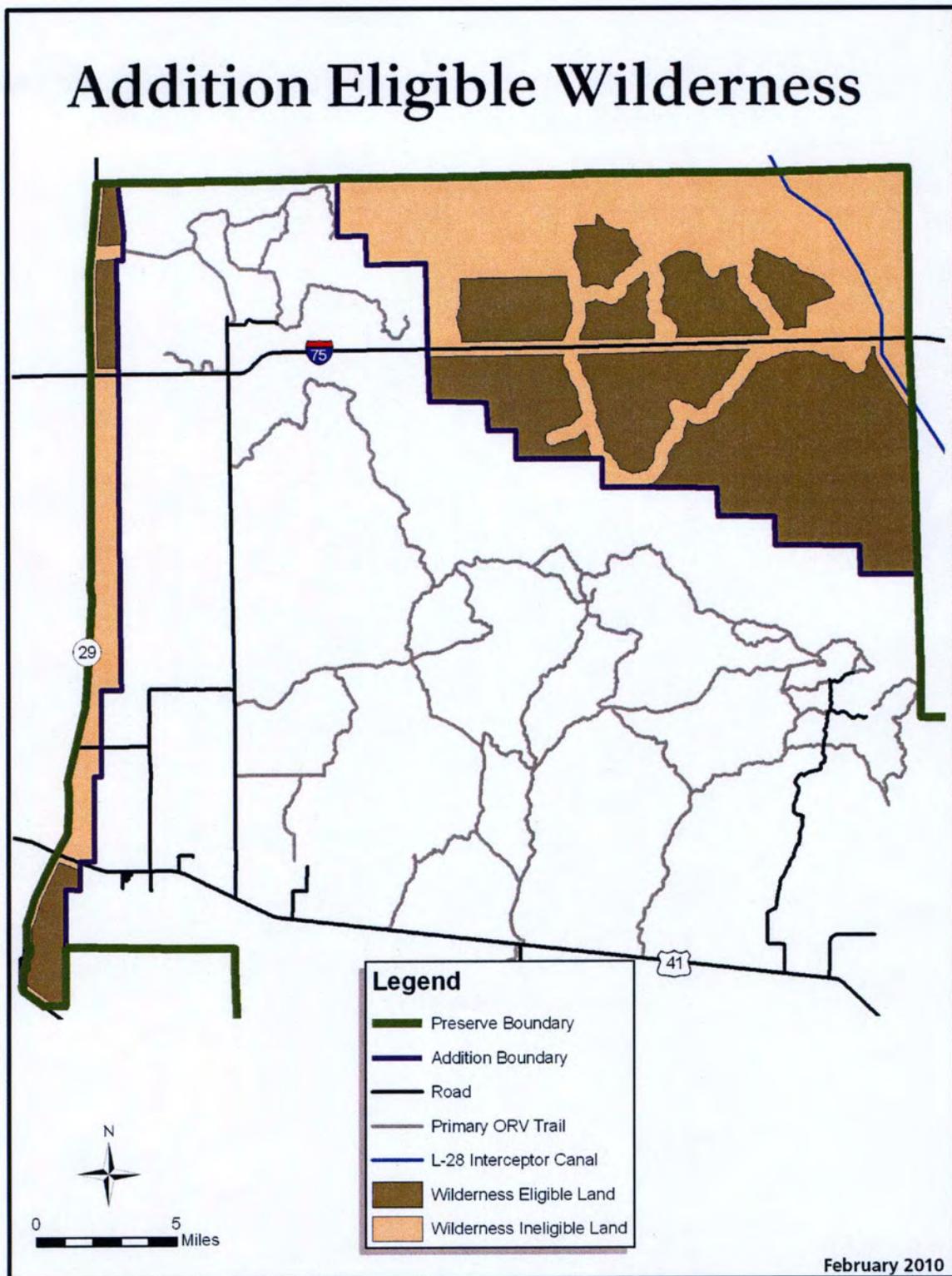
- The area generally appears to have been affected primarily by the forces of nature, with the imprint of humans' work substantially unnoticeable.
- The area is protected and managed so as to preserve its natural conditions.
- If needed restoration techniques and resulting impacts would be inconsistent with wilderness eligibility, then the area to be restored would not be wilderness eligible for purposes of this assessment.

ASSUMPTIONS

- The participants' definition of what was considered an example of a "substantial imprint of humans' work" included roads, trails, or other areas that were created by man and used significantly over time that would require substantial human intervention to restore.
- Whether the imprint of humans' work is substantially unnoticeable was reviewed from the perspective of a land manager and not a common visitor. Man's past work is, in many cases, substantially noticeable to a land manager, but may not be to the common visitor.
- The wilderness eligibility criteria were only applied to the Addition; areas in the original Preserve were not included as part of this analysis.
- If needed long-term restoration techniques would be inconsistent with wilderness eligibility, then the area to be restored would not be wilderness eligible.

FINDINGS

Of the 147,000 acres assessed, 71,263 acres were determined to be eligible for wilderness designation. See the map on the next page. For a more detailed presentation of the eligibility analysis and findings, please refer to the maps on pages 11 and 12.



Northeast Addition

Not Eligible for Wilderness Designation (North of I-75)

(#16) I-75 Right-of-Way (ROW): Quarter-mile (400 meters)¹ on either side of the actual ROW so as to include all past disturbances from highway engineering, construction and maintenance as well as continued motorized use and access for infrastructure maintenance. The area is not untrammelled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#17, #18) L-28 Interceptor Canal: Quarter-mile (400 meters) on either side of the actual ROW so as to include all past disturbances from canal engineering, construction and maintenance activities. The area is not untrammelled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#25, #24, #32) Bundschu, Nobles and Jones Grades: Quarter-mile (400 meters) on either side of the actual grade; includes the areas that have been altered or disturbed by unconventional techniques used to create roads and grades and resulted in sidecast debris. Other human disturbances such as borrow pits are present. The southern section of Jones Grade includes additional evidence of past human disturbance. These areas do not retain their primeval character, they bear the noticeable imprint of humans' work, and they do not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#34) Grades East of Jones Grade: Quarter-mile (400 meters) on either side of the actual grade; raised grades; significant imprint of humans. The area is not untrammelled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

¹ See description and rationale for "non-wilderness corridors" on pages 9-10. All corridors have been established as a total width of ½ mile.

(#31) Trail Connecting Jones and Nobles Grades: Quarter-mile (400 meters) on either side of the actual trail; trail has been significantly used; humans' work is substantially noticeable when on the ground and other man-made items are visible adjacent to the trail; motorized use would continue; the area is not untrammelled by humans and does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#30, #28) One-mile Strip North of Pipeline: the pipeline ROW width is 50 feet and runs west to east across the northern area of the northeast Addition. The area to the north of the ROW has been disturbed by past construction and maintenance activity. Many trails bisect this area; adjacent land management impinges on its primitive character. As a result, the area is not untrammelled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#33) East of L-28 and North of I-75: this area has been substantially altered by man --hydrology and prior human land uses.

(#27) Storelli Property: substantially altered (roads, houses); boundaries are based on property lines in the absence of any major topographic features; does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#26) Big Cypress Sanctuary: substantially altered by man (roads, houses); boundaries based on property lines in the absence of any major topographic features; does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#35) West and South of Sanctuary: camps are present; adjacent to trail/road that serves exempt properties. The area is not untrammelled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#23) Area not practicable to be managed as wilderness; adjacent to other motorized corridors/areas deemed ineligible; does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#7) Man's work is substantially noticeable. A rectangular strip of past disturbance, probably an old bulldozed property line, exists in the vicinity of Nobles Ranch. The areas north to the pipeline and west and east are also disturbed. An old agricultural ditch is present and a man-made pit is visible on the east side of Nobles Grade.

(#6) This area includes old, abandoned agricultural fields that have and will be actively restored/maintained and intentionally manipulated with motorized equipment to achieve desired resource conditions. Exotic vegetation, including the root mat, has been removed. Original pine trees have been cut; pine trees may be planted. Remnants of ditch and dike agricultural techniques are present, although old ditches have been filled in. The southern boundary is an old fence line that runs west to east. Trails have been significantly used. The area is not untrammelled by humans and humans' work is substantially noticeable when on the ground; motorized use would continue.

(#29) This area does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation; past disturbance and bisecting trails present.

(#5) As a result of adjacent Bundschu Grade and its corridor, this area is not of a shape that could be practicably managed as wilderness.

Not Eligible for Wilderness Designation (South of I-75)

(#20) This area is not of sufficient size and shape to practicably manage as wilderness.

(#21) This area does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation; is not of sufficient size and shape to practicably manage as wilderness.

(#22) Quarter-mile (400 meters) corridor on either side of existing trails; trails have been significantly use; portions of the trail are a former oil and gas road; humans' work is substantially noticeable when on the ground and other man-made items are visible adjacent to the trail; motorized use would continue. The area is not untrammelled by humans and does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Eligible for Wilderness Designation

(#8, #10) **Areas East of Nobles Grade:** large, wild areas with minor imprints of man. Natural processes and conditions prevail. The areas are of sufficient size to preserve in an unimpaired condition.

(#9) **Kissimmee Billy Strand and Adjacent Areas:** a remote area devoid of trails. Natural processes dominate and man's imprint is substantially unnoticeable. Outstanding opportunities for solitude or a primitive and unconfined type of recreation exist.

(#11, #12) **East of Grades and North of I-75:** large, wild areas with minimal imprints of man. Natural processes and conditions prevail. The areas are of sufficient size to preserve in an unimpaired condition.

(#13) **Mullet Slough West:** a remote area largely devoid of trails and adjacent to wildlands with no ORV impacts. Natural processes dominate and man's imprint is substantially unnoticeable. Outstanding opportunities for solitude or a primitive and unconfined type of recreation exist.

(#14) **Mullet Slough Central:** a large block of contiguous, primeval, undeveloped habitat that has been primarily affected by the forces of nature and where natural processes dominate. The area is of sufficient size to preserve in an unimpaired condition. Man's imprint is substantially unnoticeable, and the area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#15) **Mullet Slough East:** a large block of contiguous, primeval, undeveloped habitat that has been primarily affected by the forces of nature and where natural processes dominate. The area is of sufficient size to preserve in an unimpaired condition. Man's imprint is substantially unnoticeable, and the area offers outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Western Addition

Not Eligible for Wilderness Designation (North of I-75)

(#36) **SR 29 ROW:** Quarter-mile (400 meters) to the east of the actual ROW; includes past disturbance from road construction, including the canal and borrow pits. The area is not untrammelled

by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#36) I-75 ROW: Quarter-mile (400 meters) on the north side of the actual ROW so as to include all past disturbances from highway engineering, construction and maintenance as well as continued motorized use and access for infrastructure maintenance. The area is not untrammled by humans, it does not retain its primeval character, it bears the noticeable imprint of humans' work, and it does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#36) Bear Island Grade: Quarter-mile (400 meters) on either side of the actual ROW so as to include all past disturbances from construction and maintenance as well as continued motorized use.

(36#) North Side of I-75/SR 29 Interchange Triangle: includes past disturbance from engineering, construction, and maintenance, including the canal; continued motorized use.

(36#) Private Land: plus 50-foot buffer around property lines due to previous disturbance; falls within the $\frac{1}{4}$ mile of the SR 29 and I-75 ROW.

Not Eligible for Wilderness Designation (Between I-75 and U.S. 41)

(#3) Areas of past human disturbance and private property exist. Humans' work is noticeable. When areas of past disturbance are removed from eligibility, the remaining lands become very fragmented and management as wilderness is not practicable. The ability of a land manager or visitor to determine when he/she was in or out of an eligible area would be very limited.

The disturbances listed below contribute to the finding that area #3 is not eligible.

Note: many disturbances below fall within $\frac{1}{4}$ -mile of the SR 29, I-75, and U.S. 41 ROW.

- **I-75 ROW:** Quarter-mile (400 meters) south of the actual ROW so as to include all past disturbances from highway engineering, construction and maintenance as well as continued motorized use and access for infrastructure maintenance.

- **SR 29 ROW:** Quarter-mile (400 meters) to the east of the actual ROW includes past disturbance from road construction, including the canal and borrow pits.
- **U.S. 41 ROW:** Quarter-mile (400 meters) north of the actual ROW so as to include all past disturbances from highway engineering, construction and maintenance as well as continued motorized use and access for infrastructure maintenance.
- **South Side of I-75/SR 29 Interchange Triangle:** includes past disturbance from engineering, construction, and maintenance, including the canal; continued motorized use.
- An old agricultural area lies southeast of the I-75/SR 29 junction. Furrows are prominent and substantially noticeable; vegetation differs from adjacent natural areas, and soil chemistry has been altered due to past agricultural activity.
- Other areas of past human agricultural activity and disturbance exist within this strip of land, and humans' work is noticeable. Vegetation in disturbed areas differs from adjacent natural areas.
- **Tram North of Deep Lake:** past disturbance due to construction and use.
- **Lower Wagonwheel Road ROW:** plus 50 feet on both sides due to disturbance from construction and continued use.
- **Private Land:** plus 50-foot buffer around property lines due to previous disturbance.

Not Eligible for Wilderness Designation (South of U.S. 41)

Note: most disturbances below fall within the $\frac{1}{4}$ mile of the SR 29 and U.S. 41 ROW.

(#37) SR 29 ROW: Quarter-mile (400 meters) to the east of the actual ROW includes past disturbance from road construction, including the canal and borrow pits; does not offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

(#37) U.S. 41 ROW: Quarter-mile (400 meters) south of the actual ROW so as to include all past disturbances from highway engineering, construction and maintenance as well as continued motorized use and access for infrastructure maintenance. This distance allows for opportunities for solitude and primitive recreation.

(#37) Municipal Boundary and Edge of Lake Placid: Used regularly by Everglades City; human use; practical boundary for wilderness management.

(#37) Private Land: plus 50-foot buffer around property lines due to previous disturbance.

(#37) LCEC Power Substation: private property, developed.

(#37) Everglades City Chamber of Commerce: dredged and filled; encumbered with leases.

Plantation Island Subdivision and Access Road: private property; outside of BICY boundary.

Eligible for Wilderness Designation

(#1, #2, #4) sensitive and wild natural areas without trails and primarily affected by the forces of nature; adjacent to designated wilderness in Everglades National Park. The areas are undeveloped and offer outstanding opportunities for solitude or a primitive and unconfined type of recreation.

Width of Non-Wilderness Corridors along Roads, Trails, and Canals

The non-wilderness corridor width was established as 1/2 mile (or ¼ mile from the centerline of established roads, trails, and canals). This exclusion area was established to accommodate environmental protection and safety considerations, such as for fire management, exotic/invasive plant and animal control, hunting and retrieval of game, and traditional uses including the gathering of native materials.

For example, all constructed roads, trails, and canal embankments represent a change in elevation that provides an opportunity for non-native plant invasion. The road shoulder, even if represented by only inches in change from natural wetland grade, provides space above standing water for seeds to

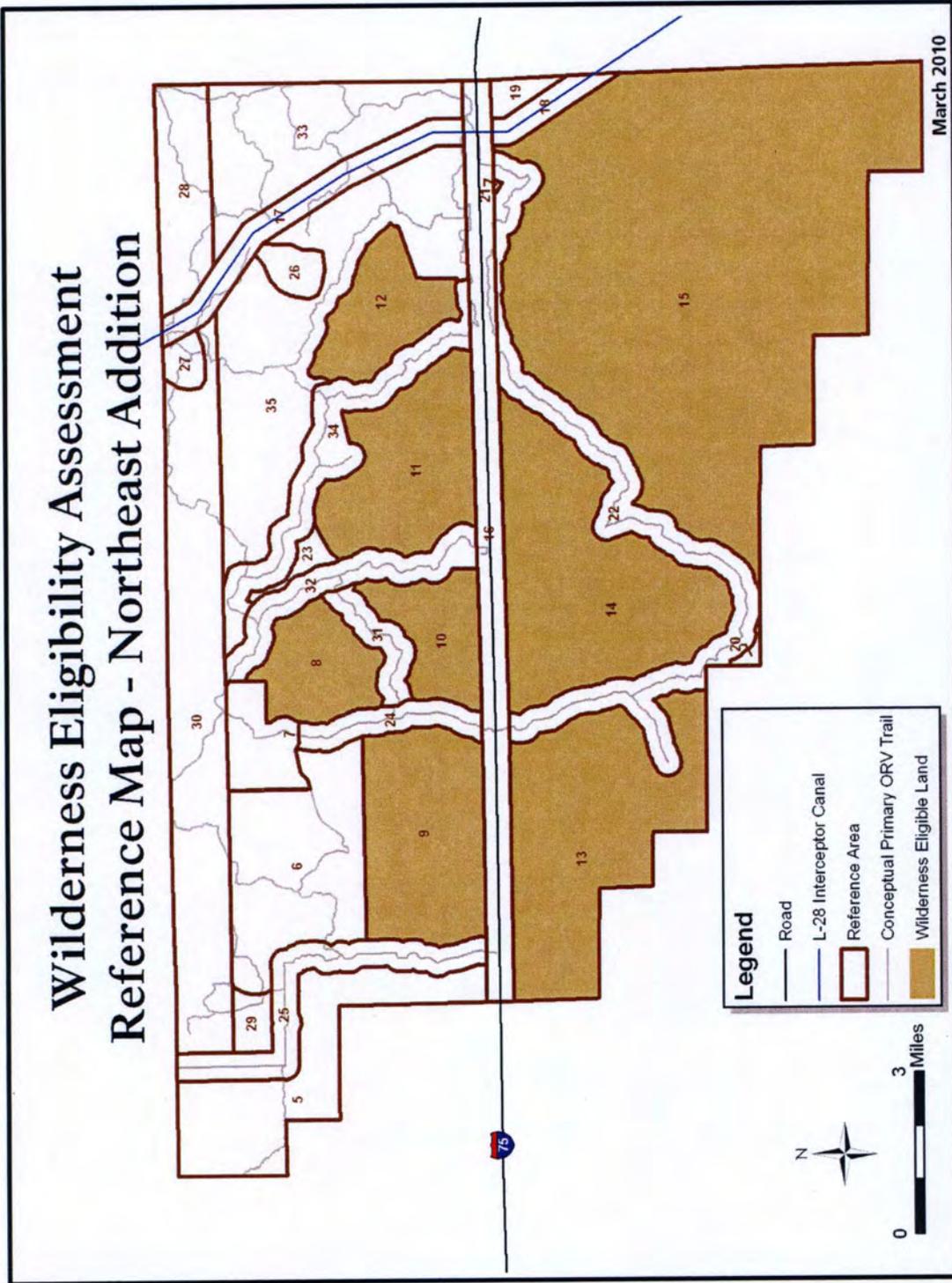
germinate if a source is nearby. Most exotic invasives become established more easily in disturbed areas such as raised road shoulders and other significant constructed features. Specific management techniques, including mechanical treatment, are required in these areas to maintain the ecological integrity of the Preserve.

Furthermore, the Preserve's enabling legislation (P.L. 100-301) at Sec. 4 (b) (8) discusses the Secretary's authority to develop rules and regulations necessary to limit or control use of the area with respect to a list of activities including "such other uses as the Secretary determines must be limited or controlled in order to carry out the purposes of this Act: *Provided, That the Secretary shall consult and cooperate with the Secretary of Transportation to assure that necessary transportation facilities shall be located within existing or reasonably expanded rights-of-way and constructed within the reserve in a manner consistent with the purposes of this Act.*"

SUMMARY

The table below lists the reference areas and corresponding acreages for the eligible wilderness depicted in the reference maps on pages 11 and 12.

Reference Area No.	Acres
1	988
2	1,808
4	3,422
8	2,458
9	5,475
10	2,325
11	4,901
12	2,694
13	8,530
14	8,904
15	29,758
Total	71,263



APPENDIX C: CONSULTATION LETTERS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

September 3, 2009

Mr. Pedro Ramos, Superintendent
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, FL 34141-1000

**RE: EPA Review and Comments on Big Cypress National Preserve - Addition,
Draft General Management Plan/Wilderness Study, Off-Road Vehicle
Management Plan/Environmental Impact Statement - May 2009;
CEQ No. 20090229**

Dear Mr. Ramos:

Pursuant to Section 102(2)(C) of the National Environmental Policy Act (NEPA) and Section 309 of the Clean Air Act, the U.S. Environmental Protection Agency (EPA) has reviewed the subject Big Cypress National Preserve - Addition, Draft General Management Plan / Wilderness Study / Off-Road Vehicle (ORV) Management Plan / Environmental Impact Statement – of May 2009 prepared by the National Park Service (NPS). This draft plan, study and EIS of the Preserve Addition will hereafter be referred to as the Draft Environmental Impact Statement (DEIS).

The NPS finalized a *General Management Plan* for the Preserve in 1991. That plan addressed only the original Preserve and contained no guidance for the Addition. The Addition, located in Collier County, Florida, was established as part of Big Cypress National Preserve. The Addition is about 147,000 acres and consists of two separate areas — the Northeast Addition and the Western Addition. Most of the lands, about 128,000 acres in the Northeast Addition, are northeast of the original Preserve boundary. The Western Addition is an approximately 1-mile strip of land (approximately 19,000 acres) between State Road 29 and the western boundary of the original Preserve.

This DEIS presents four alternatives, including the NPS's Preferred Alternative, for future management of the Addition. The four alternatives include the "no-action" alternative (Alternative A), which describes the continuation of current management direction, and three "action" alternatives (Alternative B, Preferred Alternative, and Alternative F). Additional alternatives (Alternatives C, D, and E) were considered; however, these alternatives were dismissed from further detailed analysis.

The concept for management under Alternative B would be to enable visitor participation in a wide variety of outdoor recreational experiences. It would maximize motorized access, provide the least amount of proposed wilderness, and develop limited new hiking only trails. New visitor and operations facilities along the I-75 corridor

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would also be provided. The key impacts of implementing Alternative B would include moderate, long-term, adverse, and mostly localized impacts on surface water flow; long-term, moderate, adverse and potentially Addition-wide impacts on the control of exotic/nonnative plants; long-term, moderate, adverse and mostly localized impacts on (likely to adversely affect) the Florida panther; long-term, minor to moderate, adverse and mostly localized impacts on (likely to adversely affect) the red-cockaded woodpecker; long term, minor to moderate, adverse and mostly localized impacts on major game species; long-term, moderate, beneficial and Addition-wide impacts on wilderness resources and values; long-term, moderate, and beneficial impacts on visitor use and experience.

Alternative F would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of wilderness, no ORV use and minimal new facilities for visitor contact along I-75. The key impacts of implementing Alternative F would include minor, beneficial, long-term, and mostly localized impacts on surface water flow; long-term, minor, adverse, and mostly localized impacts on (not likely to adversely affect) the Florida panther; long term, major, beneficial, and Addition-wide impacts on wilderness resources and values; long-term, minor, beneficial impacts on visitor use and experience.

The Preferred Alternative would provide diverse front country and backcountry recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. This alternative would maximize ORV access, provide a moderate amount of wilderness, provide non-motorized trail opportunities and new camping opportunities, and develop a partnership approach to visitor orientation. New visitor and operations facilities along the I-75 corridor would also be provided. The key impacts of implementing the Preferred Alternative would include moderate, long-term, adverse, and mostly localized impacts on surface water flow; long-term, moderate, adverse and potentially Addition-wide impacts on the control of exotic/non-native plants; long-term, moderate, adverse and mostly localized impacts on (likely to adversely affect) the Florida panther; long-term, minor-to-moderate, adverse and mostly localized impacts on (likely to adversely affect) the redcockaded woodpecker; long-term, minor to moderate, adverse and mostly localized impacts on major game species; long-term, moderate, beneficial and Addition-wide impacts on wilderness resources and values; long-term, moderate, and beneficial effects on visitor use and experience.

EPA submits the following comments on this DEIS for your consideration in the Final EIS (FEIS):

General Comments

Alternatives

The Addition currently has 253 miles of ORV trails. The Preferred Alternative would authorize the use of 140 miles of those ORV trails. The FEIS should identify how it was determined that 140 miles of ORV trails is the least amount necessary in order to provide access throughout the site and still maintain an ecological balance within the Addition. Also, information on the use of the remaining 113 miles of ORV trails located within the Addition should be provided. EPA recommends that any trails not used to be restored to its natural community type.

Avoidance and Minimization of Wetland Impacts

In reviewing the four alternatives proposed, the DEIS did not include information on efforts taken to avoid and minimize wetland and other waters of the US impacts. EPA requests that the FEIS provide information on measures that have been taken to avoid and minimize onsite waters of the US impacts.

To further minimize wetland impacts, please consider the use of lower water crossings during trail restoration. The use of low-water crossings will allow the natural sheet flow of water and still allow the use of the trail for ORV use.

Wetland Impacts and Mitigation

The DEIS did not include information on the total amount of wetland impacts that will occur per alternative and the mitigation necessary to offset those impacts. The FEIS should provide a description of the wetland impacts which will occur by alternative and how those impacts will be mitigated. In addition, a wetland functional analysis for all proposed wetland impacts and mitigation necessary to offset those impacts should be provided. Technical rationale for each score should also be included.

Cumulative Impact Analysis

The DEIS lacked detailed information on the cumulative impacts the proposed alternatives would have on the environment. EPA requests that the FEIS provide a cumulative impact analysis for the entire Big Cypress National Preserve, including the Addition. It is essential that the FEIS provide a clear understanding of the potential direct, indirect (secondary), and cumulative environmental impacts the proposed alternatives will have on the aquatic and other affected resources within the project area in association with other past, present and reasonably foreseeable projects.

Specific Comments on DEIS

Motorized Recreational Opportunities –Trails and Permits (pg. 80)

The DEIS states that a maximum of 700 ORV permits would be issued annually for the Addition. How was it determined that the issuance of 700 ORV permits would not have a negative impact on the aquatic environment? The DEIS did not provide detailed information.

Restoration (pg. 108)

The DEIS states that the NPS would restore areas that have been impacted by off-road vehicles within the Addition. The FEIS should document the total number of acres impacted by off-road vehicles, the restoration efforts proposed, and how future off-road impacts will be restricted.

Major Game Species (pg. 186)

According to the DEIS, the major food source for the Florida Panther is the white-tailed deer. How will the white-tail deer hunting within the Addition be managed to insure it does not have an impact on the Florida Panther's prey supply?

Developed Campgrounds (pg. 200)

The DEIS states that no developed campgrounds currently exist in the Addition. It is unclear if the NPS is proposing to develop these types of campgrounds within the Addition. The FEIS should be clear on this point and identify any ecological impacts should developed campgrounds be proposed.

Nonmotorized Use (including hiking horseback riding, and bicycling) (pg. 336)

The DEIS did not provide any discussions on the proposed authorization of horseback riding within the Addition. EPA believes that the FEIS should include restrictions on horseback riding to insure it does not have an adverse impact on the aquatic functions of the Addition.

EPA DEIS Rating

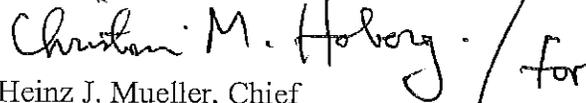
EPA rates this document EC-2 (Environmental Concerns, additional information requested). We have concerns that NPS's Preferred Alternative will have impacts on the environment that could and should be avoided. The DEIS does not contain sufficient information to fully assess the environmental impacts that should be avoided in order to protect the environment. Additional information, data, analyses, or discussion should be included in the FEIS.

Summary

EPA finds that the Preferred Alternative may adversely impact surface water flow; the control of exotic/non-native plants; the Florida panther's food supply; the redcockaded woodpecker and localized impacts on major game species. EPA also has concerns for potential impacts to wetlands and other waters of the US. Overall, the aquatic environment could be negatively impacted by the addition of 700 ORV permits in the Addition area. EPA recommends that the FEIS provide a cumulative impact analysis for the entire Big Cypress National Preserve, including the Addition. It is essential that the FEIS provide a clear understanding of the potential direct, indirect (secondary), and cumulative environmental impacts the proposed alternatives will have on the aquatic and other affected resources within the project area in association with other past, present and reasonably foreseeable projects. We also recommend consideration of Alternative F which would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of wilderness, no ORV use, and minimal new facilities for visitor contact along I-75.

We appreciate the opportunity to review this document. Please call Ken Clark of my staff at (404) 562-8282 or clark.ken@epa.gov if you have questions on our comments.

Sincerely,

Handwritten signature of Christian M. Hoberg in black ink, followed by a slash and the word "for".

Heinz J. Mueller, Chief
NEPA Program Office
Office of Policy and Management



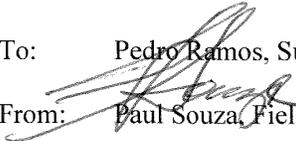
United States Department of the Interior

FISH AND WILDLIFE SERVICE
 South Florida Ecological Services Office
 1339 20th Street
 Vero Beach, Florida 32960



October 9, 2009

Memorandum

To: Pedro Ramos, Superintendent, Big Cypress National Preserve
 From:  Paul Souza, Field Supervisor, South Florida Ecological Services Office
 Subject: Addition Lands Draft General Management Plan Comments, Service Federal
 Activity Code: 41420-2006-FA-1398

Thank you for the opportunity to provide comments on the National Park Service's (NPS) draft General Management Plan for the Big Cypress National Preserve – Addition (GMP). Your letter, dated July 20, 2009, indicated that the comment period for the draft GMP would conclude on September 30, 2009. We thank you for the extension to provide our comments. The U.S. Fish and Wildlife Service (Service) would like to offer the following comments for your consideration. The comments presented in this memorandum represent those of this office and have been fully coordinated with the Florida Panther and Ten Thousand Islands National Wildlife Refuges (NWRs). We are available to discuss the comments in detail with you and your staff at your convenience.

PROJECT DESCRIPTION AND BACKGROUND

The development of the GMP for the Addition Lands is an NPS requirement. These lands were not owned by the Federal government when the GMP for Big Cypress National Preserve (BICY) was approved in 1991 (NPS 1991); therefore, a separate GMP must be developed for the Addition Lands. This draft GMP includes four alternatives, including the no-action alternative. The alternatives use the concept of zoning for levels of activity. The four zones described are:

1. Developed – This zone includes Interstate 75 (I-75) access points, orientation and interpretation facilities, comfort stations, boardwalks and trails, administrative facilities, and commercial facilities.
2. Frontcountry – This zone includes recreational access or trailhead parking, picnic areas, orientation facilities, campgrounds, comfort stations, boardwalks and trails, and commercial activities.
3. Backcountry Recreation – This zone includes hiking, backpacking, hunting, fishing, horseback riding, camping, boating, bicycling, and vehicle use. Vehicle use is restricted to designated trails. Public water supply, information/interpretation, ranger stations, fire cache, outfitter/guide activities, and resource protection and monitoring activities are also included.



4. Primitive Backcountry – This zone includes hiking, backpacking, hunting, fishing, horseback riding, camping, and non-motorized boating. Trails will be designated in this zone. Outfitter/guide activities would be permitted and resource monitoring and protection activities would occur.

Alternative A is the “no action” alternative. Under this alternative, the Addition Lands would remain closed to motorized vehicle traffic. Wilderness and Off Road Vehicle (ORV) trails would not be designated under this alternative. Pedestrian use would continue.

Alternative B would provide “maximize motorized access, provide the least amount of proposed wilderness, and develop limited new hiking only trails. New visitor and operations facilities along the I-75 corridor would also be provided.” This alternative includes designation of 140 miles of primary ORV trails and issuance of a maximum of 700 permits, annually. Approximately 48,919 acres of the Addition Lands would be designated as wilderness under this alternative.

The Preferred Alternative would “maximize ORV access, provide a moderate amount of wilderness, provide non-motorized trail opportunities and new camping opportunities, and develop a partnership approach to visitor orientation. New visitor and operations facilities along the I-75 corridor would also be provided.” This alternative also includes designation of 140 miles of primary ORV trails and issuance of a maximum of 700 permits. Approximately 85,862 acres of the Addition Lands would be designated as wilderness under this alternative.

Alternative F would “provide the maximum amount of wilderness, no ORV use, and minimal new facilities for visitor contact along I-75.” While no motorized vehicles would be permitted in the eastern Addition, motorized vessels would continue to be permitted in the western Addition along the State Road (SR) 29 corridor. Under this alternative approximately 111,601 acres would be designated as wilderness.

Additional details on each alternative being considered for inclusion in the National Environmental Policy Act of 1970 (NEPA) review are included in the draft GMP.

GENERAL COMMENTS

The document includes helpful graphics that are easy to read. Please consider adding management unit boundaries and other locations referenced in the text of the document to the maps to improve their utility. The tables provide good information and the formatting is easy to follow. In addition, the background of the history and need for the GMP is well done and informative.

We recommend that the GMP include a list of activities that will require a “least tool” analysis in order to be carried out in a wilderness area. We encourage the NPS to include stakeholders in these analyses. It is our understanding that research and monitoring activities would be allowed in designated wilderness areas provided a “least tool” analysis is performed on the specific

activity or suite of activities. For example, use of ATVs or swamp buggies may be allowed to access designated wilderness areas for such activities as radio-instrumenting panthers or performing other research as long as it meets the “least tool” analysis criteria. If this is not the case, please clarify what research and monitoring activities would be allowed in designated wilderness or the constraints such designation would have on these activities. We share some of the concerns expressed by the Florida Fish and Wildlife Conservation Commission (FWC) and other State partners regarding the potential impacts of wilderness designation on fire management, exotic species control, and panther conservation activities. We encourage you to ensure that any wilderness designation is fully compatible with accomplishing actions needed to appropriately manage fire, fuel, exotic species, and panthers.

Table 1 – Impact Topics. While we agree with most of the “topics” that are dismissed, we believe that some topics should be evaluated further. The Everglade snail kite, American crocodile, and eastern indigo snake should be retained and analyzed because the description in Table 1 suggests a “may affect, not likely to adversely affect” determination. In order to fulfill the requirement of the implementing regulations (50 CFR § 402), an informal consultation is likely to be necessary for those species. Therefore, a complete analysis of the potential effects should be documented in either the GMP or a Biological Evaluation.

The Service believes the NPS should further clarify distinctions across the range of alternatives offered in the draft GMP. Alternative B and the Preferred Alternative appear nearly identical with the exception of the portion of the Addition Lands recommended for inclusion in wilderness designation. In particular, both alternatives include 140 miles of primary ORV trails and 700 annual permits. We recommend clarifying differences and developing a framework for analyzing variations in the amount of trails and number of permits for an adaptive management approach.

The draft GMP does not contain information on administrative (NPS, FWC, researchers, oil and gas operators, contractors) ORV use. Please include information on the type of administrative ORV use that would be allowed in each of the alternatives.

The Cowbell Strand/California Slough area contains large cypress. We recommend this area and the Mullet Slough area remain free of adverse ORV impacts. We recommend that measures be developed and implemented to ensure the hydrologic and ecological integrity of sloughs and prairies is maintained. Please also explain how trails in this area were configured.

As stated in our June 13, 2007, memorandum (attached), we recommend the NPS consider the potential effects that Comprehensive Everglades Restoration Plan projects, particularly the L-28 Interceptor project, could have on the Addition Lands and its hydrology, as well as wildlife use when designing special use zones. Corridor locations for wildlife entering and exiting BICY should be included in the planning and design of management zones.

Information presented on the Florida panther (*Puma concolor coryi*) is dated. This section should present the most current science on the species as well as its status and the status of

Pedro Ramos

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recovery actions taking place within BICY. Please update the science of the species to enable the NPS to make informed decisions regarding the potential effects of the alternatives on the Florida panther. Updated information on the Florida panther may be found in the 2008 revision of the Florida panther recovery plan (Service 2008).

When considering management of open tidal waters regarding manatee speed zones, NPS must remember that the bay bottoms (submerged lands) are not federally-owned, consequently NPS may have no authority to manage activities on or within the water column. Please clarify if a management agreement with the State has been developed that would enable NPS to enforce state regulations on tidal waters within the BICY boundary.

We support the proposed facility development listed in Alternative B and the Preferred Alternative. At I-75 Mile Marker 51, we recommend that visitor orientation should include information on recreational opportunities on other local public lands including Florida Panther and Ten Thousand Islands NWR and Fakahatchee Strand Preserve State Park. Information on local refuges, parks and forests could also be available at the proposed visitor center at Mile Marker 63. Additional opportunities to promote local public lands and partnerships could occur at Bear Island Grade at SR 29 and Miles City (I-75 at SR 29). It would also be helpful to evaluate the additional access afforded by the I-75 access points as well as the increase in recreational pressure from ongoing residential and commercial development in south Florida.

Level of use restrictions such as management unit quotas for hunting or ORV use, are not mentioned in the draft GMP. As noted in our June 13, 2007, memorandum providing comments on the alternatives described in NPS' Newsletter 3, we recommend determining management unit quotas by vehicle type and number of permits appropriate for a given management unit. We recommend level of use quotas to be established for all management units in BICY, which will help in assessing the effects of specific levels of use on federally-listed species and their habitats.

The proposed trailhead and parking area at Bear Island Grade and SR29 is located adjacent to a panther/wildlife crossing. This proposed trailhead is present in each alternative except the No Action Alternative. We support the compatible development of an access point to BICY; however care must be taken to manage the method of public access (such as self-closing gates, etc.) to prevent panthers/wildlife from accidentally entering the roadway. We believe this area could accommodate a small parking area (8-12 vehicles) for anglers, bicyclists, hikers and hunters. The design of this trailhead and parking area should take into consideration the proximity of the panther crossing and provide vegetative barriers between the visitors and the wildlife bridge. In addition, we believe wildlife would be more likely to use the crossing if the NPS cleared a trail that diverged from Bear Island Grade to the wildlife bridge.

We recommend greater analysis of the impact of non-native animals on fish and wildlife resources in the Addition Lands. Most discussion of impacts of non-native species is limited to plants. Non-native animals, such as the Mexican bromeliad weevil (*Metamasius callizona*), have an impact on rare native plant species. Additionally, the proliferation of exotic fish in south

Florida impacts the aquatic ecosystems in the area. Please address the potential impacts of the spread of invasive non-native animals by human activity in the Addition.

We recommend the GMP further evaluate the level of use appropriate for the Addition Lands prior to opening the area to hunting, ORV use, and other uses. This analysis could include a review of data available, appropriate levels of hunter density, current and projected prey abundance, and other factors that may be important considerations to maintain a sustainable prey base that is essential for conservation of the panther.

Climate change is not mentioned in the draft GMP. Please clarify how climate change was considered in the development of the alternatives and the analysis of the environmental consequences for each alternative.

WILDERNESS

The range of alternatives includes various scenarios for proposed wilderness designation. The document discusses the process for wilderness designation; however, it does not discuss how the amount of wilderness area for each alternative was developed. Please describe how each alternative was designed. In addition, we are concerned that the least tool mandate of the Wilderness Act could constrain effective management of non-native exotic plants and animals, forest management related to red-cockaded woodpeckers, fire management, and research activities in designated wilderness areas. Please describe how wilderness designation in each alternative would affect fuel and fire management as well as endangered species management and research. We recommend considering using other alternatives such as regulations in 36 CFR Volume 1 Chapter I Parts 1-199 to fulfill the purpose of the intent of the Wilderness Act. We recommend that any wilderness considerations carefully evaluate and allow actions needed for fire and fuel management, exotic species control, and panther or other listed species conservation.

SPECIFIC COMMENTS

Chapter 2. The Alternatives, Including the Preferred Alternative.

Page 64 – The section describing how the alternatives were developed should include a description of the analyses used to develop the different alternatives.

Page 65 – Please explain what is meant by the “highest number of advantages” for the Preferred Alternative.

Page 75 and 81 – Please describe the methodology used to conclude that 140 miles of designated trail system was appropriate for the Addition Lands. We recommend using an analysis similar to that developed during the development of the ORV Plan. This analysis included the resiliency of the substrate, sensitivity of the resources present, and proximity to sensitive resources among

Pedro Ramos

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other parameters. Also, please specify how many miles of secondary trails may be created or opened in the Addition Lands under Alternative B and the Preferred Alternative.

Page 76 – Please describe the amount of additional parking that may be created and the environmental impacts at the I-75 access points.

Page 76 – Please clarify whether additional parking for trailers and access through large gates would be needed at Bear Island Grade and SR29. Any improvements should maintain the integrity of the wildlife crossing and consider keeping the gates closed when not in use, the increase in the footprint of the development of facilities, and the increase in human disturbance. If additional parking is necessary, please evaluate the environmental consequences of such facilities in the GMP.

Pages 80 and 81 –The Preferred Alternative does state that connecting trails from the Addition Lands to Bear Island would require additional NEPA, but Alternative B does not include this statement. Please clarify why this statement was not included in the description of Alternative B or include it in the description of this alternative. Please specify in greater detail how 700 permits were derived and what the environmental effects of issuance of these permits would be on natural resources. The amount of additional parking proposed for the access areas is not enumerated in this alternative either.

Pages 85 and 86 – Please clarify why the area at Carnestown is not proposed for wilderness designation in this alternative.

Page 93 – The monitoring program referred to needs further explanation. Specifically, what is to be monitored, how often, when and where will reports be shared, etc. Please elaborate on the proposed frequency of visitor surveys and include the reference for the process NPS undertakes to create and administer surveys (this could be included as an appendix). Will the ORV Advisory Committee expand their scope to address recreational issues in the Addition Lands? If so the Service offers to review those recommendations as they relate to natural resources, including threatened and endangered species.

Page 94, Table 7 – Please describe in greater detail the methods proposed to monitor the Indicator Topics contained in this table. Also, under the topic Off-trail travel by motorized and non-motorized users, the Standard for this Indicator Topic is “no more than 6 incidences per winter/spring season of off-trail travel for either motorized or non-motorized use”. The Preferred Alternative states that the extent of trails and the number of permits available to the public would be accomplished in phases over five years and the number of permits issued will be prorated to the initial extent of the trail system. Therefore, we recommend the Off-trail travel standard be prorated based on miles of roads available or number of permits issued that year.

Page 97 – Please describe the tire psi rating appropriate for sensitive vegetative communities that will be used as a standard for ORVs using the Addition Lands. We are pleased to see that

tracked vehicles will be prohibited as the impacts resulting from use of this type of vehicle are greater than those with tires.

Page 98 and 104 – The text indicates that different numbers of permits would be included in each alternative. Please clarify where these different numbers of permits are specified.

Page 100 – Please describe how the appropriate level of use, destination, foot traffic preference, hunter densities, prey densities, and other components were included in the analysis used to determine the number of miles of trails and how they relate to the natural resources in the Addition Lands.

Page 104 – We recommend that the number of miles of secondary trails be identified per alternative in the GMP. The Service supports the closure options outlined in the draft GMP. As stated in our June 13, 2007, memorandum, the criteria for high and low water closures should be numeric so it is clear to all users why an area is closed. Please clarify what criteria will be used for trail closure.

Page 105 – The wood stork (*Mycteria americana*) and Florida panther criteria lacks supporting scientific citations. Please ensure that the most current guidelines are referenced and include them in an appendix. In addition, if the guidelines are revised, the version used during development of this document needs to be clear to future readers. For the Florida panther, what research or data were used to determine that a trail would be closed if a den was located within 0.5 miles? Please provide information or citations on the development of these criteria.

Page 106 – Aerial patrols of the Addition Lands are mentioned. We support aerial patrols and monitoring of the natural resources found in the Addition. We believe it would be beneficial to provide more information on the frequency of patrols as well as the protocols and techniques. The protocols and techniques from the original preserve could be used as a guide to further define monitoring and protocols in this GMP.

Page 108 – How will the research included in the GMP be accomplished? The Service is interested in the mechanics as well as the funding mechanisms since these may relate to endangered species recovery and conservation.

Page 108 – The Service supports clearly marking trails to ensure the resources that visitors enjoy at BICY remain intact and unimpaired. Proper trail marking is an important factor in maintaining the natural resources in BICY in good condition. Please consider approaching trail marking in the same manner as channels are marked in navigable waterways. Placing markers on each side of the trail with different colors or arrows pointing toward the center of the trail would ensure users are well-informed on trail location.

Page 121 – We suggest the last word of the first sentence should be changed from “plants” to “species” since non-native plants are not the only invasive species present within the Preserve.

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Page 8

Page 121 – Under the “Wildlife” section, please change the word “spawning” to “breeding” as not all species are considered to spawn.

Page 121 – Under the Threatened and Endangered Species section, second bullet, we do not believe any of the alternatives would completely eliminate human disturbance.

Page 122 – Please define what is meant by “infeasible” as used in the first bullet.

Page 124 – We are pleased to see that a hunting management plan may be performed in future studies, however, we believe the completion of this hunting management plan should be scheduled prior to opening the Addition Lands to ORV hunting activities and the process for incorporating this information into management decisions be clearly defined.

Page 125 – We believe that all of the alternatives offer opportunities for resource enjoyment, alternatives A and F restrict those opportunities to non-motorized recreation for the most part. Please further define what is meant by resource enjoyment.

Page 127 – The differences between the alternatives dismissed and those considered do not appear to be minor. Some of the alternatives presented in the earlier newsletters included a variety of trail mileage. The Preferred Alternative and Alternative B contain the same mileage of trails but were not identified in the earlier newsletters that solicited comment on alternatives. Please describe, in more detail, the process used to eliminate other alternatives from further consideration.

Page 137 – Summary of Key Impacts Table. We suggest more detail be provided on the alternative’s potential effects on threatened and endangered species. The table appears to repeat the same effects for most of the alternatives included in the document. In addition, the eastern indigo snake (*Drymarchon corais couperi*) should be added to this list.

Chapter 3. The Affected Environment

Page 163 – There are several references to “grazing allotments and cattle grazing” (page 172) in the draft GMP. Please clarify if grazing is or will be allowed on the Addition Lands. Please provide additional information on the management and the anticipated environmental effects on grazing leases if they are present or anticipated as a component of any of the alternatives analyzed in the GMP.

Page 169 – Please provide detail on the wetland maps referenced. If it is the web based mapping, then the URL should be included. If not web based maps, then the map source and version needs to be included.

Page 170 – This section should be updated with information contained in the 2008 Florida Panther Recovery Plan.

Chapter 4. Environmental Consequences

Page 240 – In Table 28, the categories of Negligible, Minor, Moderate, and Major are used to categorize the intensity levels of the potential effects the proposed alternatives may have on different resources. For threatened or endangered species, the resulting effect determination included in these columns may not correlate to the Endangered Species Act (16 U.S.C, 1531 *et seq.* as amended, in 1988) definition of minor. For an activity to be “not likely to adversely affect,” the effects of the activity must be insignificant and discountable, that is, they should not be measurable. If this was the intention, then the text should be clarified.

Page 247 – Please provide more detail on the Collier Resources Oil and Gas Plan.

Page 262 – Under the section on the Florida panther, “ongoing vegetation management efforts” are mentioned. Please describe these efforts.

Page 263 – The first paragraph described effects including “flushing and displacement” of panthers. These types of effects are measurable and not likely insignificant or discountable; therefore, they would not qualify as minor effects to the panther. Also, the mention of the 2000 ORV Management Plan is confusing with respect to its relevance to this GMP. The ORV Management Plan specifically excluded the Addition Lands since a GMP was not in place. Please clarify its relevance or remove references to the 2000 ORV Management Plan.

Page 291 – Please define the phrase “to the greatest extent possible” with respect to development of new facilities.

Page 292 – Under Cumulative Impacts, the 2000 OVR Management Plan is referenced without any clarification on its relevance to the GMP. In addition, the Collier Resources Company Oil and Gas Plan of Operations is mentioned but no details or indication of its relevance to the GMP is included. In the second to last paragraph on this page, reference is made to regional growth and development. How is this a cumulative effect of the proposed alternative? Please provide clarification on these points.

Page 368 – In the environmental consequences section for this alternative and all the alternatives, there is insufficient analysis of the potential effects of the actions on federally listed threatened or endangered species. We look forward to discussing the information necessary for a complete analysis of the potential effects of the alternatives on threatened and endangered species that should be included in the GMP or Biological Evaluation.

Page 382 – For your information, we are attaching our June 13, 2007, memorandum that you may wish to include in Appendix C of the GMP.

Pedro Ramos

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SUMMARY

The Service appreciates the opportunity to comment on the draft GMP for the Addition Lands. We hope these comments are useful to you. In summary, our main concerns are the need to fully consider whether or not wilderness designation will meet your resource objectives for the Addition Lands; the number of miles of trails and level of use appropriate for the Addition Lands; and the analyses sections should be more updated and robust. In addition, we recommend clarifying differences in alternatives and developing a framework for analyzing variations in the amount of trails and number of permits for an adaptive management approach. We look forward to further coordination and consultation. If you have any questions, please contact Jane Tutton of my staff at 772-562-3909, extension 235.

LITERATURE CITED

U.S. Fish and Wildlife Service. 2008. Florida panther recovery plan (*Puma concolor coryi*). Third Revision. U.S. Fish and Wildlife Service, Southeast Region; Atlanta, Georgia.

Attachment

cc: Layne Hamilton, Manager, Florida Panther National Wildlife Refuge, FWS
Nick Wiley, Assistant Executive Director, FWC



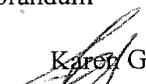
United States Department of the Interior

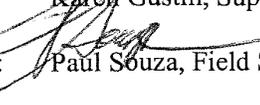
FISH AND WILDLIFE SERVICE
 South Florida Ecological Services Office
 1339 20th Street
 Vero Beach, Florida 32960



June 13, 2007

Memorandum

To:  Karen Gustin, Superintendent, Big Cypress National Preserve

From:  Paul Souza, Field Supervisor, South Florida Ecological Services Office

Subject: Addition Lands General Management Plan Alternatives Comments,
 Service Consultation Code: 41420-2007-I-0995

This memorandum responds to the National Park Service's (NPS) Newsletter 5 dated April 2007, regarding the proposed alternatives for consideration in the development of a General Management Plan (GMP) for the Addition Lands of Big Cypress National Preserve (BICY). Our comments are intended in the spirit of cooperation in the conservation of fish and wildlife resources at BICY. The Fish and Wildlife Service (Service) is available to continue informal section 7 consultation, in accordance with section 7 of the Endangered Species Act of 1973, as amended (87 Stat. 884; 16 U.S.C. 1531 *et seq.*), with the NPS on the alternatives to be selected for further investigation during development of the GMP for the Addition Lands portion of BICY.

PROJECT DESCRIPTION AND BACKGROUND

The development of a GMP for the Addition Lands is an NPS requirement. These lands were not owned by the Federal government when the GMP for BICY was approved in 1991 (NPS 1991), therefore, a separate GMP must be developed for the Addition Lands. This Newsletter further refines the six alternatives, including the no-action alternative, which was included in Newsletter 3. The alternatives use the concept of zoning for levels of activity. The four zones described are:

1. Developed – This zone includes Interstate 75 (I-75) access points, orientation and interpretation facilities, comfort stations, boardwalks and trails, administrative facilities, and commercial facilities.
2. Frontcountry – This zone includes recreational access or trailhead parking, picnic areas, orientation facilities, campgrounds, comfort stations, boardwalks and trails, and commercial activities.



Karen Gustin

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3. Backcountry Recreation – This zone includes hiking, backpacking, hunting, fishing, horseback riding, camping, boating, bicycling, and vehicle use. Vehicle use is restricted to designated trails. Public water supply, information/interpretation, ranger stations, fire cache, outfitter/guide activities, and resource protection and monitoring activities are also included.
4. Primitive Backcountry – This zone includes hiking, backpacking, hunting, fishing, horseback riding, camping, and non-motorized boating. Trails will be designated in this zone. Outfitter/guide activities would be permitted and resource monitoring and protection activities would occur.

Additional details on each alternative being considered for inclusion in the National Environmental Policy Act of 1970 (NEPA) review are included in the Newsletter.

GENERAL COMMENTS

Generally, we appreciate the need for Developed Zone locations and most of the Frontcountry Zone locations. Our comments are focused more on the extent of Wilderness designation, Backcountry Recreation, and Primitive Backcountry Zones depicted in the alternatives included in the Newsletter and, where applicable, the extent and location of Wilderness and Frontcountry Zones.

We understand that NPS is currently working with the Florida Fish and Wildlife Conservation Commission (FWC) to inventory wildlife in the Addition Lands. We support this effort and stand prepared to provide assistance as requested.

For your convenience, a current list of threatened and endangered species of potential consideration during the planning process is available at http://www.fws.gov/verobeach/Species_lists/countyfr.html. Designated critical habitat for the West Indian manatee (*Trichechus manatus*) (50 CFR § 17.95) is present in the southwest Addition Lands. The Service is available to assist in the analysis of the potential alternatives effects on threatened and endangered species and we look forward to continued cooperation to ensure the GMP for the Addition Lands provides opportunities for all uses and users, including natural resources.

The Newsletter did not address whether the number of Off-Road Vehicle (ORV) permits would remain at the cap of 2,000 (NPS 1991) or be increased with the development of the GMP. We believe this issue is important and is needed to fully analyze alternatives. We also recommend that NEPA analysis include the predicted increase in use, and the manner in which this will be monitored and regulated. Specifically, it would be helpful to evaluate the additional access afforded by the I-75 access point as well as the increase in recreational pressure from ongoing residential and commercial development in south Florida. We also would like to recommend that the ORV permit system be reviewed and revised during this effort, which is timely given the FWC recent elimination of hunter quotas for much of BICY. We believe it will be important to

determine management unit quotas for each management unit by vehicle type and determine the number of permits compatible with each management unit. The intensity of ORV use may be more of a factor on panthers and other wildlife more than the length of ORV trails.

We recommend that NPS consider removing the Frontcountry Zone from I-75 along Nobles Grade from the alternatives. This component would require the greatest amount of resource impacts to develop and may be difficult to patrol and police. In addition, we are concerned about potential impacts to manatees and believe NPS should work closely with the State, local governments, and Service to determine the level of motorized boat use and speeds in the southwest Addition Lands that are appropriate, and to limit use and speeds in key locations, as needed. We also recommend NPS consider developing numeric hydrologic triggers for closure of the Addition Lands during this planning process. The high water events of 2005 indicate that the need for closure should be dictated by water levels, duration of inundation, time of year, recession rate, and status of BICY resources. Establishment of specific, measurable criteria could provide visitors and managers with an objective way of understanding when closures are needed.

We recommend NPS consider the potential effects that Comprehensive Everglades Restoration Plan projects, particularly the L-28 Interceptor project, could have on the Addition Lands and its hydrology, as well as wildlife use when designing special use zones. Corridor locations for wildlife entering and exiting BICY should be included in the planning and design of management zones. The effects of management alternatives on Florida Panther National Wildlife Refuge should also be considered in the planning process.

The Service is pleased to see that the Wilderness study has been performed. We request a clarification on the differences between a marine wilderness and a non-marine wilderness. It is unclear in the Newsletter how they are assessed since motorized vehicles traverse and use the southwest Addition Lands and, according to the information in the newsletter, motorized vehicles are prohibited in wilderness areas.

We also recommend that the manner in which enforcement of the selected alternative would be carried out be defined. This effort will be an instrumental part in understanding the potential impacts to fish and wildlife resources.

The new visitor contact stations along I-75 offer great opportunities to promote State and Federal public lands within the Big Cypress Basin. We encourage partnerships with these other land-management agencies to develop displays and educational materials for the new access points at Mile Marker 51 and Mile Marker 63. Additionally, the access points along State Road (SR) 29 also offer opportunities to promote the adjacent public lands along the west side of the highway. This would be another great partnering opportunity for NPS and their adjacent land-management agencies.

SPECIFIC COMMENTS

Alternative A is the no-action alternative. In this alternative, the Addition Lands would be managed as they are currently. Facilities and access would be limited to those currently in place. Trails would not be designated and improved and the area would remain closed to hunting and ORV use. While this alternative may be the most conservative and protective of existing resources, we understand it does not afford all users the opportunity to recreate in the Addition Lands.

Alternative B places approximately 60 percent of the Addition Lands in the Backcountry Recreation Zone and approximately 40 percent in Wilderness designation. The newsletter indicates that up to 139 miles of proposed primary trails could be designated under this alternative. There are two Frontcountry sites and two developed sites along the SR 29 corridor. The Newsletter states that “facilities and associated activities in these areas would be compatible with management of the adjacent lands within the original preserve.” The extent of Backcountry Recreation Zone in this alternative may be an issue with respect to listed species and resource protection. We also think the boundaries for this zone may be difficult to control or monitor. Two areas in the southern portion of the Addition Lands would remain as Primitive Backcountry and Wilderness, however, these areas are separated from each other by a Backcountry Recreation Zone.

Alternative C includes both Frontcountry and Backcountry Recreation Zones in the southwest Addition Lands and the northern Addition Lands. The southwest Addition Lands in the vicinity of Everglades City would be designated Marine Wilderness. From the information in the newsletter, it is unclear what activities would be allowed in this zone and how wilderness designation would be compatible with Frontcountry recreational activities. A total of three Frontcountry and two Developed Zones would be located along the SR 29 corridor and an additional Frontcountry Recreation Zone would be identified on Nobles Grade north from the I-75 access point at the Mile Marker 63 rest area. This Frontcountry Zone would traverse the Primitive Backcountry/Wilderness zone and lie within the larger Backcountry Recreation Zone in the northern section of the Addition Lands. A portion of the Addition Lands to the north of I-75 and east of the L-28 Interceptor would also be a designated Backcountry Recreation Zone. Ensuring ORVs use designated trails and do not enter the Backcountry Primitive Zone could be a challenge in this alternative. These same issues would apply to the area to the south of I-75 that is designated as Backcountry Recreation in this Alternative. In addition, we are concerned about potential impacts to manatees and believe NPS should work closely with the State, local governments, and Service to determine the level of motorized boat use and speeds in the southwest Addition Lands that are appropriate, and to limit use and speeds in key locations, as needed.

Alternative D has three Developed Zones and a Frontcountry Zone along the SR 29 corridor. The Backcountry Recreation Zone is predominantly located north of I-75 and west of the L-28. There are two Backcountry Recreation primary designated trail corridors through the

Primitive Backcountry/Wilderness Zone north and south of I-75. The corridor originates at the Mile Marker 63 rest area and traverses north along Nobles Grade, then east to intersect the Backcountry Recreation Zone. To the south, the corridor proceeds south to the Addition Lands south boundary, then travels east and north to intersect the Backcountry Recreation Zone at a proposed access point at Mile Marker 51 along I-75. The boundaries of the Backcountry Recreation Zone are variable and may be difficult to identify when in the field. This could make controlling ORV access difficult. Up to 76 miles of primary trails could be designated under this alternative. The Backcountry Recreation Zone in the southwest Addition Lands is also included in this alternative, and as previously stated, we have concerns about the use of motorized vessels in this area. Modifying Alternative D to reduce the overall extent Backcountry Recreation Zone and provide a Backcountry Recreation trail loop, perhaps with secondary trails, is a new alternative option we recommend NPS consider.

Alternative E designates the majority of the Addition Lands as Primitive Backcountry/Wilderness as in Alternative D, however, the Backcountry Recreation Zone is located to the northwest on either side of the L-28. There is a Frontcountry Zone along Nobles Grade similar to that in Alternative C. The spatial extent of Backcountry Recreation Zone is almost identical to that of Alternative D although the location is different. The area designated as Backcountry Recreation is higher in elevation and drier than those portions to the south in the Addition Lands. Compared to Alternative D, Alternative E has one additional Frontcountry Recreation Zone along the SR 29 corridor. We believe this configuration may be more manageable and easier to identify in the field. The Backcountry Recreation Zone in the southwest Addition Lands is also included in this alternative. We are concerned about potential impacts to manatees and believe NPS should work closely with the State, local governments, and Service to determine the level of motorized boat use and speeds in the southwest Addition Lands that are appropriate, and to limit use and speeds in key locations, as needed.

There is a Frontcountry Zone included from I-75 on Nobles Grade. The terminus of this zone is a campground. It may be difficult to ensure that smaller ORVs are not taken onto Nobles Grade. In addition, the campground at the terminus would entail some construction of camp sites, installation of water and comfort stations, and may affect panther use of the area. We do not see any potential issues with the remaining Frontcountry Zones.

Alternative F is the most ecologically conservative alternative depicted in the Newsletter. There are two Frontcountry Zones and one Developed Zone along the SR 29 corridor. The southwestern Addition Lands are designated as Marine Wilderness and Backcountry Recreation. The balance of the Addition Lands is designated as Primitive Backcountry with much of that area designated as Wilderness. While this alternative would have clear fish and wildlife benefits, we recognize it does not afford all visitors some level of use of the Addition Lands. This may encourage trespass activities and violations of area closures.

Karen Gustin

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We understand that the purpose of the Newsletter was to disseminate general information on the alternatives that may be considered in the NEPA process. The brief descriptions of the potential alternatives lead to many additional questions regarding the effects the alternatives may have on fish and wildlife resources, including threatened and endangered species.

We recommend that the rationale for determining the extent of each zone be presented in the NEPA document. While upland areas would be desirable locations for Backcountry Recreation as there would be fewer impacts to wetlands, these areas are more important to panther prey which should be an equal consideration in the planning process.

The Service is available to collaborate with NPS and create a modified alternative that includes a Backcountry Recreation Zone in a loop with secondary trails that also provides maximum conservation of panthers, their prey, their habitat, and other fish and wildlife resources. We look forward to working with you to protect BICY for its conservation and historic value. If you have any questions, please contact Jane Tutton at 772-562-3909, extension 235,

cc:

NPS/DSC, Denver, Colorado (Pat Kenney)

LITERATURE CITED

National Park Service. 1991. General Management Plan and Final Environmental Impact Statement: Big Cypress National Preserve, Florida. Volume 1. Ochopee, Florida: Big Cypress National Preserve.



LEWIS, LONGMAN & WALKER, P.A.
ATTORNEYS AT LAW

Reply To: West Palm Beach

September 30, 2009

VIA EXPRESS MAIL

Big Cypress National Preserve
Addition General Management Plan
National Park Service
Denver Service Center – Planning
P.O. Box 25287
Denver, CO 80225

Dear Sir/Madam:

Our firm has been asked by Mr. Jim Shore, on behalf of the Seminole Tribe of Florida, to provide our comments on the Big Cypress National Preserve Addition Draft Management Plan (“Draft Plan”). The Tribe has several comments based on its review of the Draft Plan.

GENERAL COMMENTS

1. The Tribe is concerned that the overall process of selecting proposed alternatives in the Draft Plan is flawed. Specifically, how can the federal agency that initiates the proposed action and authors the Draft Plan then be qualified to objectively evaluate it and select the preferred alternative?

2. The Draft Plan does not clearly justify why the Preferred Alternative was selected over Alternative F. Pursuant to 16 U.S.C. § 1, the purpose of the National Park Service is to promote and regulate the use of the national parks, monuments, and reservations “to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” Alternative F ranked highest with regard to fulfilling “the responsibilities of each generation as trustees of the environment for succeeding generations.” Accordingly, Alternative F is arguably the alternative which most conforms to the Service’s purpose.

Helping Shape Florida’s Future®

BRADENTON
1001 Third Avenue West
Suite 670
Bradenton, Florida 34205

p | 941-708-4040 • f | 941-708-4024

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Suite 150
Jacksonville, Florida 32202

p | 904-353-6410 • f | 904-353-7619

TALLAHASSEE
2600 Centennial Place
Suite 100
Tallahassee, Florida 32308

p | 850-222-5702 • f | 850-224-9242

WEST PALM BEACH
1700 Palm Beach Lakes Blvd.
Suite 1000
West Palm Beach, Florida 33401

p | 561-640-0820 • f | 561-640-8202

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3. Though the Tribe knows and understands that the Draft Management Plan's purpose is not to define the Tribe's use and occupancy rights within the Preserve, the Tribe would like to take this opportunity to express its desire to have these rights further defined. Pursuant to 16 USA § 698(j), the "Seminole Tribe of Florida shall be permitted, subject to reasonable regulations established by the Secretary, to continue their usual and customary use and occupancy of Federal or federally acquired lands and waters within the Preserve Addition, including hunting, fishing and trapping on a subsistence basis and traditional tribal ceremonials." For over twenty (20) years now the Tribe's usual and customary use and occupancy rights pursuant to the previously mentioned statute have not been defined. The Tribe is concerned that with new privileges being granted to the general public within the Preserve, it will become increasingly difficult to define the Tribe's rights. As the public begins to enjoy its' privileges within the addition and the preserve, defining the Tribe's statutory rights will become even more difficult because some of the public's new privileges will likely have to be curtailed. Therefore, the Tribe would like to take this opportunity to have its' rights further defined so as to avoid any potential conflict with the privileges that are granted to the public within the Addition and the Preserve.

**COMMON BORDER BETWEEN NORTHEAST ADDITION LANDS AND
SEMINOLE TRIBE OF FLORIDA RESERVATION**

1. The Tribe is concerned that increased Off Road Vehicle ("ORV") traffic in the Northeast Addition Lands along the Tribal Reservation's southern border will facilitate trespassing. Several areas of the fence along the Reservation's southern border are in disrepair. The increase in ORV traffic in these areas will require the Tribe to repair these areas to prevent trespassing. These repairs will be costly because some will require a Clean Water Act Section 404 permit prior to commencing work.

2. The Tribe does not have the resources to patrol the Reservation's southern border. Therefore, the Tribe is concerned whether the Draft Plan will provide for adequate staffing of Northeast Addition Lands' access sites, campsites, and the Addition's interior to implement management strategies and enforce proposed seasonal, nightly, and other closures.

3. The proposed increase in ORV traffic within the Northeast Addition Lands along the Reservation's southern border will facilitate illegal harvesting within the Reservation, specifically within the "Native Area".

4. The Tribe is concerned that the increase in recreational traffic within the Northeast Addition Lands near the Reservation's southern border will increase the incidence of poaching, illegal harvesting or otherwise adversely affect existing populations of over 100 threatened, endangered, or otherwise commercially exploited plant species, including the ghost

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orchid. These species are known to occur within the Northeast Addition Lands therefore they are likely to occur within the “Native Area” of the Reservation as well.

5. There are five invasive exotic plant species common to both the Northeast Addition Lands and the Reservation’s “Native Area” – melaleuca, Brazilian pepper, lygodium, hyacinth, and hydrilla. Currently, the Tribe is actively managing the three former species within the “Native Area” along the Reservation’s southern border. The Tribe is concerned that NPS strategies to manage these species may duplicate or conflict with the Tribe’s strategies. Therefore, the Tribe would like to coordinate its efforts with the NPS.

6. The Preferred Alternative and Alternative B direct backcountry recreation within the Northeast Addition Lands toward the Reservation’s southern border which is utilized as a boundary for these recreation activities despite the presence of alternative boundaries such as the L-28 interceptor canal and Jones Grade Road. Use of the Reservation’s southern border as a boundary for these activities will have adverse impacts to the Tribe’s cultural resources in the area above the L-28 interceptor canal and the Jones Grade Road. Additionally, the presence of hikers and ORVs near the Reservation’s southern border will increase the threats to the Reservation from fire, seed dispersal of exotic vegetation, poaching, and illegal harvesting. Accordingly, the Tribe recommends that ORV traffic be directed away from the Reservation’s southern border and at least be limited to the area south of the L-28 interceptor canal or south of existing campsites.

7. The maps of Alternative B and the Preferred Alternative show a network of proposed hiking and ORV trails within the Northeast Addition Lands leading up to the Reservation’s southern border. The majority of these trails already exist. However, the maps for Alternative F and the No Action Alternative do not show these existing trails.

FORRESTRY & WILDLIFE RESOURCES

1. The increase in ORV traffic coupled with dry weather conditions within the Northeast Addition Lands will increase the threat of wildland fires along the Reservation’s southern border.

2. The preferred alternative illustrates a network of existing trails and ‘islands’ of primitive backcountry in between. Inevitable off-trail ORV traffic will adversely impact these islands, eventually turning them into areas comparable to so-called recreational backcountry areas, similar to those in alternative B.

3. Increases in foot and ORV traffic will disrupt the migration patterns of large mammals between the Preserve and the Reservation, including threatened or endangered species such as the Florida Panther and Florida Black Bear, and major game species such as white-tailed deer and wild turkey.

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4. Increases in foot and ORV traffic will disrupt behavior of wood storks nesting in two historic rookeries near the Reservation's southern border. Although the Park Service staff periodically performs surveys in conjunction with wood stork telemetry flights, they have not documented any new nesting occurrences.

5. The Tribe is concerned that poaching may increase if public hunting is expanded from the Preserve into the Northeast Addition Lands.

6. As previously mentioned, portions of the fence along the Reservation's southern border are in disrepair. This disrepair has been advantageous to wildlife by allowing them to pass through these openings and move freely between the Reservation and Preserve. However, because the increase in foot and ORV traffic in this area will likely lead to increased trespassing on the Reservation, the Tribe will be required to repair these openings.

7. ORV traffic within the Northeast Addition Lands along the Reservation's southern border may reduce or degrade desirable herbaceous groundcover, reducing or eliminating the amount of suitable game and panther prey habitat and further drive game communities away from the area.

8. The increase in ORV traffic within the Northeast Addition Lands may degrade and devalue potential panther denning habitat.

9. Table 11 summarizes impacts identified for each alternative, but limits consideration to only four species, the Florida panther, West Indian manatee, red-cockaded woodpecker, and wood stork.

10. Potential nesting habitat for the red-cockaded woodpecker has been identified in the southern portion of the Reservation. Increases in foot traffic and ORV traffic will likely disrupt the behavior of any red-cockaded woodpeckers attempting to nest within and/or near the Northeast Addition Lands and the Reservation's southern border.

SURFACE WATER & WETLANDS

1. The Tribe and Army Corps of Engineers have spent millions of dollars on the WCP to restore the sheet flow to lands south of the Reservation. The preferred alternative and alternative B will create long term impacts on surface water flow.

2. Trail improvements and associated construction will adversely impact wetlands within the Northeast Addition Lands. The section of the Draft Plan which discusses environmental consequences of the Preferred Alternative claims that "impacts from actions contained in this alternative would not result in impairment of wetlands in the Addition", despite

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acknowledging that the majority of the Northeast Addition Lands have been mapped as wetlands as part of the Fish & Wildlife Service's National Wetland Inventory. Yet the Draft Plan does not acknowledge adverse wetland impacts resulting from the proposed action, nor does it offer compensatory mitigation or specific Best Management Practices to offset or minimize such impacts.

CULTURAL RESOURCES

1. The Tribe is concerned about the focus of the methodology of the surveys being conducted. The results of these methods can be seen in the results of the field season of 2000, including the discovery of forty archaeological sites. Of these, only one was recognized as having a Seminole component present in the artifact assemblage collected from these sites. It is more likely that the researchers did not recognize the cultural remains that indicated the presence of the Seminole people that occupied nearly every rise in the Big Cypress and Everglades regions over the last three hundred years. Or it may pertain to the methods used. At the Okeechobee Battlefield a few hundred shovel tests and a long trench gave little indication of the army that had occupied the site in 1837, and showed even less evidence of the Seminole camp upon which the military camp stood. There had been thousands of people present at the site during the battle. The fact is that the methodology used by archaeologists tends to favor locating evidence of prehistoric campsites. This is compounded by the duration of the prehistoric Draft Plan occupation versus the relatively short historic occupation, leaving far less evidence of these events.

2. It is not the position of the Tribal Historic Preservation Office ("THPO") that the Seminole occupation of the Everglades has been ignored. The second and third volumes of the Schwadron report of 2005 give descriptions of the recorded sites located within the Preserve lands and here we see that a great number of sites have been recorded as having Seminole components. However, in 1993 the Tribe asked the Archaeological and Historical Conservancy (AHC) to conduct a statewide survey to record all of the known Seminole sites and bring the state records to the Tribal Museum. In addition to this data collection, research was conducted which located twenty-three Seminole towns that were known only by the historic record and had never actually been located and recorded. Examples of sites that were located during this study include Bowlegs Town, east of Tampa; Peliklakaha (Abraham's Town); Coa hadjo's Town; and Charley Emathla's Town. What the 1993 AHC study determined was that a great number of the Seminole sites located in the Everglades and Big Cypress areas were recorded in a manner that was not strictly archaeological. The SEAC surveys conducted from about 1977 to 1981 recorded many Seminole sites by the presence of orange trees (8CR483 is an example) or girdled oaks (8CR449 is an example). While it is likely that these sites were occupied by the Seminole people, there was no archaeological evidence used to make these determinations. It is this lack of developed methodology to define the Seminole occupation of these sites that is our concern. The 1993 AHC report therefore excluded any site that did not have archaeological evidence (*i.e.*, cultural material or food refused in some manner shown to be of Seminole origin) indicating

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Seminole occupation. The upshot of this observation is that we believe that the research design needs to be reassessed to give more consideration to an area of archaeology which seems to need development. That is, the historic component of the Preserve's history.

3. During the last thirty years of archaeological research conducted in South Florida, there is a growing consensus of the significance of the archaeological record of three hundred years of Creek culture presence in the region. At one time Charles Fairbanks, the father of historic archaeology in Florida, concluded that the Creek peoples did not bring their town pattern with them into the territory. It seems that he believed that there was a breakdown of the Creek culture (including the Seminoles and Miccosukees) when they came here. This would explain the failure of the methodology being used by archaeologists to find evidence of the Creek peoples in the area. It also would justify dedicating little time to the study of a culture that had disappeared. However, recent work in South Florida has shown that the traditional Creek Town pattern, particularly as recorded in the eighteenth century in Georgia and Alabama, was in fact transplanted to the southern extremity of the territory. This is particularly important to the Seminole people as it shows that they had in fact managed to protect and maintain their cultural identity in the face of all efforts to exterminate them.

4. A report produced by the THPO of the Tribe entitled "The Snake Creek Community and Big City Island, THPO, 2009", illustrated the presence of a settlement at the headwaters of Snake Creek. Map number 13, shows the archaeological sites that have been recorded that made up this community. While this town is located on the east coast, another similar community existed in the Big Cypress Region. It was connected by a canoe route that shows up on many maps of the period and is the accepted pathway across the peninsula. It connected the Snake Creek Community with the Big Cypress Community. The map designated #11, Tribal Historic Preservation Office – Historical Map of Florida 1839, clearly shows this route. Map #2, which is L89, Record Group 77, Civil Works File, from the National Archives, has been altered to show the present day Big Cypress Reservation. It is depicted in a black outline on the map. From this and other maps we have been able to locate three towns of the Big Cypress Community which are located on Tribal lands. It also allows us to see the early historic town as it lies in relation to the proposed project.

5. What is missing in the interpretation of the historic maps of South Florida is an understanding that the structure of a Creek town is based on clan kinship. For that reason, a "town" is actually made up of numerous camps, or villages, that are centrally organized by the practice of common government through the Green Corn Dance and other ceremonies. When Denise Breit was looking for the town of Miccosukee many years ago she commented on the difficulty of determining which of the concentrations of Creek archaeological remains represented the town which was referred to in history as the mother town of the Miccosukee. In fact, the town was represented by several sites.

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6. The Tribe is also very concerned with the potential impact the Draft Plan's ORV policies will have on the Green Corn Dance site. Currently, the Green Corn Dance site is located on state lands within the Addition north of Interstate 75. It appears from the Draft Management Plan that one of the proposed ORV trails runs adjacent to the Green Corn Dance site. The Tribe is concerned that the noise from these ORVs will interfere with the Tribe's traditional activities associated with this site. The Draft Plan admits that noise from ORVs has adverse impacts on cultural resources and visitors' enjoyment. However, the plan is silent as to noise impact on the Tribe's traditional ceremonies. Furthermore, the Green Corn Dance site is a sacred site whose location is known only to the Tribe. The Tribe is concerned that visitors using the nearby ORV trails will enter the site and damage or destroy the traditional structures therein or reveal its location to others. Additionally, most of the structures at the site are susceptible to fire which could easily be started from a visitor's cigarette or a spark from an ORV. Accordingly, the Tribe would like to work with the National Park Service to restrict access to ORV trails within the vicinity of the Green Corn Dance site.

7. The Tribe is also concerned with access to cultural sites around the Jones Grade Campsite and Jones Grade Road. Despite the fact that these areas are difficult to access, the Tribe continues to encounter people here. Therefore, it is likely that once the Addition is opened to the public, the Jones Grade Campsite and Road will become a popular destination for visitors. The increased visitor traffic in these areas will have an adverse affect on more than a dozen archaeological sites in the area. Among these sites are four (4) burial mounds and the 18th century Seminole town of Assunawah.

8. The Tribe is further concerned about proposed ORV access at Mile Marker 51. It appears that many of the ORV trials accessible from Mile Marker 51 will be adjacent to, or in close proximity to cultural, ethnographic, and archeological resources. Despite education of and restrictions on ORV drivers, users may still decide to wonder from the trails, thus, endangering cultural resources which are not directly next to or on one of the trails. Therefore, the Tribe would like to be consulted with and be kept abreast of all the plans with regard to ORV trails in the Northeast Addition Lands.

Thank you for taking the time to review these comments.

Sincerely,

Stephen A. Walker

SAW:bas
Enclosures



Florida Department of Environmental Protection

Marjory Stoneman Douglas Building
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

September 29, 2009

Mr. Pedro Ramos, Park Superintendent
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, FL 34141

RE: National Park Service – Big Cypress National Preserve – Addition
Draft General Management Plan/Wilderness Study/Off-Road Vehicle
Management Plan/Environmental Impact Statement – Collier County, Florida
SAI # FL200907154851C

Dear Superintendent Ramos:

The Florida State Clearinghouse, pursuant to Presidential Executive Order 12372, Gubernatorial Executive Order 95-359, the Coastal Zone Management Act (16 U.S.C. §§ 1451-1464, as amended), and the National Environmental Policy Act (42 U.S.C. Ch. 55), has coordinated a review of the Big Cypress National Preserve Addition *Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement* (the Draft Plan/EIS).

The Florida Department of Environmental Protection (Department) is designated the state's lead coastal management agency by Section 380.22, Florida Statutes (*F.S.*), to implement and enforce the Coastal Zone Management Act (16 U.S.C. 1451, et seq.). The Department has reviewed the Draft Plan/EIS under the provisions of 15 C.F.R. § 930 Subpart C, and hereby notifies the National Park Service (NPS) that the Draft Plan/EIS is inconsistent with the Department's statutory authorities under Chapters 253, 259 and 373, *F.S.* The bases for the Department's objections are set forth below, following a summary of comments received from other state and regional agencies. The comment letters from those agencies are attached and incorporated in this letter by reference.

SUMMARY OF STATE AGENCY COMMENTS

The Florida Department of Agriculture and Consumer Services' Division of Forestry notes that designation of large areas of wilderness in the Big Cypress National Preserve could significantly increase the risk of severe, damaging wildfires due to the accumulation of fuels. Natural wildfires will not be adequate to control fuels in the wilderness areas, because the historic natural conditions by which fires started and propagated no

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longer exist, and the current landscape is fragmented by transportation corridors and developed areas. The inability to fight wildfires through the use of mechanized equipment in designated Wilderness areas will increase the risk that wildfires will contribute significant amounts of smoke on transportation corridors and in urban and rural areas, causing road closures and potential for damage to adjacent properties. The designation of any area as Wilderness must allow prescribed fire management that approximates historical fire regimes. The fire management program should reduce and maintain fuel loads, and allow the suppression of wildfires that threaten the public and surrounding resources through the use of mechanized equipment, if necessary. Such a prescribed fire program would enhance wilderness values and prevent their degradation from destructive wildfires.

The **Florida Fish and Wildlife Conservation Commission (FWC)** advises that it cannot support the Preferred Alternative, but finds that Alternative B has many of the elements its staff could strongly support if modified as recommended in the attached comment letter. Staff adamantly opposes designation of Wilderness areas in the Addition, as well as the establishment of Primitive Backcountry management zones.

FWC staff states that the Congressional acts establishing the Big Cypress National Preserve and Addition distinguished and set apart these public lands from typical national parks and recognized the importance of local cultural values and traditional recreational uses including fishing, hunting, trapping and associated vehicular access. The acts sought to integrate these values and uses in a unique management partnership between the federal government and the State of Florida. FWC staff believes the proposed Wilderness and Primitive Backcountry designations would result in restrictions on public access that would be inconsistent with these Congressional acts. Moreover, FWC staff believes the Wilderness designation would not be appropriate in these locations due to existing trails, historic patterns of use, and the difficulty in managing natural resources and public access.

The FWC recommends that the Wilderness designation be eliminated and the Primitive Backcountry management zones be changed to Backcountry Recreation management zones. FWC also recommends that the NPS utilize the existing roads and trails to provide a more comprehensive trail system for pedestrian access and other multiple uses. The FWC supports Alternative B's approach for issuing ORV permits for public access in Addition lands, as opposed to the Preferred Alternative's phased-in approach. In addition, FWC requests that the Record of Decision recognize FWC as an equal partner in the decision-making process for management of the Off-Road Vehicle (ORV) trail system.

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The **Florida Department of Community Affairs (DCA)** recommends that the draft management plan be strengthened by a stronger focus on protection of the Addition's less-disturbed areas and restoration of surface hydrology. The agency indicates support for an alternative that designates the area south of Interstate-75 as Wilderness, with an appropriate buffer along the interstate highway and which includes specific authority to conduct fire management and invasive plant management utilizing mechanized equipment, if necessary. DCA recommends that the primary trail system south of I-75 be limited to trails that avoid key habitats and wetlands and minimize fragmentation of habitat. The agency also recommends that the trails south of I-75 be closed to recreational ORV use and thoroughly evaluated to ensure normal hydrologic flow.

The DCA notes that the Draft Plan/EIS did not contain sufficient information to confirm that ORV trails will be managed in a manner that does not impair Preserve resources. The agency therefore strongly recommends that a hydrologic study of the Addition be conducted to evaluate sheetflow impacts caused by the use of ORV trails. DCA also recommends adding enforcement measures to the plan for non-compliance with the Preserve's regulations on ORV use. It also urges completion of the panther behavior studies recommended in the 2000 and 2007 Biological Opinions issued by the U. S. Fish & Wildlife Service for the Preserve's ORV management plan. The agency encourages an appropriate evaluation of the discharge of approximately 60 million gallons of water from the Preserve via the S. R. 29 Canal into Chokoloskee Bay.

The DCA states that it will conditionally concur with the NPS' federal consistency determination if Wilderness designations in the Addition contain specific language authorizing the Park Superintendent to work with other federal, state and local agencies to prevent the spread of exotic plants, to use prescribed fire as a management tool for restoring and maintaining native plant communities, and to allow suppression and containment of wildfires that threaten adjacent natural or built areas by any means deemed appropriate, including mechanized equipment. Further, the final Management Plan must evaluate potential effects that ORV trail usage, maintenance and modifications will have on restoration benefits and surface hydrology associated with Comprehensive Everglades Restoration Plan (CERP) projects within and adjoining the Addition.

South Florida Water Management District (SFWMD) staff emphasizes the importance of hydrology and proper management of the water resources within, abutting and adjacent to the Addition lands in all decisions related to implementation of the General Management Plan. Staff recommends that the comments and concerns provided previously by the DEP, SFWMD, Miccosukee Tribe of Indians and Seminole Tribe of Florida be included and addressed in the adopted General Management Plan and final EIS. The SFWMD also suggests a number of updates and edits to the document regarding the Commercial Services Plan, potential limits of the manatee habitat/use areas, and amended Biological Opinion. The document should address the effects of

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management plan implementation on the S.R. 29 (Barron River) Borrow Canal, Everglades City well field, and adjacent CERP projects.

Based on the information provided, the **Southwest Florida Regional Planning Council** (SWFRPC) finds the Draft Plan/EIS “Regionally Significant and Inconsistent”¹ with its Strategic Regional Policy Plan due to its magnitude and impacts on regional resources. Staff states that the alternatives analyses are incorrect in that they overestimate the public benefits and underestimate the adverse environmental impacts of the Preferred Alternative, and underestimate the benefits of Alternative F to the natural environment. In its comment letter, the SWFRPC provides a summary of the alternatives, identifying both beneficial and adverse effects. Staff finds that Alternative F best supports the regional Goals, Strategies, and Actions of the Strategic Regional Policy Plan, while providing more Wilderness area with fewer long-term adverse impacts to the region's hydrology, plants and wildlife. The SWFRPC finds that the Preferred Alternative – as currently presented – will not provide acceptable benefit levels to the region and will not enhance the health, safety and welfare of the region's population and habitats. The Preferred Alternative is, therefore, inconsistent with several Goals, Strategies, and Actions of the Strategic Regional Policy Plan's Natural Resources Element.

The **Florida Department of State** (DOS) has determined that the Draft Plan/EIS adequately addresses cultural and historical resources and concurs with the NPS's choice of the Preferred Alternative, but also agrees with the NPS's finding that implementation of the Preferred Alternative could adversely impact cultural resources. The DOS therefore concurs with the NPS that cultural resource (archaeological and other) surveys/investigations must be conducted in advance of ground-disturbing or other development activities that could adversely affect cultural and historical resources. The resulting surveys/investigations should be forwarded to the DOS for review and comment.

OBJECTIONS, COMMENTS AND RECOMMENDATIONS

The Department commends the NPS for its thorough evaluation of Addition lands and attempt to balance resource protection with a variety of public uses, including off-road vehicles (ORV). Even so, however, the Draft Plan/EIS failed to adequately address the following issues with regard to the Addition lands:

1. **Control of invasive exotic species;**
2. **Fire ecology (including suppression, maintenance and control); and**
3. **Design of ORV trails to avoid hydrologic impacts.**

¹ Use of the term “inconsistent” in this paragraph is an artifact of the Strategic Regional Policy Plan and not indicative of a CZMA consistency determination. The SWFRPC is not a state agency authorized to submit a CZMA consistency determination under the Florida Coastal Management Program.

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Exotic Species and Fire Ecology

The Draft Plan/EIS contemplates several alternatives that would involve designation of thousands of acres as Wilderness areas. The Department is concerned that current management practices in federal wilderness areas prohibit the use of mechanized fire suppression and invasive species control and maintenance. Because the fire-dependent ecosystems of this area cross several state-owned conservation lands and invasive species do not respect artificial boundaries, the prohibition on mechanized management would threaten the natural resources of areas owned by the Board of Trustees of the Internal Improvement Trust Fund (BOT), as well as those lands in the immediate vicinity targeted for acquisition under the *Florida Forever* Program (see attached map). Section 380.055, *F.S.*, contemplates eventual transfer of all of the state-owned lands in the Big Cypress National Preserve Addition to the federal government. The transfer has not been completed, and some of the lands are still titled to the BOT. In addition, most of the instruments conveying lands from the BOT to the federal government contain the following reverter clause:

In the event the United States of America ceases to use the land for purposes of conservation and protection of the natural resources and scenic beauty of the Big Cypress Areas, as set forth in the Big Cypress Conservation Act of 1973 and Public Law 93-440 approved October 11, 1974, title to said land shall automatically revert to the Board of Trustees of the Internal Improvement Trust Fund.

The BOT therefore retains authority over lands that are not yet transferred to the federal government, as well as a possible reverter in the lands previously conveyed. While the Draft Plan/EIS does encompass the purposes of conservation and resource protection, some aspects of the proposed management plan could result in harm to the natural resources contained in these lands.

Section 253.034(1), *F.S.*, states that “[l]ands acquired pursuant to chapter 259 shall be managed to serve the public interest by protecting and conserving land, air, water, and the state’s natural resources. [The] lands shall be managed . . . to ensure the survival of plant and animal species and the conservation of finite and renewable natural resources.” Section 253.034(5)(b), *F.S.*, provides that management goals must include measurable objectives for habitat restoration and improvement, hydrological preservation and restoration, sustainable forest management, and imperiled species habitat maintenance, enhancement and restoration, all of which require appropriate prescribed fire as a management tool. Finally, Section 259.032(10)(e), *F.S.*, requires management plans to contain key management activities necessary to achieve “restoring habitat, protecting threatened and endangered species, controlling the spread of nonnative plants and animals, performing prescribed fire activities, and other appropriate resource management.” Inadequate management activities on federal lands that lie adjacent to state-owned lands could result in harm to resources on state conservation lands and impact state land managers’ ability to implement meaningful control tools.

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Recommendation/Condition:

Our review of the 1964 Wilderness Act and the Draft Plan/EIS has found that fire suppression and exotic species control are allowed in areas designated as Wilderness, except that mechanized control is prohibited in those designated areas. To ensure that adjacent natural and built areas are adequately protected from unconfined fires and the spread of exotics, any Wilderness designations in the Addition approved by Congress should contain specific language that allows the Park Superintendent of the Big Cypress National Preserve to work with other federal, state and local agencies to prevent the spread of exotic plants into and out of the Addition and to use prescribed fire as a management tool for restoring and maintaining native plant communities. In addition, any Wilderness designation should allow the Park Superintendent to suppress and contain fires that threaten adjacent natural or built areas by any means deemed appropriate – including mechanized equipment – in coordination with other federal, state and local agencies.

Hydrologic Impacts of ORV Trails

In both Alternative B and the Preferred Alternative, the NPS proposes the designation of up to 140 miles of primary ORV trails in the Addition lands. The Department and other state agencies have requested reports on current ORV use in the Preserve, but no reports or other data have been provided.

The Department concurs with the proposal for 140 miles of ORV trails in the Addition, but recommends that a three-year deadline be established for the issuance of the 700 permits described in the Draft Plan/EIS.

An analysis of ORV use under the Preferred Alternative states that improvements to existing trails and development of new ORV trails will create barriers to surface water flows due to raised trail treads, trail heads and general ORV use. Culverts and other best management practices must be used to avoid or reduce hydrologic impacts. The development or improvement of trails and the construction and operation of water control structures must obtain review and approval under Chapters 373 and 403, *F.S.*

Recommendation/Condition

Ongoing south Florida ecosystem restoration projects include several proposals for the restoration of surface water flows in the region, including the Big Cypress/L-28 Interceptor Modifications and the Seminole Tribe Big Cypress Water Conservation Plan, designed to reestablish sheet flow and restore the more natural water flows from the Big Cypress Reservation and into the Big Cypress National Preserve. The final Plan/EIS must evaluate the potential effects that ORV trail development will have on restoration

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benefits expected from these projects. The selected plan should detail the proposed activities to facilitate the Department's determination of anticipated adverse impacts to south Florida ecosystem restoration projects identified under 373.470, *F.S.*, and whether the proposed activities comply with the requirements of Chapters 373 and 403, *F.S.*

In addition to the foregoing, the Department has several other concerns that should be addressed in the final plan and prior to the commencement of any activity that would require the issuance or renewal of a state license under Chapters 373 and 403, *F.S.* Final agency action on an application (*i.e.*, issuance or renewal of a license) for any activity regulated by the Department shall constitute the state's final determination on whether an activity is consistent with the federally approved Florida Coastal Management Program. *See* Sections 373.428 and 380.23, *F.S.* The Department has the following additional concerns:

- A. Paragraph 2 of the Department's letter dated August 27, 2001, identified several important issues, including the designation of waters and wetlands as "special waters" – a category of Outstanding Florida Waters that prohibits dredge-and-fill activities not clearly in the public interest. Public access features that involve adverse impacts to wetlands should be avoided. A copy of the 2001 letter is available upon request.
- B. The Florida Scenic Trail traverses the northeast portion of the Addition land and the portion of the Preserve that begins south of I-75. The maps for Alternative B and the Preferred Alternative depict some overlap between ORV and other trails. Potential conflicts should be evaluated and explained in the final Plan/EIS.
- C. Typically, in draft federal actions related to projects or plans of this importance, the NPS consults with the FWC and the U.S. Fish and Wildlife Service regarding Section 7 of the Endangered Species Act. The Department was unable to find in Appendix C any letters or comments from either agency addressing compliance with the Endangered Species Act.

Proposed Alternative

While the Department, DCA and FWC stand ready to defend their respective objections and comments herein, the agencies have reached general consensus on the acceptability of the following modifications:

The designation of 85,000 acres as Wilderness, where ORV use is prohibited, denies reasonable public access to areas open to hunting and other recreational activities. To more closely meet the needs of various user groups, the agencies recommend that the area north of I-75 and the western strip of Addition lands (along S.R. 29) proposed for Wilderness designation under the Preferred Alternative be removed

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from that proposed designation and placed in a Backcountry Recreation management zone. The dominant goals of that management zone are the preservation of natural and cultural resources, restoration of degraded resources, and continuation of natural processes, while allowing compatible recreational uses supported by roads and trails.

In addition, the agencies propose that a half-mile buffer designated Backcountry Recreation be added to the south side of I-75 to accommodate the maintenance of current and future roadway infrastructure, and that a half-mile buffer – also designated Backcountry Recreation – be added to each side of the L-28 Interceptor Canal south of I-75 to the boundary of the Addition to accommodate current and future canal access, maintenance and restoration.

Conditional Concurrence

In accordance with 15 C.F.R. § 930.4, the Draft Plan/EIS will be consistent with the enforceable policies of the Florida Coastal Management Program and the Department will concur with the NPS' determination that the Draft Plan/EIS is consistent with the previously cited provisions of state law (in Chapters 253, 259 and 373, *F.S.*), **if and only if** the following conditions are satisfied:

- I. Any Wilderness designation in the Addition must include specific language that directs the Park Superintendent of Big Cypress National Preserve to work with other federal, state and local agencies to eradicate exotic plants and animals and prevent their spread into and out of the Addition; to use prescribed fire as a management tool for restoring and maintaining native plant communities; and to conduct necessary law enforcement activities. Any Wilderness designation must also include language directing the Park Superintendent to use the most effective and timely methods for conducting these critical management activities, including the use of mechanized equipment. In addition, any Wilderness designation must allow the Park Superintendent and cooperating agencies to suppress and contain fires that threaten adjacent natural or built areas using the most effective and timely methods, including the use of mechanized equipment.
- II. The final Plan/EIS must evaluate the potential effects that recreational development activities, including ORV trail modifications, will have on the surface hydrology of the area and the anticipated benefits of the South Florida ecosystem restoration projects identified in § 373.470, *F.S.* The selected alternative must provide details regarding proposed trail development and improvement activities, so the Department can determine whether the activities will adversely impact South Florida ecosystem restoration projects and whether the activities may be eligible for licensing under Chapters 373 and 403, *F.S.* The Department's evaluation of the trail development or improvement activities during its review

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of the final Plan/EIS will not bind or prejudice any future determination of the Department or the South Florida Water Management District in their evaluation of applications submitted pursuant to Chapters 373 and 403, *F.S.*, nor shall the fulfillment of this condition for the purpose of the final Plan/EIS's consistency with state law be considered the final consistency determination for any of those applications.

Pursuant to 15 C.F.R. 930.4(a)(2), the NPS must either modify the Draft Plan/EIS to meet the Department's two conditions or immediately notify the Department that the conditions are not acceptable. If the conditions are not met, 15 C.F.R. 930.4(b) directs the parties to treat this conditional concurrence as an objection under 15 C.F.R. 930 Subpart C.

The Department appreciates the opportunity to review the Draft Plan/EIS. Should you have questions or require additional documentation, please do not hesitate to contact Ms. Lauren Milligan, Florida State Clearinghouse Coordinator, at (850) 245-2170 or Lauren.Milligan@dep.state.fl.us.

Sincerely,



Michael W. Sole
Secretary

cc: Tom Pelham, Secretary, Florida Department of Community Affairs
Ken Haddad, Executive Director, Fla. Fish & Wildlife Conservation Commission
Nick Wiley, Asst. Exec. Director, Fla. Fish & Wildlife Conservation Commission
Jim Karels, Director, Florida Division of Forestry
Kenneth Heatherington, Exec. Director, Southwest Fla. Regional Planning Council
Kim Shugar, South Florida Water Management District
Laura Kammerer, Florida Department of State
Jennifer Fitzwater, Florida Department of Environmental Protection
Bob Ballard, Florida Department of Environmental Protection
Greg Knecht, Florida Department of Environmental Protection
Marianne Gengenbach, Florida Department of Environmental Protection
Sally Mann, Florida Department of Environmental Protection
Danny Clayton, Florida Department of Environmental Protection
Kelly Samek, Florida Department of Environmental Protection
Mary Ann Poole, Fla. Fish & Wildlife Conservation Commission
David Kennedy, Director, NOAA Office of Ocean and Coastal Resource Mgmt.

Florida Department of Environmental Protection

Memorandum

TO: Lauren Milligan

FROM: Greg Knecht

DATE: September 18, 2009

SUBJECT: National Park Service – Big Cypress National Preserve Addition – Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement – Collier County, Florida SAI # FL09-4851

Background

The National Park Service has prepared a draft General Management Plan, Wilderness Study, Off-Road Vehicle (ORV) Management Plan and Environmental Impact Statement, which will be the basis for managing the Addition land over the next 15 to 20 years. The draft plan includes detailed maps and narrative text that describe the four alternatives, including:

- The no-action alternative, which would result in a continuation of the existing management in the Addition. The Addition would remain closed to public recreational motorized use and motorized hunting. No wilderness would be proposed for designation.
- Alternative B, which would enable visitor participation in a wide variety of outdoor recreational experiences. Approximately 48,919 acres of land would be proposed for wilderness designation, and up to 140 miles of sustainable ORV trails would be designated and phased in as part of the conceptual primary ORV trail network. Secondary ORV trails, as defined in the plan, could be designated in any of the backcountry recreation areas, comprising approximately 94,817 acres, or 65 percent, of the Addition.
- The preferred alternative, which would provide diverse frontcountry and backcountry recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. Approximately 85,862 acres of land would be proposed for wilderness designation, and up to 140 miles of sustainable ORV trails would be designated and phased in as part of the conceptual primary ORV trail network. Secondary ORV trails, as

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defined in the plan, could be designated only in the ORV trail corridors and other backcountry recreation areas, comprising approximately 52,431 acres, or 36 percent, of the Addition.

- Alternative F, which would emphasize resource preservation, restoration and research while providing recreational opportunities with limited facilities and support. This alternative would maximize the amount of land proposed for wilderness designation, about 111,601 acres, or 76 percent of the Addition. No ORV use would be available under this alternative.

Recommendation

We commend the Park Service for its thorough evaluation and attempt to balance the need for resource protection while allowing for a variety of uses, including off-road vehicles. However, we have identified three specific areas that require attention by the Service. First, we believe that the preferred alternative, which proposes wilderness designation of over 85,000 acres, of which off-road vehicle use is precluded, is excessive and removes areas that are open to hunting and other recreation activities from reasonable access.

The Department, in an effort to more closely meet the needs of all the various user groups, recommends that the area north of I-75 and the western addition lands (adjacent to hwy 29) proposed for wilderness designation under the Preferred Alternative be removed and placed in a Back Country Recreation Management Zone. The dominant goal of this management zone is the preservation of natural and cultural resources, restoration of degraded resources, and continuation of natural processes, while still allowing for compatible recreational uses supported by roads and trails.

We concur with the wilderness designation of the land south of I-75 as proposed in the Preferred Alternative, but with the recommendation of including a one-half mile buffer from I-75 in order to accommodate maintenance of current and future roadway infrastructure.

Second, it is our understanding from a review of the 1964 Wilderness Act and the Draft General Management Plan for the Addition land that fire suppression and exotic species management are allowed in areas designated as wilderness. To ensure that adjacent natural and built areas are adequately protected from unconfined fires and the spread of exotics, we ask that any proposed wilderness designation in the Addition that is approved by Congress contain specific language that allows the Superintendent of the Big Cypress National Preserve to

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work with other federal, state and local agencies to prevent the spread of exotic plants into and out of the Addition and to use prescribed fire as a management tool for restoring and maintaining native plant communities. Additionally, the wilderness designation should allow the Superintendent of the Big Cypress National Preserve to suppress fires, by any means deemed appropriate, that threaten adjacent natural or built areas in coordination with other federal, state and local agencies.

Third, we concur with the proposal for 140 miles of ORV trails and recommend that a three-year deadline be established for the issuance of the 700 permits. . . Additionally, as addressed in number 4 below the Department needs to be consulted in the design and construction of the proposed ORV trails to ensure that any effect to water resources are acceptable under the Department's permitting authority.

Specific Comments

In addition to the comments above, we have several specific comments that would need to be addressed as part of the selected plan and/or prior to any proposed activities that would require the issuance or renewal of a state license in accordance with Chapters 373 and 403 Florida Statutes (F.S.). In accordance with Subsection 373.428 and 380.23, F.S., final agency action on an application (i.e. issuance or renewal of a license) for any activity regulated by the Department, shall constitute the State's final determination as to whether an activity is consistent with the federally approved Florida Coastal Zone Management Program.

1. Paragraph 2 of the Department's August 27, 2001 letter identifies several important issues, including the designation of waters and wetlands as "special waters," a category of Outstanding Florida Waters that prohibits dredge and fill activities not clearly in the public interest. Access features that involve adverse impacts to wetlands should be avoided.

2. The Florida Scenic Trail traverses the Northeast portion of the Addition land and the Preserve beginning south of I-75. A review of the map of Alternative B and the Preferred Alternative appears to have overlap with ORV and other trails. Potential conflicts should be evaluated and explained in the final document.

3. ORV use is contemplated in Alternative B and the Preferred Alternative. Our previous comment letter requested a report on the monitoring results of

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current ORV use in the Preserve and potential future use to be analyzed to determine possible effects on the Addition.

4. An analysis of ORV use under the Preferred Alternative states that development, including improvements to existing trails and up to 140 miles of ORV trails will create barriers to surface water flow due to raised trail treads and ORV use. Culverts and other best management practices are to be used to reduce these impacts, but long-term, moderate to severe localized impacts are expected to occur. Information concerning the construction of trails and construction and operation of water control structures that will have or have the potential to adversely affect water resources of the state shall require appropriate review and approval under Chapter 373 and/or 403 F.S.

5. Ongoing south Florida ecosystem restoration projects include several proposals for restoration of surface water flows in the region, including the Big Cypress/L-28 Interceptor Modifications and the Seminole Tribe Big Cypress Water Conservation Plan that are designed to reestablish sheet flow and restore the more natural water flows from the Big Cypress Reservation and into the Big Cypress National Preserve. The document should evaluate the potential affects that the ORV trail development will have on the restoration benefits expected from these projects. Proposed activities should be further detailed as part of any selected plan in order to facilitate the Department's determination as to whether any adverse affects to south Florida ecosystem restoration projects identified under 373.470 F.S. are anticipated and whether the proposed activities are licensable under Chapter 373 and 403, F.S.

6. Typically, in draft federal actions related to projects or plans of this importance, there is consultation with the U.S. Fish and Wildlife Service under Section 7 of the Endangered Species Act and related consultation with the Florida Fish and Wildlife Conservation Commission. We did not find any letters from either agency addressing compliance with the Act in Appendix C.



Florida Department of Agriculture and Consumer Services
CHARLES H. BRONSON, Commissioner
The Capitol • Tallahassee, FL 32399-0800
www.doacs.state.fl.us

Please Respond to:
Florida Division of Forestry
3125 Conner Boulevard
Tallahassee, Florida 32399-1650
Phone: 850-488-4274

August 26, 2009

Lauren P. Milligan, Environmental Manager
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Stop 47
Tallahassee, Florida 32399-3000

Dear Ms. Milligan:

Thank you for the opportunity to comment on the National Park Service Draft Plan/Environmental Impact Statement regarding Big Cypress National Preserve (SAI#: FL200907154851C).

Designation of large areas of wilderness in the Big Cypress National Preserve could significantly increase the risk of severe wildfires in the designated wilderness area due to the accumulation of fuels. Natural wildfires will not be adequate to control fuels in the wilderness areas because the landscape context in which these fires historically started and propagated no longer exists. This landscape is fragmented by transportation corridors and developed areas outside the Preserve, in which wildfires are controlled by wildfire suppression efforts. Wildfires that do occur in the unnaturally accumulated fuels will not behave as historical natural fires did. Their higher intensity and more complete coverage of the wilderness area will most likely cause severe damage to the vegetation and wildlife in the wilderness area.

The inability to fight wildfires in the designated wilderness will increase the risk that these wildfires will contribute significant amounts of smoke on transportation corridors and in urban and rural areas. Wildfires in this and surrounding areas frequently cause this main east-west artery (I-75) to be closed for extended periods. Major, uncontrollable wildfires in the designated wilderness will increase the risk that these wildfires will escape into surrounding areas and be even more difficult to control. A wilderness designation will exacerbate this situation as the use of mechanized equipment would be prohibited thus slowing suppression efforts. Uncontrollable wildfires that escape from the wilderness area will cause significant damage to natural and cultural resources, including residential, commercial and agricultural development.



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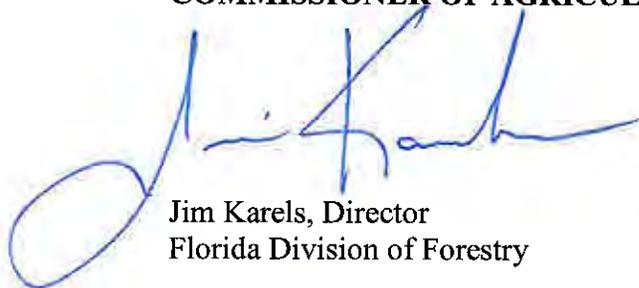
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If a wilderness area is to be designated, the designation must provide for prescribed fire management in the wilderness area that approximates the historical fire regime. This prescribed fire program should be aimed toward reduction and maintenance of fuel loads, and provide for the ability to suppress wildfires that threaten surrounding resources and the public either through excessive smoke or through escaping wildfires. Such a prescribed fire program would enhance wilderness values and prevent their degradation from destructive wildfires. If a wilderness area is designated in the southeast corner of the addition boundary as shown on map 4 alternative B, it would help to alleviate some of the fire management concerns. This configuration would eliminate wilderness property along I- 75 corridors where active fuel management could be carried out thus reducing the impacts of wildfire.

Thank you for the opportunity to provide input into this land designation proposal.

Sincerely,

CHARLES H. BRONSON
COMMISSIONER OF AGRICULTURE



Jim Karels, Director
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September 8, 2009

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Ms. Lauren Milligan
Florida State Clearinghouse
Florida Department of Environmental Protection
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

Re: The Big Cypress National Preserve Addition, Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement, SAI #FL200907154851C, Collier County

Dear Ms. Milligan:

Florida Fish and Wildlife Conservation Commission (FWC) staff reviewed the Big Cypress National Preserve's (BCNP) Preferred Alternative for the General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement ("draft GMP") and provides the following comments and recommendations in accordance with the BCNP Addition Act [Public Law (P.L.) 100-301], the National Environmental Policy Act, and the Florida Coastal Management Program/Coastal Zone Consistency Act.

As a cooperating manager of BCNP as the Big Cypress Wildlife Management Area, the FWC sincerely appreciates the leadership of Pedro Ramos, Superintendent of BCNP, and the dedicated work of National Park Service staff throughout this critical planning process. We appreciate their decisions to integrate several major planning elements into this draft GMP so the Addition can be opened for a broad spectrum of public access soon after the final GMP is approved and published. We also appreciate their willingness to include FWC staff in earlier reviews of the draft GMP, their willingness to listen to our concerns and ideas, and the fact that many of our suggestions are reflected in the draft GMP. We look forward to a time in the near future when the Addition is open to the full enjoyment of the public while protecting the natural diversity and integrity of this precious ecosystem as envisioned by Congress.

We have provided detailed comments and recommendations in the enclosed report. Below is a summary of our major findings:

1. We cannot support the Preferred Alternative, but find that Alternative B has many of the elements we could strongly support if modified as recommended in our report.
2. We adamantly oppose the wilderness designation in the Addition and the establishment of primitive backcountry management zones because this is a misapplication of wilderness designation. The Addition already has a significant number of trails with historic patterns of use. Further, wilderness designations would hinder management of natural resources and public access. We recommend that the wilderness designation be eliminated and the primitive backcountry management zones be changed to backcountry recreation management zones.

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: (850) 488-4676

Hearing/speech impaired:
(800) 955-8771 (T)
(800) 955-8770 (V)

MyFWC.com

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3. While we fully support a designated trail system for off-road vehicles (ORVs) and the proposed trails for non-motorized access, many miles of old roads and trails that have been in existence for more than 20 years are not designated for public use in the draft GMP. We recommend the National Park Service take full advantage of these existing roads and trails to provide a much more comprehensive trail system for pedestrian access and other multiple uses.
4. We support the approach in Alternative B for issuing ORV permits for public access into the Addition, as opposed to the phased-in approach proposed under the Preferred Alternative. Moreover, we urge the National Park Service to specify in the Record of Decision that they will recognize the FWC as an equal partner in the decision making process regarding management of the ORV trail system including closing or opening trails for ORV access.

The FWC has enjoyed a nearly four-decade history of partnering with the National Park Service at BCNP, and co-managing the original BCNP as the Big Cypress Wildlife Management Area. Since the BCNP Addition was established in 1988, the FWC has supported and encouraged including these public lands into the Big Cypress Wildlife Management Area to provide a full suite of public access and recreation including hunting, fishing, trapping, and other forms of recreational access consistent with the original purposes for establishing BCNP. We continue to support the inclusion of the Addition into the BCNP/Wildlife Management Area system to provide a diversity of fish- and wildlife-based recreational opportunities for the public.

We look forward to working with BCNP and other involved federal and state agencies, as well as with regional agencies and governments, to formulate the most appropriate approaches to managing significant resources in and associated with BCNP to maximize benefits to the public and fish and wildlife conservation. If you have any questions or would like to follow up on issues discussed in this letter or the enclosed report, please contact Chuck Collins, the Director of the FWC's South Region at 561-625-5131.

Sincerely,



Nick Wiley
Assistant Executive Director

nw/mp

cc: National Park Service, Denver Service Center, Big Cypress Planning Team
Superintendent Pedro Ramos, Ochopee, Florida

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PROJECT DESCRIPTION

On July 10, 2009, the National Park Service (NPS) published the draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement for the Big Cypress National Preserve (BCNP), which selected the Preferred Alternative from the revised alternatives for a General Management Plan (GMP) to manage the Addition over the next 15 to 20 years.

Alternatives

Four alternatives were considered in the preparation of this document: Alternative A, or the No-Action Alternative; Alternative B; the Preferred Alternative; and Alternative F. The Preferred Alternative would allow off-road vehicle (ORV) use with up to 140 miles of sustainable primary trails, gradually allow up to 700 permits for ORVs, provide new access points for other forms of recreational use (e.g., hunting, hiking, bicycling), and designate approximately 85,862 acres of wilderness in the Addition. It would also designate developed (18 acres), frontcountry (11 acres), backcountry recreation (52,431 acres), and primitive backcountry (93,426 acres) of management zones. Secondary ORV trails, as defined in the plan, could be designated only in the ORV trail corridors running through wilderness and backcountry primitive recreation areas. The proposed designated trail system under the Preferred Alternative would restrict use of motor vehicles and other mechanical transport to the designated trails.

The No-Action Alternative would maintain current conditions, including no motorized access into the Addition and no wilderness designation or frontcountry, primitive backcountry, backcountry recreation, or developed management zones in the Addition.

Alternative B would allow ORV use with up to 140 miles of sustainable primary trails and a limit of 700 ORV permits, provide new access points for other forms of recreational use (e.g., hunting, hiking, bicycling), and designate approximately 48,919 acres of wilderness in the Addition. It would also designate developed (18 acres), frontcountry (6 acres), backcountry recreation (94,817 acres), and primitive backcountry (51,045 acres) management zones.

Alternative F is the most restrictive alternative, prohibiting any ORV use except to provide access to owners of private inholdings, and designating about 111,601 acres of wilderness, nearly the entire amount that the NPS deemed eligible through their wilderness study. It would also designate developed (15 acres), frontcountry (6), backcountry recreation (3,422 acres), and primitive backcountry (142,442 acres) management zones.

Wilderness Designation and Establishment of Management Zones

An interdisciplinary NPS team evaluated the Addition in 2006 to determine what portions of the BCNP would be eligible for a wilderness designation. The basis for this review was whether the area had the following characteristics:

1. “Generally appear to have been affected primarily by the forces of nature, with the imprint of man’s work substantially unnoticeable,
2. Be undeveloped and retain its primeval character and influence, without permanent improvements or human habitation,
3. Be untrammelled by man, where man himself is a visitor who does not remain,
4. Offer outstanding opportunities for solitude or a primitive and unconfined type of recreation, and
5. Be protected and managed so as to preserve its natural conditions” (p. 114 of the draft plan).

Table 2 (“Management Zones”) in the draft GMP provides a comparison of the expected conditions, visitor experience, and appropriate types of facilities and activities for each type of management zone; however, we found no criteria outlined by which the NPS determined which parts of the Addition, in its current condition, qualified for the types of zone proposed.

BACKGROUND

The BCNP, comprising 582,000 acres in southwest Florida, was initially established on October 11, 1974, by P.L. 93-440. BCNP was expanded by an additional 147,000 acres in 1988 by Public Law (P.L.) 100-301, which is known as the “Addition Act.” Under P.L. 93-440, the purpose for designating these lands as a national preserve was “...to assure the preservation, conservation, and protection of the natural, scenic, hydrologic, floral and faunal, and recreational values of the Big Cypress Watershed in the State of Florida and to provide for the enhancement and public enjoyment thereof...” Section 5 of P.L. 93-440 requires that the Secretary of the Interior shall permit hunting, fishing, and trapping in accordance with federal and state laws and further requires that any restrictions relating to hunting, fishing, or trapping can be put into effect only after consultation with the appropriate State agency having jurisdiction over hunting, fishing, and trapping activities. Section 10 of P.L. 100-301 states that “The Secretary and other involved Federal agencies shall cooperate with the State of Florida to establish recreational access points and roads, rest and recreation areas, wildlife protection, hunting, fishing, frogging, and other traditional opportunities in conjunction with the creation of the Addition...”

The Florida Fish and Wildlife Conservation Commission (FWC) has enjoyed a nearly four-decade history of partnering with NPS at BCNP, having dedicated staff to help co-manage the original BCNP as the Big Cypress Wildlife Management Area (WMA). Since the BCNP Addition was established in 1988, the FWC has supported and encouraged including these public lands into the Big Cypress WMA to provide a full suite of public access and recreation including hunting, fishing, trapping, and other forms of recreational access consistent with the original purposes for establishing BCNP. In June of 2008, the FWC Commission took action in the form of a strong resolution and letter expressing concern that it has taken too many years for NPS to open the Addition to public access and hunting, and urging NPS to expedite the planning process; open the Addition to the public as soon as possible; and provide traditional forms of public access that are in high demand in south Florida and long overdue on the Addition.

CONCERNS, ISSUES, AND RECOMMENDATIONS

OVERVIEW

FWC staff reviewed all of the alternatives within the context of our longstanding cooperative relationship with NPS, a long history of experience managing fish and wildlife resources and public hunting in the BCNP, and the pertinent acts of Congress that mandate recreational access for the public balanced with responsible management and protection of fish and wildlife resources and their habitats. Staff finds that the FWC cannot support the Preferred Alternative, primarily because of the proposal to designate parts of the Addition as wilderness and the establishment of the backcountry primitive management zone, and because of the phased approach taken to allowing ORVs access to the designated trails. On the other hand, Alternative B has many of the elements of an alternative that we could strongly support. We do not support the No-Action because it maintains the status quo of no motorized access to the Addition, nor do we support Alternative F because it also does not allow motorized access to the Addition.

Concern: Wilderness Designation

Although the FWC understands that Congress mandated a wilderness study for the Addition, we adamantly oppose the designation of 85,862 of wilderness in the Addition. The concept of wilderness has become an established part of the nation's land-use policy to preserve natural areas, and as such has come to represent an expectation that wild areas are places where natural processes can proceed unimpeded by human actions. In Florida, experience has taught us that this expectation is impossible to attain and that this approach is, in fact, the antithesis of natural resource management in much of Florida.

Two concerns in particular lead us to this conclusion. One is the expectation that wildfires ignited by lightning would run their courses naturally, resulting in naturally maintained ecosystems. That is almost never the case in Florida because the landscape has been profoundly altered by canals, levees, roads, and other man-made structures that impede fire. Altered fire cycles caused by infrequent burning allow the accumulation of plant litter, which in turn acts as fuel for catastrophic wildfires that cause adverse ecological impacts.

The other concern is that, while the wilderness designation is intended to provide a level of security that these areas will not be further degraded, our experience in south Florida has shown us that managers must have flexibility to react quickly to unanticipated stressors on the natural system. An obvious and recent example of this need to react quickly and decisively is the invasion of Burmese pythons in south Florida. While contingencies can be written into the plans for managing specific wilderness areas, it is impossible to conceive of every situation that may arise in the future. This has shown itself to be particularly true in south Florida, where the hydrologic regime has been so altered, management options constrained, and exotic plant and animal species have been introduced with unexpected and undesirable consequences.

In terms of resource protection, we believe that the same level can be achieved on the Addition without designating acreage as wilderness. The main advantage of wilderness designation therefore seems to be some perceived assurance that protection of the lands and their resources would be more permanent than without the designation. The concern is that, for instance,

without wilderness designation, resource protections could be undone based on changing management philosophies of NPS staff. This concern over the permanence of resource protection is unfounded. Levels of protection are ensured by the GMP, which is developed through a public process, and it is our understanding that any departures would necessarily have to be cleared through a NEPA process for revising the GMP. The purpose of wilderness designation of Addition lands, therefore, must be seriously questioned given the lack of real benefits and the strong potential for wilderness designation to hinder necessary management.

These factors cannot be ignored given that wilderness designation is such a serious decision with long-term consequences once adopted by Congress.

Concern: Primitive Backcountry Management Zone

Our concerns with respect to establishing portions of the Addition as a primitive backcountry management zone closely parallel our concerns about designating portions as wilderness. While the primitive backcountry management zone may not preclude rapid responses to unexpected resource management problems, it is similar in that it may prohibit access by motorized vehicles.

Concern: Phased Approach to Allowing ORVs Access to Trails

The Preferred Alternative would allow up to 700 ORV permits in a phased approach, with the number of permits issued being proportional to the amount of trail established at the time. The draft document provides no information as to how frequently the level of access would be assessed, nor does it offer an expected time of trail completion. The FWC is very sensitive to the fact that it has taken over 20 years since establishment to open the Addition to all public access except a limited amount on the Florida Trail. Given this history, we have reason to be concerned that an open-ended phased approach will also take a long period of time.

Issue: Compatibility of ORV Use with Natural Resource Management

From our experience in managing the Bear Island Unit of the BCNP, and from data collected on the response of the Florida panther to existing ORV use, we believe that responsible management of ORV use is compatible with the goals of resource management including protection of imperiled species such as the Florida panther.

DETAILED REVIEW

Wilderness Designation and Primitive Backcountry Management Zone

All of the alternatives except the No-Action Alternative include a wilderness designation ranging in total acreage from 48,919 up to 111,601, most if not all of which is also managed as primitive backcountry. All of these alternatives designate wilderness both north and south of Interstate 75 (I-75) and along a roughly one-mile strip running along the eastern side of State Road 29. All of these alternatives except Alternative B designate the bulk of the Addition (the northeastern component) as wilderness and propose most of this component to be managed as primitive backcountry.

As the following comments are considered, it is important to keep in mind the definition of “wilderness” under the Wilderness Act of 1964, which follows: *“A wilderness, in contrast with those areas where man and his own works dominate the landscape, is hereby recognized as an area where the earth and community of life are untrammelled by man, where man himself is a visitor who does not remain.”* Wilderness designation under this act generally prohibits road construction, use of motor vehicles, use of motorized equipment, landing of aircraft, other forms of mechanical transport such as bicycles, and commercial enterprises.

The FWC recognizes the value of wilderness designation in certain ecosystems or landscapes where Wilderness Act prohibitions and restrictions are necessary and warranted; however, we have found significant fault regarding the process and, consequently, the findings of this NPS wilderness study. The study was completed entirely by NPS staff; we are not aware of any consultation with or participation by other partner agencies in developing this study. Because several state and federal agencies play key roles in managing the network of public lands in which BCNP is embedded, we believe that NPS should have reached out to its local neighboring managers and cooperating agencies in developing this study. Consultation with cooperating agencies could have addressed many questions and concerns up front and ensured an objective and fully informed result.

FWC staff, with years of direct knowledge and experience in the Addition, can see no basis for characterizing the proposed wilderness areas as having “the imprint of man’s work substantially unnoticeable” since these areas have been subjected to agriculture, cattle raising, logging, and oil exploration. Some portions are infested by exotic vegetation. These areas are crosscut and fragmented by numerous trails; contain private inholdings; and are positioned immediately adjacent to I-75, which is a major corridor for vehicular traffic across south Florida. Florida Department of Transportation estimates of vehicular traffic on this part of I-75 ranges from 17,500 to 21,709 AADT (average annual daily traffic).

The most striking example of the misapplication of wilderness designation is the “western addition.” Clearly this area does not meet the definition of wilderness and should not have been identified as eligible for wilderness. This property is highly subject to the influence of anthropomorphic factors (e.g., exotic plants and animals, feral animals, and wildfires) and does not conform to the definition of “untrammelled” as “not confined or hindered, not limited; being free and easy” (NPS 2009). On the contrary, this narrow strip of land, which is bordered by SR 29 with a canal and fence running the length of the road and with private property dispersed throughout, does indeed appear to be “confined.” It also does not conform to the criterion of “[o]ffer[ing] outstanding opportunities for solitude or a primitive and unconfined type of recreation.” The draft GMP even notes that “[o]pportunities for solitude in the western Addition are reduced due to the presence of developed areas along the highway corridors, such as near Miles City, Copeland, Carnestown, and Everglades City, and near popular areas like Bear Island Grade.”

We have serious concerns about the unintended consequences of federal wilderness designation in the Addition. Furthermore, we find that it is unnecessary, unwarranted, and will significantly impair the ability of the NPS, FWC, and other management partners to carry out management activities that are critical to fish and wildlife conservation and maintaining public access on a

long-term basis. Moreover, FWC asserts that the proposed designated trail system, along with the fact that these lands are established as a “national preserve”, will provide the same level of resource protection and higher recreational values as wilderness without severe restrictions on active resource management and public access.

Finally, we note that the various wilderness areas are proposed on top of a primitive backcountry management zone designation. While primitive backcountry management zones are not as restrictive on management and public access as wilderness, FWC asserts that this designation is unnecessary given that motorized uses will be managed through a designated trail system.

Management Challenges for Addition Areas Designated as Wilderness

There is no question that active management is needed to effectively sustain native plant and animal species, particularly imperiled species, given the threats from exotic plants and animals, presence of fire-dependent plant communities, and the dynamic nature of south Florida hydrology. The FWC is seriously concerned that active management would be significantly reduced under wilderness designation primarily due to restrictions on motorized vehicles and equipment and constraints on timely use of the most effective methods and technology available. Experience with other wilderness areas in Florida suggests the “minimum tool” process for authorizing certain management tools as allowed in the Wilderness Act is simply not an effective approach for managers to maintain the integrity and stability of native fish and wildlife populations and habitats over the long term, particularly in south Florida. The complex south Florida environment creates problems for natural resource managers because of a highly managed hydrology, limited management options due to the existing infrastructure, and the introduction of exotic plants and animals. The BCNP Addition is clearly an area for which wilderness designation could do more harm than good over the long term.

Mechanized vehicles and equipment are essential to other important management activities within the Addition. For example, panther biologists frequently encounter unplanned situations that require the use of mechanized equipment for research, tracking, or collaring activities. Law enforcement officers also routinely encounter situations that require quick action and mechanized equipment to protect the public, natural resources and enforce existing laws. We realize there are contingencies in wilderness areas to address situations such as search and rescue; however, time is sometimes critical and rescuers must be allowed to spontaneously change tactics. In these situations, we cannot afford a lengthy approval process to identify the minimum necessary tools to be compatible with wilderness restrictions, and we do not believe it is feasible to secure approval in advance when many situations and circumstances are unpredictable and unforeseeable.

Concern: Management Challenges Associated with Invasive Exotic Species

Invasive exotic plant and animal species in south Florida are a serious threat to the ecological integrity and stability of native fish and wildlife populations. The draft GMP provides a good overview of ongoing active management efforts necessary to control particularly invasive and harmful exotic plants including melaleuca, Brazilian pepper, and old world climbing fern. The draft GMP lists “controlling invasive alien species” as a permitted management activity in

wilderness; however, the FWC is very concerned that some of the most effective methods of treatment requiring use of mechanized and aerial equipment will be restricted or prohibited in portions of the Addition designated as wilderness, and that many of the roads and trails necessary for access to treat exotic plants or capture exotic animals are likely to be off limits to vehicular access as well.

The FWC understands how challenging and costly it can be to control exotic species and how much impact, if left unchecked, these exotic species can have on native fish and wildlife and their habitats. We believe for these reasons, it would be a serious mistake to designate wilderness where the “forces of nature would be allowed to operate unrestrained and unaltered” in the Addition. We believe that, over the long term, managing the area according the requirements of the Wilderness Act of 1964 in the Addition would eventually transform into an exotic landscape bearing little resemblance to native Big Cypress ecosystems we treasure today. This outcome would clearly violate the very purposes Congress identified in P.L. 93-440 and P.L. 100-301 for establishment of the BCNP and the Addition. The FWC places these purposes above any value that may be associated with wilderness designation over such a large portion of the Addition and takes little comfort in the “minimum tools” approach to address these concerns.

The FWC has had extensive experience with managing lands invaded by exotic plants and animals. We are the lead manager for the majority of the Everglades Water Conservation Areas and several other large properties in south Florida where exotic plants and animals are a major ongoing management problem. The FWC is partnering with a number of state and federal agencies, including NPS at BCNP, to implement aggressive measures to control the spread of reptiles of concern, specifically Burmese pythons. In addition, since its inception in 1997, Florida’s invasive plant management program, which is now housed in FWC, has spent \$1,031,656 to actively treat upland exotic plants on BCNP, and over \$92,000,000 has been expended on upland exotic plant control treatments statewide with a large portion of this effort focused on south Florida.

These are just a few examples of our experience with exotic plants and animals and basis for our strong interest in maintaining flexibility to use all available management tools to actively and aggressively address this serious problem. Many of the problems associated with invasive exotic species we are fighting today are ones that were not foreseen, but we have learned that the most effective responses often require rapid and innovative solutions.

Recommendation: *We adamantly oppose and very strongly recommend withdrawal of the wilderness designation, and recommend replacing the primitive backcountry management zone with a recreational backcountry management zone to maintain the flexibility for natural resource managers to respond timely and efficiently to unexpected natural resource management challenges related to control of exotic invasive species.*

Concern: Challenges Associated with Fire Management

Many of the habitats in the Addition so critical for maintaining native wildlife diversity depend on frequent fire. In fact, according to the draft GMP, roughly 90% of the Addition consists of plant communities that require periodic fire for perpetuation. The draft GMP does an excellent

job explaining the importance of frequent fire in the Addition and the serious implications when areas go without natural or prescribed fires for even a few years. The following excerpt from the draft GMP illustrates this point:

“Although periodic surface fires tend to maintain certain communities, extreme fire conditions can dramatically alter plant, and consequently animal, distribution. When the fire cycle is retarded, organic materials accumulate and create hazardous fuel levels that can threaten even fire-tolerant species. Prolonged droughts or human-caused drainage can dry out the organic soils of many plant communities and, when coupled with hazardous fuel accumulations, can result in intense fires that consume organic soil materials. Peat fires, as such fires are called, can literally burn the soil out from under established vegetation, radically changing the plant composition. Peat fires tend to lower the surface level of the burned area, thereby extending the hydroperiod and affecting the replacement vegetation. The pond in the middle of a cypress dome, for instance, may be enlarged by a peat fire. In an extreme example, a hardwood hammock on deep organic soil may be completely burned and replaced by an open pond.”

FWC views prescribed fire as another active management tool that would be compromised and constrained by wilderness designation. Historically, before roads and canals were established and hydroperiods were altered significantly, natural lightning-ignited fires would provide the frequent fire necessary to maintain these habitats. Human influences have changed the landscape in the Addition so much that natural fires do not burn frequently enough, wildfires burn with too much intensity, and prescribed fires are necessary to maintain native fire-dependent plant communities and protect against catastrophic wildfires. Effective use of prescribed fire over large landscapes requires use of mechanized equipment and a good network of roads and trails accessible by managers only for these purposes. The Addition has an extensive network of roads and trails that were historically used to manage and contain fire when these lands were in private ownership. Under wilderness designation, most of this trail system would be off limits to vehicular access even for prescribed burning by NPS staff.

While “fire management activities (including fire suppression)” are listed in the draft GMP as permitted in wilderness, a review of wilderness management suggests that fire management tools and tactics are significantly restricted in wilderness areas. This makes it much more difficult for managers to burn enough land with enough frequency to sustain key wildlife habitats and prevent catastrophic wildfires over the long term. This situation is further complicated by the presence of I-75 and State Road 29 corridors. Without the use of mechanized equipment and existing roads and trails, it will be difficult, if not impossible at times, to keep the size of prescribed burns small enough for safe and effective smoke management thus preventing potential danger to motorists on these busy roads.

Recommendation: *As with concerns with management of invasive exotic species, we adamantly oppose and very strongly recommend withdrawal of the wilderness designation, and recommend replacing the primitive backcountry management zone with a recreational backcountry management zone to maintain the flexibility for management of fire as necessary for protecting the integrity of native fish and wildlife habitats.*

The preceding clearly illustrates critical concerns regarding wilderness and resource management in south Florida. FWC views the designated trail system proposed under Alternative B without wilderness as the absolute best approach for retaining the flexibility for management activities critical for protecting the integrity of wildlife habitats and sustaining appropriate public access. The designated trail system would be well defined and limited by the GMP without the wilderness or primitive backcountry designation. Pedestrian access would be the only way the public can access lands outside the designated trail system. This is essentially the same access situation with wilderness/primitive backcountry. Any other wilderness prohibitions not addressed by the designated trail system, to the extent they are really necessary, could readily be provided through federal or state regulations. This approach maintains much greater flexibility to adapt to changes over time given the dynamic nature of south Florida ecosystems.

Public Access and the Designated Trail System

The FWC applauds and fully supports elements of Alternative B that provide a range of options for public recreational access including hiking trails, ORV trails, multiple-use trails, and use of ORVs on designated trails for public hunting and fishing. A review of the history and records associated with establishment of the BCNP and the Addition leaves no doubt that the U.S. Congress and the State of Florida intended to provide traditional recreational opportunities, including vehicular access for public hunting and fishing. These are the fundamental purposes behind the designation of this area as a “*national preserve*” rather than a “*national park*.” The records associated with establishment of BCNP indicate that the “*national preserve*” designation was used in this region of Florida to recognize and preserve traditional uses and methods of access including ORV access and hunting that typically would not be allowed on lands designated as a “*national park*.” Central to these traditional uses and of particular importance to FWC is access for public hunting and fishing associated with the “Gladesmen” culture in south Florida as described by Greg Smith in an *Ethnographic Study of Traditional Cultural Properties of the Gladesmen Culture* authorized by the U.S. Army Corps of Engineers in association with the Comprehensive Everglades Restoration Plan and published in May of 2009.

Issue: Compatibility of ORV Trails with Resource Management Needs

The proposed system of designated ORV trails in Alternative B is more aligned with the original intent of the enabling legislation for the purpose of providing access for traditional and cultural uses, provided this access is managed and regulated in a manner similar to that on the Bear Island Unit of BCNP. The traditional and cultural uses referenced in the enabling legislation historically depended on the use of vehicles for access. FWC staff asserts that the designated trail management system in place on the Bear Island Unit and other portions of BCNP have clearly demonstrated how ORV access and public hunting can be successfully integrated with other recreational uses and natural resource protection. We commend NPS staff for responding to the input and interests of the people who wish to explore and enjoy the Addition by vehicle using a sustainable designated trail system. We further commend NPS staff for honoring the intent and spirit of the Congressional acts and associated federal and state laws that established the BCNP and the Addition by allowing use of ORVs for public hunting and fishing.

Issue: Compatibility with Florida Panther Conservation

The FWC also commends NPS staff for recognizing the importance of implementing public access in the Addition in a manner that is compatible with managing and protecting Florida panthers. We are pleased to see Alternative B and the Preferred Alternative include a designated trail system with careful management of ORV access and public hunting in partnership with FWC. Our partnership in this regard reflects a long history of experience and success on the original BCNP where we have adjusted hunting and public-use regulations, including use of ORVs, over the years to ensure that these activities are compatible with panther conservation. FWC panther biologists have reviewed tracking data, published literature, and internal NPS and FWC reports and have concluded that BCNP supports more panthers today than when this species was first listed as an endangered species in 1967 (FWC 2008). We cannot say whether this increase in numbers is the direct result of our joint management efforts, the population hitting a critical mass that allowed for rapid expansion, the fact that all subspecies of puma are highly adaptable, or most likely, a combination of these and other factors. The FWC believes strongly, however, that panthers and public use, including the use of ORVs and hunting, would also be compatible on the Addition as long as appropriate management strategies such as those in place on the Bear Island Unit are established and implemented.

Several reports and biological opinions reference the 2002 Janis and Clark study as the best available science with regard to panther response to ORV use. This report suggests that ORV use during hunting season has an effect on panther movements, but indicates these effects are probably minor from a biological perspective (Janis and Clark 2002). In fact, Janis and Clark (2002) observed that panthers were located 683 meters from designated ORV trails during hunting season and 503 meters away from trails before hunting season which is a difference of 180 meters, and this difference may be the result of deer moving away from trails followed by a panther response to their prey movements. The FWC asserts that the suggestions of the Janis and Clark (2002) study should be considered in the context of panther population changes over time, current ORV trail management practices in BCNP, as well as the ratio of ORV trails to available panther habitat on BCNP. It is clear that panther populations in the Big Cypress area have increased significantly over the past 15 years while at the same time trail-based ORV use has been permitted across much of BCNP. FWC's panther team have found that ORV trails are utilized by panthers as they move throughout their home ranges as evidenced by tracking surveys and camera traps. The designated ORV trail system represents a small fraction of the landscape within BCNP, and large blocks of habitat are available through which no vehicular access is permitted. This would also be the case on the Addition with the designated trail system proposed under the Alternative B and the Preferred Alternative. When these factors are all considered together, they do not support the conclusion that ORV use and hunting in the Addition as with the rest of BCNP under a designated trail management system is detrimental to panthers.

Concern: Connectivity of the Addition Trails with Those on Existing BCNP Units

The draft document does not address connectivity between authorized trails on the original portion of the BCNP and those proposed under Alternative B and the Preferred Alternative. Establishing a trail system that connects the existing with the proposed trails would allow users more convenient access to the rest of the preserve. This action would accommodate the future

integration of the Addition into the Corn Dance and Turner River units for hunt management purposes and would allow more seamless management of the BCNP as a whole.

Recommendation: *Establish a trail system connecting the Addition to bordering BCNP. We also recommend expanding the use of the Bear Island/State Road 29 access point to include recreational access for the Addition. This would provide an additional access point for the western portion of the area from the Bear Island Unit.*

Issue: Enforcement of ORV Use on Designated Trail System.

FWC asserts that NPS has a strong set of regulations and educational programs to assure ORV use of designated trails is enforceable. FWC enforcement has worked closely with NPS enforcement to develop and implement a successful approach to enforcement of ORV use in the original BCNP. The recent track record for enforcement of designated trails in the original BCNP should serve as an excellent example of this success. We have forged a close enforcement partnership with NPS and are working to formalize this partnership in a mutual aid agreement. FWC is fully committed to providing law enforcement support and resources as needed to insure ORV use of designated trails in the Addition is enforced appropriately. For these reasons, FWC is highly confident of enforcement capabilities with regard to the designated trail system and believes successfully focusing vehicular access on the designated trail system is a key to protecting fish and wildlife species and habitats in the Addition while providing appropriate access for public use and enjoyment.

Recommendation: *Complete and execute a mutual aid law enforcement agreement between NPS/BCNP and FWC to formalize our law enforcement partnership as soon as possible.*

Concern: Pedestrian Access

While the FWC fully supports a designated trail system that allows ORV/vehicular access for the public, we also believe it is highly desirable to make use of the larger network of open roads and trails for pedestrian access. We note that there are many miles of old roads and trails in the Addition that were not identified as sustainable for multiple use or ORV use. As we understand all of the alternatives except the No-Action Alternative, these old roads and trails would be open for pedestrian access, but there is no plan to formally designate and maintain these trails for continued use. We believe this approach is missing an important opportunity to provide additional access throughout the Addition for hiking, wildlife viewing, hunting, and other multiple uses.

We understand trail management and maintenance would be required to keep a system of pedestrian trails open and accessible for the public. If these trails are not formally designated for multiple uses and necessary management in the final GMP, the FWC is concerned that they will not be maintained and will eventually close in with native and exotic vegetation and no longer be accessible to the public.

Recommendation: *We highly recommend a modification of the draft GMP to formally designate, open and maintain a large portion of these roads and trails for multiple uses. We would*

encourage linkages to access points and primary ORV trails throughout the addition to facilitate sustainable pedestrian access across more of the property. Additionally, we would welcome the opportunity to partner with NPS to help develop a more comprehensive pedestrian trail system in the Addition and would be happy to endorse Recreation Trail Program grant applications for both pedestrian and ORV trail projects.

Concern: Phasing in ORV Trail Access

The FWC is extremely sensitive to the fact that it has taken an inordinate number of years to open the Addition to public hunting and ORV access. Given this history, it is reasonable to have strong and valid concerns that phasing in ORV access across the Addition, as proposed by the Preferred Alternative, may likewise take a long period of time.

We assert that a quota-based permitting system should be used to manage the levels of ORV use throughout the designated trail system. This approach will show a good faith effort to more fully allow public ORV access across the entirety of the Addition. The FWC is fully committed to continue working closely with NPS to open all designated ORV trails for access to public hunting as quickly as possible.

Recommendation: *We recommend retaining the approach proposed by Alternative B, which does not incorporate phased-in ORV access. Moreover, given the provisions of P.L. 93-440 and P.L. 100-301 that call for cooperation and consultation with the State of Florida, the FWC urges NPS to specify in their final record of decision that NPS will fully consult and cooperate with FWC in any and all decisions regarding the initial opening of designated trails for ORV access and subsequent decisions regarding closing or opening designated trails to ORV access. It should be specified in the final Record of Decision that “consult and cooperate” means that the FWC and NPS shall share in the decision-making process and that such decisions will not be finalized or implemented without the consent and support of both parties.*

SUMMARY

The FWC fully supports the incorporation of the Addition into the BCNP/WMA system to provide a diversity of fish and wildlife based recreational opportunities for the public. We applaud NPS for proposing significant opportunities for public access and recreation. We cannot support the Preferred Alternative, but do find that we could support a revised version of Alternative B if it incorporates the recommendations in this report and our cover letter. Primary among those modifications, the FWC respectfully requests and strongly urges that NPS withdraw the proposal to designate any of the Addition as federal wilderness and replace the primitive backcountry management zone with the backcountry recreation management zone. We do not believe the original purposes for establishing the BCNP and the Addition can be achieved with this area set aside as wilderness or primitive backcountry, and we believe this wilderness proposal suffers seriously from a lack of collaboration with the State of Florida and cooperating agencies regarding several key concerns as outlined in this letter. Also, we urge NPS to expedite the process for opening all designated ORV trails to public access as quickly as possible. We value our partnership with NPS staff at BCNP and are committed to working with them

throughout the remainder of this process to develop the best possible package of protections for fish and wildlife resources while providing ample opportunities for public access and enjoyment.

References Cited:

- FWC. 2008. A Summary Report on: Public Use, Off Road Vehicles, and Florida Panthers in the Big Cypress National Preserve and the Addition. Unpublished report dated December 29, 2008. Tallahassee, FL.
- Janis, M.W., and J.D. Clark. 2002. Responses of Florida panthers to recreational deer and hog hunting. *Journal of Wildlife Management* 66:839-848.
- NPS. 2009. Big Cypress National Preserve: Frequently Asked Questions about Wilderness

Resolution

**FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
RESOLUTION REGARDING
The Draft GENERAL MANAGEMENT PLAN for
the BIG CYPRESS NATIONAL PRESERVE ADDITION**

WHEREAS, the Florida Fish and Wildlife Conservation Commission is a constitutionally created agency dedicated to managing fish and wildlife resources for their long-term well-being and the benefit of people, and

WHEREAS, the Big Cypress National Preserve was established by an Act of the United States Congress to preserve and protect natural scenic, hydrologic, floral, faunal, and recreational values of the Big Cypress Watershed, and

WHEREAS, the Big Cypress National Preserve Addition was established by an Act of the United States Congress to provide public recreational use and enjoyment of public lands by expanding the Big Cypress National Preserve, and

WHEREAS, the State of Florida was a major partner with the Federal Government in the acquisition of the lands that compose the Addition, and

WHEREAS, the express intent of the Congressional acts establishing the Big Cypress National Preserve and Addition is to distinguish and set apart these public lands from typical national parks and thereby recognize the importance of local cultural values and integrate those values into a unique management paradigm that provides for traditional public use and enjoyment of south Florida's natural resources, and

WHEREAS, these acts of Congress or implementing federal laws call for the Federal Government and its agencies to cooperate with the State of Florida to establish wildlife protection and recreational opportunities, and

WHEREAS, these acts of Congress or implementing federal laws require that hunting, fishing, trapping, and other traditional recreational opportunities shall be permitted in the Big Cypress National Preserve and Addition, and

WHEREAS, these acts of Congress or implementing federal laws call for the National Park Service to consult with the State of Florida prior to implementation of regulations restricting activities, and

WHEREAS, these acts of Congress or implementing federal laws require that any action by the National Park Service to control or limit the use of motorized vehicles must be reasonable, equitable, and justified in terms of public enjoyment and important resource protection, and

WHEREAS, the Florida Fish and Wildlife Conservation Commission strongly believes in making public lands as accessible as possible to the public for their use, education, and enjoyment while maintaining fish and wildlife conservation values, and

WHEREAS, on July 10, 2009, the National Park Service has published a draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement for the Big Cypress National Preserve Addition, which includes a Preferred Alternative for public access and management, and



Florida Fish
and Wildlife
Conservation
Commission

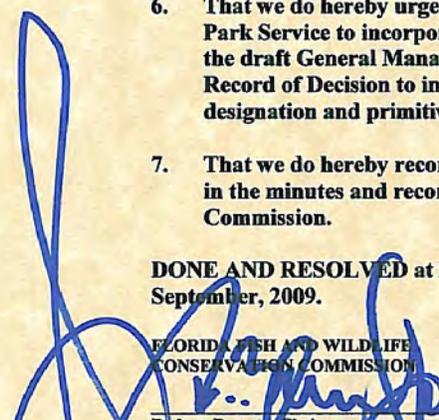
WHEREAS, the period for public review and comment on the draft General Management Plan for the addition is currently open, and staff of the Florida Fish and Wildlife Commission has submitted comments on behalf of this Commission,

NOW THEREFORE, be it resolved by the Florida Fish and Wildlife Conservation Commission in a duly constituted and assembled meeting:

- 1. That we do hereby express our firm support for the comments submitted by Commission staff dated September 8th, 2009;**
- 2. That we do hereby applaud elements of the draft General Management Plan that provide a diversity of public access and recreation that includes a designated trail system that will support enjoyment of these lands by the public;**
- 3. That we do hereby emphasize the Commission's adamant opposition to wilderness designation in the Addition as proposed in draft General Management Plan alternatives;**
- 4. That we do hereby express strong concern that the wilderness designation would unnecessarily hinder natural resource management including control of invasive exotic species and maintenance of native fish and wildlife habitats;**
- 5. That we do hereby express strong concern that proposed wilderness designation and primitive backcountry management zones as proposed in draft General Management Plan alternatives would not provide necessary flexibility for management of public access and would result in restrictions on public access too far below appropriate and sustainable levels;**
- 6. That we do hereby urge the Department of the Interior and the National Park Service to incorporate Commission recommendations regarding the draft General Management Plan for the Addition into the final Record of Decision to include removal of proposed wilderness designation and primitive backcountry management zones;**
- 7. That we do hereby record the sentiments of this resolution forevermore in the minutes and records of the Florida Fish and Wildlife Conservation Commission.**

DONE AND RESOLVED at Howie-in-the-Hills, Florida this 9th day of September, 2009.

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION


Rodney Barreto, Chairman


Kathy Bares, Vice-Chair


Ronald M. Bergeron, Commissioner


Richard Corbett, Commissioner


Dwight Stephenson, Commissioner


Kenneth W. Wright, Commissioner


Brian Yablonski, Commissioner

Attest:


Lucy Hedblad



STATE OF FLORIDA

DEPARTMENT OF COMMUNITY AFFAIRS

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CHARLIE CRIST
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THOMAS G. PELHAM
Secretary

September 29, 2009

Ms. Lauren P. Milligan
Florida Department of Environmental Protection
Florida State Clearinghouse
3900 Commonwealth Boulevard, M.S. 47
Tallahassee, Florida 32399-3000

Re: SAI# FL200907154851C

Dear Ms. Milligan:

The Department of Community Affairs (Department), pursuant to its role as the state's land planning agency, has reviewed the Big Cypress National Preserve Draft Management Plan (Plan), dated May 2009, for consistency with its statutory responsibilities under the Florida Coastal Management Program, which includes Chapter 163, Part II, and Chapter 380, Florida Statutes (F.S.). The Preserve is located in the Big Cypress Area of Critical State Concern; therefore, development must also be consistent with Section 380.055, F.S., Chapter 163, Part II, F.S., Rule 28-25, Florida Administrative Code (F.A.C.) and the local Comprehensive Plan.

Prior to Congressional approval of the Big Cypress National Preserve, the Florida Legislature enacted "The Big Cypress Conservation Act of 1973," Section 380.055, F.S. The stated purpose of these regulations is to conserve and protect the natural, environmental and economic resources and the scenic beauty of the Big Cypress Area.

Recommendations

The Department believes that the draft management plan should be strengthened through a stronger focus on protection of the Addition's less disturbed areas and on restoration of the surface hydrology.

2555 SHUMARD OAK BOULEVARD ♦ TALLAHASSEE, FL 32399-2100
850-488-8466 (p) ♦ 850-921-0781 (f) ♦ Website: www.dca.state.fl.us
♦ COMMUNITY PLANNING 850-488-2356 (p) 850-488-3309 (f) ♦ FLORIDA COMMUNITIES TRUST 850-922-2207 (p) 850-921-1747 (f) ♦
♦ HOUSING AND COMMUNITY DEVELOPMENT 850-488-7956 (p) 850-922-5623 (f) ♦

Ms. Lauren P. Milligan
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Specifically, the Department supports an alternative that designates the area south of Interstate 75 as wilderness with an appropriate buffer along the interstate, and which includes specific authority to conduct fire management and invasive plant management utilizing mechanized equipment, if necessary. The primary trail system within the wilderness area south of I-75 should be limited to those trails that avoid key habitats and wetlands and minimizes fragmentation of habitat. To better complement the wilderness designation, the Department recommends that these trails be closed to recreational ORV use, but that the trails be available for access to private inholdings and utilized for fire protection and suppression, management of exotic vegetation and authorized research. Further, these trails should be carefully evaluated to ensure that grade, orientation and sufficient culverts (where appropriate) are present to maintain the normal hydrologic flow regime and preserve conditions necessary to sustain the area's wetlands.

Rule 28-25.008, F.A.C., requires that transportation facilities that would retain, divert or otherwise block surface water flows shall provide for the re-establishment of sheet flow and provide for passage of stream, strand or slough waters. The Management Plan does not contain sufficient information for the Department to confirm that ORV trails will be controlled in a manner that does not impair the resources of the Preserve beyond those impacts already acknowledged by the Plan. Consequently, the Department strongly recommends a hydrologic study of the Addition be conducted to fully evaluate the impacts to sheetflow by the continued use of ORV trails. The study should examine ORV impacts throughout the Addition and as relates to the hydrological integrity of the rest of the Preserve and all ecosystem restoration measures defined in the Final Plan accordingly.

There is no mechanism in the Plan for assessing ORV impacts on soils and wildlife, or for rescinding ORV permits or enforcing regulations. The Department recommends adding enforcement measures with appropriate penalties for non-compliance with the Preserve's rules regarding the use of ORVs. The Department urges completion of the panther behavior studies that were recommended in both the 2000 and 2007 Biological Opinions issued by U.S. Fish and Wildlife Service for the Preserve's ORV Management Plan.

The Department encourages increased coordination with restoration efforts of the South Florida Water Management District and the Florida Department of Transportation to appropriately evaluate the discharge of the nearly 60 million gallons of water from the Preserve, via the SR 29 Canal, into the estuarine waters of Chokoloskee Bay.

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Resource management strategies should be consistent with the Comprehensive Everglades Restoration Plan (CERP) and evaluate the role of Addition Lands in meeting restoration goals of the South Florida ecosystems. CERP projects will significantly increase water conveyance through the Addition Lands, improving sheet flow and water quality in the Greater Everglades ecosystem, including Big Cypress National Preserve. As a result, activities that adversely affect Addition resources may jeopardize the effectiveness of the CERP improvements.

The L-28 modification project identified in the Comprehensive Everglades Restoration Plan is intended to reestablish sheetflow from the West Feeder Canal across the Big Cypress Reservation and into the Big Cypress National Preserve. However, it is not clear how the development of facilities such as trails, trailheads, access points, visitor centers and campsites that are outlined in the *Preferred Alternative* would be consistent with the Comprehensive Everglades Restoration project located within the Addition Lands. The Plan should identify areas of development that would be affected by CERP projects.

Conditional Concurrence

The Department will conditionally concur with the National Park Service's determination that the Draft Management Plan is consistent with applicable state law (Section 380.05, F.S., and Rule 28-25.008, F.A.C.), if and only if the following conditions are fully satisfied:

- I. Wilderness designations in the Addition approved by Congress must contain specific language that authorizes the Park Superintendent of Big Cypress National Preserve to work with other federal, state and local agencies to prevent the spread of exotic plants into and out of the Addition and to use prescribed fire as a management tool for restoring and maintaining native plant communities. In addition, any such Wilderness designation must allow the Park Superintendent to suppress and contain fires that threaten adjacent natural or built areas by any means deemed appropriate – including mechanized equipment – in coordination with other federal, state and local agencies.
- II. The final Management Plan must evaluate the potential effects that ORV trail usage and maintenance will have on the restoration benefits expected from CERP projects within and adjoining the Addition. The final plan must detail how all proposed recreational development activities, including ORV trail modifications, will impact surface hydrology as contemplated by CERP.

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Thank you for the opportunity to comment on the Big Cypress National Preserve Management Plan. If additional information is needed, please contact Rebecca Jetton at 850-922-1766.

Sincerely,

A handwritten signature in black ink that reads "Tom Pelham". The signature is written in a cursive style with a large, stylized "T" and "P".

Thomas G. Pelham
Secretary

TP/cjd

cc: Secretary Mike Sole
Mr. Ken Haddad
Mr. Nick Wiley
Ms. Sally Mann

Memorandum**South Florida Water Management District**

TO: Florida State Clearinghouse

FROM: James J. Golden, AICP, Lead Planner
Environmental Resource Regulation Department

DATE: September 17, 2009

SUBJECT: National Park Service - Big Cypress National Preserve Addition - Draft
General Management Plan/Wilderness Study/Off-Road Vehicle
Management Plan/Environmental Impact Statement – Collier County, FL
SAI#: FL200907154851C

The South Florida Water Management District (SFWMD) has the following comments regarding the above subject proposal.

- 1) The Draft General Management Plan (GMP) and Environmental Impact Statement (EIS) consider water as the “principal natural resource” for proper functioning and management of the Addition Lands. As such, hydrology and proper management of the water resources within, abutting and adjacent to the Addition Lands must be a major factor upon which all decisions with regard to implementation of any GMP should be based. While the proposed GMP/EIS cites references to existing reports, many of the cited references were prepared over 10 years ago. They do not appear to have been updated to reflect current hydrologic and land uses conditions.
- 2) The proposed GMP/EIS Alternatives do not appear to address many of the comments and concerns included in a letter from the Florida Department of Environmental Protection, dated August 27, 2001 (see Chapter 5, Pages 419 through 423, Appendix C: Consultation Letters).
- 3) In response to a request for comments from the Big Cypress National Preserve regarding the GMP/EIS Alternatives, the SFWMD sent a letter to Karen Gustin, former Superintendent of the Big Cypress National Preserve, in December, 2005. A copy of that letter is attached. The SFWMD also sent a copy of the letter to the Big Cypress Planning Team at the National Park Service Center in Denver, Colorado. The comments and concerns listed in that letter have not been addressed in the GMP/EIS. Also, a copy of the letter was not included in the Appendices of the GMP/EIS.
- 4) The proposed GMP/EIS Alternatives do not appear to address many of the comments and concerns expressed by the Miccosukee Tribe of Indians of Florida and the Seminole Tribe of Florida regarding impacts to cultural,

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ethnographic, archeological and natural resources within and adjacent to the Addition Lands, as well as trespass issues. Copies of their comments are attached.

- 5) The proposed GMP/EIS makes note of the Big Cypress National Preserve's intention to use the guidelines established under the December, 2008, Commercial Services Plan. A copy of the Commercial Services Plan is proposed to be included as an addendum to the final GMP/EIS. However, the proposed GMP/EIS Alternatives contain elements that may be considered in direct conflict with the directives and rules for those areas of the Addition Lands that would be defined as "wilderness" under the Commercial Services Plan.
- 6) Map 12, which depicts potential limits for West Indian manatee habitat/use areas, has an error. An un-regulated channelized flow connection with direct discharge and unimpeded flow to tide is located approximately 0.5 mile west along the Tamiami Trail (US 41) from its intersection with State Road 29. This channel then runs north and northeast for approximately 2.5 miles to a box culvert under State Road 29 and connects directly to the SR29 (Barron River) Borrow Canal immediately upstream of SFWMD water control structure SR29, Number 2. The potential exists for the West Indian manatees to travel as far north as Deep Lake within the SR29 (Barron River) Borrow Canal, and also to the east within the borrow channel located along the northern side of Wagon Wheel Road (CR 837). Big Cypress National Preserve staff members have previously been advised of this hydrologic connection.
- 7) The SFWMD understands that the GMP/EIS must address many aspects of resource management, including public access, and that this plan is not a 'restoration plan' per se. However, we believe that the plan should include opportunities to manage water resources from the potential impacts of the proposed recreational activities. Additionally, any uses identified in the GMP/EIS should not be inconsistent with the Comprehensive Everglades Restoration Plan projects located near the Addition Lands.
- 8) Regarding endangered/listed species, the GMP/EIS does not indicate if the amended Biological Opinion includes the Addition Lands and does not indicate if there has been any official determination by the U.S. Fish and Wildlife Service regarding listed species. Although the GMP/EIS states that coordination with both State and Federal wildlife agencies has been initiated, there are other statements, such as 'the species has been observed' but 'no real data on its use of the Addition exists'. This indicates that additional precautions may be necessary. Research and visitor education should be a priority on the lesser known species, such as the Indigo snake. For example,

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although this species is typically associated with uplands, they do forage in wetlands.

- 9) The discussion concerning impairment of the Addition Lands resources in relation to the development of private lands northwest of the Addition (page 249 of the Cumulative Impact Analysis) should be revised to clarify that the Town of Ave Maria and the University are developed areas, as the lands have been cleared and development has commenced. The text also implies that the Town of Big Cypress has been approved. However, approval has not yet occurred. The Town of Big Cypress should only be considered as a potential future development at this stage of the Cumulative Impact Analysis.
- 10) Currently, the western boundary of and a major portion of the western Addition Lands included in the GMP/EIS are located within the ± 300 square-mile SR 29 drainage basin. The SR29 (Barron River) Borrow Canal is also located in this area. This canal is approximately 39 miles in total length, beginning at or very near the Town of Immokalee at its northern terminus, then paralleling SR29 southward to its southern terminus at Everglades City, where it discharges into Chokoloskee Bay and Everglades National Park. The southern 27 miles of the canal are located entirely or partially within or adjacent to the western boundary of the western Addition Lands. The northern 13 miles of the canal, outside of the boundary of the Addition Lands, receive inflows of stormwater runoff from the Town of Immokalee, rural improved grazing pasture, and agricultural lands located upon approximately 200 square miles of the northern portion of the SR 29 drainage basin. This canal also receives surface and ground water inflows from approximately 100 square miles of the western Addition Lands, not including additional surface and ground water inflow from Big Cypress National Preserve lands located to the east and abutting the eastern boundary of the western Addition Lands.

Considering that the majority of the 27 mile-long SR29 (Barron River) Canal is located entirely or partially within or abutting the western Addition Lands, each GMP/EIS Alternative should address the potential impact of changes (water quality and water quantity) to the discharge characteristics of the canal into Chokoloskee Bay and the waters of Everglades National Park. The alternative chosen should not further degrade the water resources and ecosystem within and adjacent to the Addition Lands.

- 11) The GMP/EIS should address any potential impact on the shallow potable water supply well field for Everglades City from activities on the Addition Lands. The well field is located in Copeland, approximately 0.5 miles west of the western boundary of the Preserve.

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- 12) The Park Service has stated that the Wilderness designation boundary for the Addition Lands along the SR29 Corridor would be located 50 feet east of the eastern top of bank for the SR29 (Barron River) Canal. Please be advised that this canal falls under multiple jurisdictions, including the Park Service, the Florida Department of Transportation, the SFWMD, and Collier County. The SFWMD recommends that a Memorandum of Agreement (MOA) be negotiated between the above named parties with regard to operation and maintenance of the canal, prior to finalizing any GMP/EIS Alternative, and that the MOA be included in the final GMP/EIS.
- 13) The final GMP/EIS should address the following concerning potential impacts to SFWMD planned/proposed projects, facilities, and infrastructure within, abutting or upon lands proposed as “Wilderness” by the Park Service:
 - Need to determine how the “wilderness” designation will impact the review and permitting of SFWMD planned and proposed projects, facilities, and infrastructure located within, abutting, or upon adjacent lands
 - Need to address any potential legal challenges that may result from the designation to planned and proposed projects, facilities, and infrastructure located within, abutting, or upon adjacent lands designated as “wilderness” from non-governmental and private entities, as well as responsibilities of the Park Service in the challenges
- 14) SFWMD is attempting to restore, to the extent possible, the historical hydrological and hydraulic connections/conditions to those areas that were disconnected by the construction of SR29. The Park Service should coordinate with the SFWMD to ensure proposed activities by both agencies are compatible.



BIG CYPRESS BASIN
SOUTH FLORIDA WATER MANAGEMENT DISTRICT

6089 Janes Lane, Naples, FL 34109
(239) 597-1505 • Suncom 721-7920 • Fax (239) 597-4987 • www.sfwmd.gov/organ_2_bcb.html

12/30/05

GOV 04-14

December 30, 2005

Ms. Karen Gustin, Superintendent
Big Cypress National Preserve
33100 Tamiami Trail East
Ochopee, FL 34141-1000

Dear Ms. Gustin:

**Subject: Comments Upon The Proposed General Management Plan Alternatives
For The Addition Lands Portion Of The Big Cypress National Preserve**

In response to the request for comments on the proposed General Management Plan (GMP) Alternatives for the Addition Lands, Big Cypress Basin / South Florida Water Management District (BCB/SFWMD) staff has reviewed the alternatives for the above subject project. The proposed GMP Alternatives indicate that the project involves the evaluation of potential recreational activities, facilities and access to and upon the Addition Lands.

After review of the proposed Alternatives, the BCB/SFWMD offers the following comments:

General Alternative-Related Comments

- 1) Hydrology is a critical and primary element that should be considered when developing and evaluating the management plans for those lands within the Addition Lands. The BCNP has an aggressive hydrologic monitoring and assessment program. The evaluation of the GMP alternatives for the Addition Lands should include an analysis of the impacts, on the overall hydrology (surface and groundwater flow patterns) of the existing preserve and the addition lands for selection and implementation of a successful GMP.

- 2) The SR 29 (Barron River) Borrow Canal is the predominant drainage feature within an approximate 290 square mile drainage basin that extends approximately 30 miles northward from the north boundary of the Addition Lands. Hydrologic-hydraulic assessment of the surface and groundwater flow characteristics of the Barron River canal basin have been performed by several SFWMD studies (BCB Watershed

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Management Plan/ South Florida Water Management Model etc). The information available from these studies could be incorporated in the development of the management plan of the BCNP Addition Lands.

- 3) The Big Cypress Basin of the South Florida Water Management District (BCB) presently operates and maintains the canal and ten water control structures in the segment of Barron River Canal between I-75 and US 41. The BCB 10 Year Capital Improvement Plan includes modification to these water control facilities to enhance their water management features. It is strongly suggested that BCNP work directly with BCB staff located at BCB/SFWMD office at 6089 Janes Lane, Naples, Florida in the continuing development and implementation of the GMP Alternatives for the Addition Lands.
- 4) Multiple agencies are currently working at this time to restore the historic hydrologic regime to those lands within the SR 29 Drainage Basin, which include the Addition Lands. One active plan under development is the Southwest Florida Feasibility Study being prepared by the U.S. Army Corps of Engineers in cooperation with several state and local agencies. BCNP should also seek out and review projects being proposed by other Governmental Agencies within the SR 29 Drainage Basin.
- 5) All the management plan alternatives for the Addition Lands assume that the SR 29 (Barron River) Borrow Canal is under total ownership of the U.S. Government and will be managed under the jurisdiction on the National Park Service. This assumption is potentially in error as the first six (6) miles of the SR 29 Borrow Canal lies completely within the Right of Way for State Road 29 on lands owned solely by the State of Florida, Department of Transportation (FDOT) and maintained and operated by the (BCB/SFWMD) under agreement with FDOT as recorded in the Official Records of Collier County, Florida. Additionally, other portions of the SR 29 Canal lie only partly within the boundary of the Addition Lands.
- 6) It is apparent BCNP has prepared the proposed Addition Lands management plan alternatives without benefit of a boundary survey to determine at minimum the location of the western boundary of the Addition Lands and specific features and ownership of these features such as drainage canals, water control structures and roadways located adjacent to, entirely or partially within the boundaries of the Addition Lands. While a simple property description is legal and sufficient for the transfer of real property, at minimum a boundary survey of the western boundary of the Addition Lands that includes the location of the specific features noted above and referenced to the Addition Lands boundary must be performed to determine the boundary and actual ownership of real property including the rights that are conveyed with such ownership

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for development and implementation of any of the Addition Lands Management Plan Alternatives..

- 7) An assessment of liabilities which may be incurred by other Federal, State and Local Governmental Agencies with management responsibilities and duties upon lands and facilities abutting, adjacent or possibly within the Addition Lands does not appear to have been performed during the development of the Addition Lands management plan alternatives
- 8) A Cultural Resource Assessment does not appear to have been performed upon the Addition Lands to identify historical and / or archeological sites that may exist and evaluate potential impacts from implementation of the GMP Alternatives.
- 9) The proposed Addition Lands Management Plan Alternatives have not identified nor provide any means by which BCNP intends to work with other Federal, State and Local governmental agencies and entities to address potential impacts from any of the GMP Alternatives upon lands within the SR 29 Canal Drainage Basin managed by these other agencies and entities.
- 10) To ensure that the optimal management plan for the Addition Lands is chosen. Impacts to or from all lands located within the SR 29 Canal Drainage Basin must be evaluated prior to and included in the development of any GMP or Alternatives for the Addition Lands. Documentation of this review must be referenced in the Addition Lands Management Plan Alternatives and made available for review to ensure that sufficient evaluation of potential impacts has been performed.
- 11) Coordination for development for Addition Lands Management Plan Alternatives should, at a minimum, include consultation with local representatives for adjacent property owners and managers. This is critical as lands adjacent to and abutting this project area include; Fakahatchee Strand State Preserve, Florida Panther National Wildlife Refuge, Everglades National Park, South Florida Water Management District, Big Cypress Basin, Florida Department of Transportation and Collier County.
- 12) As the headwaters of the SR 29 Canal begin at the town of Immokalee with direct stormwater discharge to the canal then passing through and receiving additional direct discharge to the canal from large agricultural areas with the final discharge of the SR 29 (Barron River) Borrow Canal being to estuarine system and Chokoloskee Bay via

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the Barron River of which portions lie within the boundaries of Everglades National Park. Water quality must be addressed in all management plan alternatives and the evaluation of said alternatives.

- 13) The existence of potential ground and surface water pollution from creosote and other pollutants resulting from the operation of the now defunct Jones Sawmill located at Jerome has been identified within, abutting and adjacent to the Addition Lands. An assessment of impacts from these potential pollutant sources should be performed and addressed in the development of the management plan alternatives.
- 14) The well field for potable water supply for Everglades City lies adjacent to the Addition Lands. Potential impacts to this utility must be included in all proposed management plan alternatives for the Addition Lands.
- 15) As the US-COE, SFWMD, USFWS, FFWCC and FDEP are the responsible entities for permitting of water use, surface water management, water quality issues within the SR 29 Drainage Basin, BCNP must coordinate development of management plan alternatives with these agencies to mitigate potential negative impacts to their legislatively mandated responsibilities from implementation of any of the currently proposed management plan alternatives. Local representatives of these Agencies should be included in this coordination effort.
- 16) A final suggestion is that BCNP delay the development of the current GMP Alternatives for the Addition Lands by 90 days to identify and invite local representatives of the numerous Governmental Agencies and Entities to meet with BCNP staff and discuss the noted issues before proceeding with further development of GMP Alternatives for the Addition Lands.

Should any of the above require additional clarification, please give me a call at (239) 597-1505.

Sincerely,



Clarence Tears, Jr., Director
Big Cypress Basin
South Florida Water Management District

Ms. Karen Gustin
December 30, 2005
Page 5

/wth

c: Big Cypress Planning Team
National Park Service
Denver Service Center
Big Cypress Planning Team
12795 West Alameda Parkway
PO Box 25287
Denver, Colorado 80225-9901



Miccosukee Tribe of Indians of Florida

Business Council Members

Billy Cypress, Chairman

Jasper Nelson, Ass't. Chairman
Max Billie, Treasurer

Andrew Bert Sr., Secretary
William M. Osceola, Lawmaker

January 6, 2006

National Park Service
Denver Service Center
Big Cypress Planning Team
12795 West Alameda Parkway
PO Box 25287
Denver, CO 80225-9901

COPY

RE: Addition Lands General Management Plan

Dear Sirs:

The Miccosukee Tribe of Indians of Florida has reviewed the General Management Plan ("GMP") for the Addition Lands of the Big Cypress National Preserve. Below are our comments on the GMP.

The Tribe prefers that Alternative A, the No Action Alternative, be selected provided that hunting is allowed. Absolutely no development, parking lots, visitor centers, boardwalks, roads, etc., be constructed in this area. The Tribe is adamantly opposed to any and all development. It was never the intent of Congress to have interpretative activities, visitor services, or the creation of roads, visitor centers, etc. The Park Service needs to read the Congressional Record on when the Enabling Act for the Preserve was passed to understand the intent of Congress for the Preserve. It was the intent of Congress that the traditional uses of the Preserve be continued, i.e. primitive use, and not developed for the casual visitor. Any development would only create habitat loss for endangered species, and the potential for wildlife/human interaction. This area is also prime Florida panther habitat. Development would only create more problems between humans and panthers. Once again, we need to remind you that Congress passed the Enabling Act to protect the watershed, protect the unique flora and fauna, and freeze the development of this area so it would stay more like it was in 1971 than be developed 34 years later.

Thank you for consulting with the Miccosukee Tribe. Please contact Mr. Steve Terry of my staff at the below number if you require further information .

Sincerely,

COPY

Billy Cypress
Tribal Chairman

PC: Honorable Gale Norton, Secretary Department of Interior
Fran Mainella, Director National Park Service
Patricia Hooks, SE Regional Director National Park Service



Miccosukee Tribe of Indians of Florida

Business Council Members

Billy Cypress, Chairman

Jasper Nelson, Ass't. Chairman
Max Billie, Treasurer

Andrew Bert Sr., Secretary
William M. Osceola, Lawmaker

August 13, 2008

Acting Superintendent Pedro Ramos
Big Cypress National Preserve
33100 Tamiami Trail E
Ochopee, FL 34141-1000

Dear Superintendent Ramos:

The Miccosukee Tribe of Indians of Florida received your letter concerning the general management plan for the Addition Lands and wildlife crossing construction. We have reviewed the letter and have the following comments. We will first discuss the GMP for the Addition Lands.

We are adamantly opposed to wilderness designation as it will shut people out and concentrate use in other areas. Everglades National Park was dedicated to Seminole People to protect their homeland. Please see the attachment. What happened in reality was our people were thrown out of the Park as it was designated as wilderness. Since the Enabling Act of the Preserve, the situation in both Tribes has changed in some degrees. The Preserve only protects the rights of Tribal Members. A wilderness designation would prevent a Tribal Member from taking their non-Tribal spouse into the area. Plus, the Tribe's own non-Tribal Staff could not enter into the area to do wildlife observations, medicinal plant inventories, exotic species monitoring, or any of their other activities that we require of them.

That being said, we are also opposed to any commercial development in the Addition Lands. We have previously stated this to the Denver Service Center and will re-state this once again. Has there been any economic analysis done to determine the feasibility of any commercial development. The Tribe already has commercial development on our Alligator Alley Reservation, located just a few miles to the east of the Addition Lands. The Tribe prefers that Alternative A, the No Action Alternative, be selected provided that hunting is allowed. Absolutely no development, parking lots, visitor centers, boardwalks, roads, etc., be constructed in this area. The Tribe is adamantly opposed to any and all development. It was never the intent of Congress to have interpretative activities, visitor services, or the creation of roads, visitor centers, etc. The Park Service needs to read the Congressional Record on when the Enabling Act for the Preserve was passed to understand the intent of Congress for the Preserve. It was the intent of Congress that the traditional uses of the Preserve be continued, i.e. primitive use, and not developed for the casual visitor. Any development would only create habitat loss for

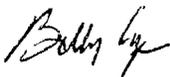
P.O. Box 440021, Tamiami Station, Miami, Florida 33144, (305) 223-8380, fax (305) 559-6653

endangered species, and the potential for wildlife/human interaction. This area is also prime Florida panther habitat. Development would only create more problems between humans and panthers. Once again, we need to remind you that Congress passed the Enabling Act to protect the watershed, protect the unique flora and fauna, and freeze the development of this area so it would stay more like it was in 1971 than be developed 34 years later.

Our comments on Wildlife Crossings are as follows. The Tribe is not opposed to Wildlife Crossings, per se. We are opposed to any visual impact, such as the Gulag Fencing on SR 29. We want to know if the Florida Department of Transportation, the Defenders of Wildlife, and the U.S. Fish and Wildlife Service value the lives of imported Texas cougars over the lives of human beings? Before any future Wildlife Crossings are planned for, much less constructed, guardrails on Tamiami Trail between 30 mile bend and 40 mile bend need to be installed to prevent the loss of human life in this area. We know of 14 people who have died in the canal over the last 15 years, from simple accidents that a guardrail would have prevented. It is incredulous to the Tribe that the Preserve would be entertaining wildlife crossings when you are planning to improve Loop Road so that more vehicles and faster speeds can be achieved. There is an abundance of wildlife on Loop Road that is not being protected. The Loop Road Improvement Project should be abandoned so that wildlife will be protected there before any Wildlife Crossings are constructed on Tamiami Trail.

Thank you for consulting with the Miccosukee Tribe. We appreciate your informing the Tribe that Superintendent Gustin has departed for Olympic National Park. The Tribe is looking forward to better cooperation with you as the Acting Superintendent. In the spirit of this future cooperation, the Tribe's staff will be available to meet with you. We do ask that you respond to our previous request on opening airboat trails in the Stairsteps Unit, Zone 4 for cultural reasons. Please contact either Mr. Fred Dayhoff or Mr. Steve Terry, if you have any questions.

Sincerely,



Billy Cypress
Tribal Chairman

PC: Steve Terry, Land Resources Manager
Fred Dayhoff, Tribal Representative



Southwest Florida Regional Planning Council

Serving Charlotte, Collier, Glades, Hendry, Lee and Sarasota Counties

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AUG 14 2009

DEP Office of
Intergov't Programs

August 10, 2009

Ms. Lauren P. Milligan
Department of Environmental Protection
Florida State Clearinghouse
3900 Commonwealth Boulevard, M.S. 47
Tallahassee, Florida 32399-3000

**RE: United States Department of the Interior
National Park Service
Big Cypress National Preserve
33100 Tamiami Trail E
Ochopee, Florida 34141-1000**

**SAI#: FL200907154851C
IC&R 2009-034**

Dear Ms. Milligan:

The staff of the Southwest Florida Regional Planning Council (SWFRPC) reviews various proposals, including Notifications of Intent, Preapplications, Permit Applications, Environmental Impact Statements and other activities that request determinations for compliance with regional Goals, Strategies, and Actions, as determined by the Strategic Regional Policy Plan, July 4, 2002. The staff reviews such items in accordance with the Florida Intergovernmental Coordination and Review Process (Chapter 29I-5, F.A.C.), and adopted regional clearinghouse procedures.

These designations determine Council staff procedure in regards to the reviewed project. The four designations are:

Less Than Regionally Significant and Consistent no further review of the project can be expected from Council.

Less Than Regionally Significant and Inconsistent Council does not find the project of regional importance, but will note certain concerns as part of its continued monitoring for cumulative impact within the noted goal area.

Regionally Significant and Consistent project is of regional importance, and appears to be consistent with Regional goals, objectives, and policies.

Regionally Significant and Inconsistent project is of regional importance and does not appear to be consistent with Regional goals, objectives, and policies. Council will oppose the project as submitted, but is willing to participate in any efforts to modify the project to mitigate the concerns.

The above referenced document has been reviewed by this office and based on the information contained in the document, and on local knowledge, the SWFRPC has the following comments about this request:

This review is a request from the National Park Service concerning a General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement for the Big Cypress National Preserve Addition. Specifically, the request is to provide comments and a consistency finding dealing with the submitted plan, maps and narrative text that describes the current and potential actions related to the future management of the Big Cypress National Preserve Addition.

This *Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement* presents four alternatives, including the NPS's preferred alternative, which provides for the future management of the Addition. The alternatives are based on the Preserve's purpose, significance, and special mandates, present different ways to manage resources and visitor use and improve facilities and infrastructure in the Addition. The four alternatives include the "no action" alternative (Alternative A), which presented a range of off-road vehicle opportunities, identified lands being considered for wilderness, and spoke to visitor facilities and experiences. In addition, the statement identified three "action" alternatives, including Alternative B, the preferred alternative, and Alternative F. Additional alternatives (Alternatives C, D, and E) and their actions were considered in the planning effort. However, these alternative and actions were dismissed from further detailed analysis by the NPS. These dismissed alternatives and actions were presented, along with the rationale for dismissing them in the "Alternatives, Including the Preferred Alternative" portion of the document. The preferred alternative identified in the submittal was developed from comments received throughout the planning process.

A summary of the proposed alternatives addressed in the *Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental Impact Statement* as follows:

- The **No-Action Alternative** describes a continuation of existing management and trends in the Addition areas. The Addition would remain closed to public recreational motorized vehicle use and motorized hunting would not be allowed. No wilderness areas would be proposed for specific designation.

- The **Alternative B** action would enable visitor participation in a wide variety of outdoor recreational experiences in the preserve. According to the submittal, about 48,919 acres of land would be proposed for a wilderness designation and up to 140 miles of sustainable ORV trails would be designated as part of the conceptual primary ORV trail network.
- The **Preferred Alternative** would provide for diverse front and back country recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. About 85,862 acres of land would be proposed for wilderness designations and up to 140 miles of sustainable ORV trails would be designated and phased in as part of the conceptual primary ORV trail network.
- The **Alternative F** would emphasize resource preservation, restoration, and research, while providing recreational opportunities with limited facilities and support. This alternative would maximize the amount of land proposed for a wilderness designation, about 111,601 acres. No public ORV use would be available under this alternative.

The Big Cypress National Preserve was authorized by an act of congress on October 11, 1974 (Public Law 93-440) and had a surrounding boundary that included 582,000 acres of land. The act was amended on April 29, 1988, when Congress passed the Big Cypress National Preserve Addition Act (Public Law 100-301). The amendment was known as the Addition Act because it expanded the size of the original preserve by about 147,000 acres. Since the enlargement of the preserve, the expansion area has been referred to as the Addition.

In 1991, the National Park Service (NPS) finalized the *General Management Plan* for the Preserve. That plan addressed only the original Preserve and contained no guidance for the Addition area.

The NPS began administration of the Addition in 1996. Since that time, the Addition has been closed to public recreational motorized use and hunting, with the only permitted public uses being pedestrian and bicycling access and camping.

To date, no comprehensive planning effort has been conducted for the Addition. A comprehensive resource based plan is obviously needed in order to more clearly define the Addition's resource conditions and identify the experiences that visitors can have in the Addition. The subject plan being provided by in the Preferred Alternative is intended to provide a much needed framework for the NPS managers to use when making decisions about how to best protect the Addition's natural resources, identify appropriate areas for visitor access facilities, and determine how the NPS will manage its operations in the Addition area.

Based on the information provided in the submittal, Council staff finds that this *General Management Plan/Wilderness Study/Off-Road Vehicle Management Plan/Environmental*

Impact Statement due to its magnitude and impacts on regional resources is Regionally Significant and Inconsistent with the Strategic Regional Policy Plan given that the alternatives analyses are incorrect due to the fact that it overestimates the benefits to the public and underestimates the adverse effects to the environment of the NPS Preferred Alternative. At the same time, it underestimates the benefits of Alternative F to the natural environment.

The following summary provides the Council staff review of the presented alternatives with both beneficial and adverse effects identified:

- **Alternative A:** No-Action Alternative (Describing the continuation of existing management and trends)

The no-action alternative describes a continuation of existing management and trends in the Addition and provides a baseline for comparison in evaluating the changes and impacts of the other alternatives. Under this alternative, the NPS would continue to manage the Addition as it is at this time. The Addition would remain closed to public recreational motorized use and motorized hunting, and only minor new construction would be authorized to accommodate visitor access, primarily for hiking and biking. Existing operations and visitor facilities would remain in place. Natural ecological processes would be allowed to occur, and restoration programs would be initiated where necessary. No wilderness would be proposed as a designation.

The key impacts of continuing existing management conditions and trends would include minor to moderate adverse localized impacts on surface water flow, moderate long-term adverse impacts on visitor use and experience, and minor to moderate impacts on NPS operations and management. No wilderness area would be proposed for designation.

The NPS staffing levels under the no-action alternative would continue to be the equivalent of 77 full-time staff members. This includes 6 employees in the superintendent's office, 10 in administration, 20 in maintenance, 12 in interpretation, 14 in resource management, and 15 in visitor and resource protection. An additional 21 employees work for the preserve's fire program, but these fulltime-equivalent employees are not accounted for in the staffing numbers because they would remain the same across all alternatives. Volunteers and partnerships would continue to be key contributors to NPS operations. The total costs associated with this alternative (annual operating costs) would be \$6.5 million.

- **Alternative B:** Expanded Visitor Access and Participation Alternative (Action would enable visitor participation in a wide variety of outdoor recreational experiences in the preserve.)

The concept for management of the Addition under this alternative would be to enable visitor participation in a wide variety of outdoor recreational experiences. It would maximize motorized access, provide the least amount of proposed wilderness, and develop limited new hiking-only trails. New visitor and operations facilities along the I-75 corridor would also be provided.

The key impacts of the implementation Alternative B would include moderate, long-term, adverse and widespread impacts on surface water flow and water quality, including interference with sheet flow dynamics of the natural Big Cypress Swamp landscape; long-term, moderate to severe, adverse and potentially Addition-wide impacts on the introduction of known and new exotic / non-native plants and animals; long-term moderate to severe, adverse impacts on (likely to adversely affect) the Florida panther; long-term moderate to severe, adverse impacts on (likely to adversely affect) the Red-cockaded woodpecker; long-term minor to moderate, beneficial and adverse impacts on minor game species; long-term, moderate, beneficial and adverse Addition-wide impacts on wilderness resources and values; long-term moderate, beneficial and adverse impacts on visitor use and experience; and long-term, moderate, beneficial and adverse impacts on NPS operations and management. In addition, there can be expected to be localized terrain alteration and exposure of marl and sandy soils thereby creating rutted channels for more rapid water flow; significant long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Florida Black Bear with the introduction of human waste, trash and other debris; long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Wood Stork and other wading bird species; long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Big Cypress Fox Squirrel; increased negative human-wildlife interactions resulting in management and complaint issues; and a potential for an increase in inappropriate public land use for dumping; marijuana grow operations, and resource harvesting of rare and endangered plant species.

Approximately, 48,919 acres of land would be proposed for wilderness area designation.

The NPS staffing level needed to implement Alternative B would be the equivalent of 93 full-time staff members (16 additional fulltime-equivalent employees or 17 positions, 15 permanent full-time employees and 2 half time temporary / seasonal employees). These 16 additional include 2 permanent interpreters, 2 seasonal interpreters, 4 maintenance workers, 5 law enforcement rangers, 2 visitors use assistants, 1 off-road vehicle (ORV) program manager, and 1 biological science technician. Volunteers and partnerships would continue to be key contributors to NPS operations. One-time capital costs of Alternative B, including projects that are planned for the near future or are underway, new construction, and no facility costs such as major resource plans and projects, are estimated at \$6.7 million. Annual operating Costs under this alternative would be \$7.9 million.

- **Preferred Alternative:** Expanded Visitor Participation and ORV Access Alternative (Action would provide diverse front and back country recreational opportunities.)

The Preferred Alternative would provide diverse front country and back country recreational opportunities, enhance day use and interpretive opportunities along road corridors, and enhance recreational opportunities with new facilities and services. This alternative would maximize ORV access, provide a moderate amount of wilderness, provide non-motorized trail opportunities and new camping opportunities, and develop a partnership approach to visitor orientation. New visitor and operations facilities along the I-75 corridor would also be provided.

Key impacts of implementing the preferred alternative would include moderate, long-term, adverse, and widespread impacts on surface water flow and water quality including interference with sheet flow dynamics of the natural Big Cypress Swamp landscape; long-term, moderate to severe, adverse and potentially Addition-wide impacts on the introduction of known and new exotic / non-native plants and animals; long-term, moderate to severe, adverse impacts (likely to adversely affect) on the Florida Panther; long-term, moderate to severe, adverse impacts (likely to adversely affect) on the Red-cockaded Woodpecker population; long-term, minor to moderate, adverse impacts on major game species; long-term, moderate, beneficial and adverse Addition-wide impacts on wilderness resources and values; long-term, moderate, beneficial and adverse impacts on NPS operations and management. In addition, there can be expected to be localized terrain alteration and exposure of marl and sandy soils creating rutted channels for more rapid water flow; significant long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Florida Black Bear; introduction of human waste, trash and other debris; long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Wood Stork and other wading bird species; long-term, moderate to severe, adverse impacts to (likely to adversely affect) the Big Cypress Fox Squirrel; increased negative human-wildlife interactions resulting in management and complain issues; and a potential for an increase in inappropriate public land use for dumping; marijuana grow operations; and resource harvesting of rare and endangered plants.

This alternative would increase the probability of unintentional and intentional (arson) wildfires with subsequent resources loses and endangerment and lose of vegetation, wildlife and human life.

Approximately 85,862 acres of land (65% of the Addition) would be proposed for wilderness area designation.

The NPS staffing level needed to implement the preferred alternative would be the equivalent of 93 full-time staff members (16 additional full-time equivalent employees or 17 positions) – 15 permanent full-time employees and 2 half-time

temporary / seasonal employees. These 16 additional employees include 2 permanent interpreters, 2 seasonal interpreters, 4 maintenance workers, 5 law enforcement rangers, 2 visitor use assistants, 1 ORV program manager, and 1 biological science technician. Volunteers and partnerships would continue to be key contributors to NPS operations. One-time capital costs of the Preferred Alternative, including projects that are planned for the near future or are underway, new construction, and no facility cost such as major resource plans and projects, are estimated at \$6.7 million. Annual operating cost under this alternative would be \$7.9 million.

- **Alternative F:** Resource Preservation Alternative (Action would emphasize preservation, restoration, and research.)

Alternative F would emphasize resource preservation, restoration, and research while providing recreational opportunities with limited facilities and support. This alternative would provide the maximum amount of wilderness, no ORV use, and minimal new facilities for visitor contact along the I-75 corridor.

The key impacts of implementing the Alternative F would include moderate, long-term, beneficial, and widespread impacts on surface water flow and water quality including maintenance of sheet flow dynamics of the natural Big Cypress Swamp landscape; long-term, moderate, beneficial and potentially Addition-wide impacts on the reduction of the introduction of known and new exotic / non-native plants and animals; long-term, moderate to significant, beneficial impacts on (likely to positively affect) the Florida Panther; long-term, moderate to significant, beneficial impacts on (likely to positively affect) the Red-cockaded Woodpecker population; long-term, minor to moderate, adverse impacts on major game species; long-term, moderate, beneficial and adverse Addition-wide impacts on wilderness resources and values; long-term, moderate, beneficial and adverse impacts on visitor use and experience; and long-term, moderate beneficial and adverse impacts on NPS operations and management.

In addition, this alternative will reduce localized terrain alteration and exposure of marl and sandy soils creating rutted channels for more rapid water flow, reduce significant long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Florida Black Bear; reduce introduction of human waste, trash and other debris; reduce long-term, moderate to severe adverse impacts on (likely to adversely affect) the Wood Stork and other wading birds species; reduce long-term, moderate to severe, adverse impacts on (likely to adversely affect) the Big Cypress Fox Squirrel; reduce increased negative human-wildlife interactions resulting in management and complaint issues; and reduce the potential for an increase in inappropriate public land use for dumping; marijuana grow operations; and resource harvesting of rare and endangered plants.

Approximately 111,601 acres of land (76% of the Addition) would be proposed for wilderness area designation.

NPS staffing level needed to implement Alternative F would be the equivalent of 7 full-time staff members (10 additional positions). These 10 additional positions (10 full-time employees) would include 2 permanent interpreters, 2 maintenance workers, 5 law enforcement rangers, and 1 visitor use assistant. Volunteers and partnerships would continue to be key contributors to NPS operations. One-time capital costs of Alternative F would projects that are planned for the near future or are underway, new construction, and facility costs such as major resource plans and projects, are estimate at \$4.9 million. Annual operating costs under this alternative would be \$7.5 million.

Based on the above analysis, Council staff finds that Alternative F best supports the regional Goals, Strategies, and Actions found in the Strategic Regional Policy Plan, while providing more wilderness area with fewer and less long-term, adverse impacts to the region's hydrology, plants and wildlife. In addition, Alternative F provides the benefits identified in the analysis at a lower capital and operational cost level.

As currently presented, Council staff finds that the Preferred Alternative as presented in the submittal will not provide acceptable benefit levels to the region, as described in the Council staff analysis and will not enhance the health, safety and welfare of the region's habitats and population and is therefore not consistent with the following Goals, Strategies, and Actions of the Strategic Regional Policy Plan's Natural Resources Element:

Goal 4: Livable communities designed to improve quality of life and provide for the sustainability of our natural resources.

Strategy: Promote through the Council's review roles design and development principles that protect the Region's natural resources and provide for an improved quality of life.

Action 6: Working in cooperation with agencies and local governments insure that new public facilities, facility expansions and additions avoid designated natural resource protection areas.

Action 8: Working with all levels of government within Southwest Florida actively plan for lands that have been acquired for natural resource purposes to be maintained and managed to preserve their environmental integrity.

Goal 5: Effective resource management is maintained across the borders of sovereign public agencies.

Strategy: All plans concerning the same resource shall have as objectives the same results.

Action 4: The SWFRPC will promote state, regional and local agencies to consider lands identified as priority one habitat south of the Caloosahatchee River and areas formally designate as critical habitat for the Florida Panther to be incorporated in the agency's natural resource management programs and provide intergovernmental coordination for the implementation of management practices that, based on existing data, would be expected to result in maintaining habitat conditions for the panther.

Action 7: The SWFRPC will continue to coordinate with the entities of the South Florida Ecosystem Restoration Task Force Working Group in their restoration efforts.

Council staff finds that Alternative F is more protective of the natural resources of the region, including listed species, water quality and hydrology, and the public use functions that the Big Cypress National Preserve was originally established. Alternative F has the most area designated for wilderness area and appears to have the lowest carbon footprint and least green-house gas production both for the management plan and the amount of recreational use dependent on internal combustion engines.

Council staff recommends that the Preferred Alternative and subsequently the Environmental Impact Statement should be rewritten with Alternative F as the Preferred Alternative because it will be the most cost effective (least costly), will minimize negative climate change factors, and will best protect the overall Big Cypress National Preserve, while allowing public uses that are appropriate to a significant national resource of this value, magnitude, and vulnerable nature.

Council also staff finds that no further review of the project will be necessary from Council unless unforeseen circumstances occur that change the overall request as presented.

Should you or any other party request that this finding to be reconsidered, please contact Nichole L. Gwinnett, IC&R Coordinator.

Sincerely,

SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL



Kenneth C. Heatherington
Executive Director

KCH/DEC



FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

Ms. Lauren Milligan
Director, Florida State Clearinghouse
Florida Dept. of Environmental Protection - #3700
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

September 18, 2009

Re: DHR Project File No: 2009-4470B / Received by DHR: July 22, 2009
SAI #: FL2009 - 4851C
*Draft General Management Plan/Wilderness Study/Off-Road Vehicle Management
Plan/Environmental Impact Statement*
Big Cypress National Preserve Addition - Collier County

Dear Ms. Milligan:

Our office reviewed the referenced documents in accordance with Section 106 of the National Historic Preservation Act of 1966 as amended and 36 CFR Part 800: Protection of Historic Properties; and the National Environmental Policy Act of 1969, as amended. This review is focused to the possible impact to historic properties listed, or eligible for listing, in the National Register of Historic Places in the Big Cypress National Preserve Addition (Addition).

We have reviewed the sections of the DGMP/WS/ORVMP/EIS that deal with cultural and historical resources, and it is our opinion that such resources have been adequately addressed in this document. We concur with the choice of preferred alternative, and agree that it has the potential to have adverse effects on cultural resources. Therefore, this office concurs that cultural resource (archaeological and other) surveys/investigations will need to be conducted in advance of ground disturbing activities, or other development activities that could directly or indirectly affect cultural resources that are listed or eligible for listing in the National Register. The results of such surveys must be forwarded to this office for review and comment. We look forward to continued coordination and consultation in the development of the Addition.

If you have any questions concerning our comments, please contact me by electronic mail at lkammerer@dos.state.fl.us, or by telephone at 850-245-6333 or 800-847-7278.

Sincerely,

A handwritten signature in cursive script that reads "Laura A. Kammerer".

Laura A. Kammerer
Deputy State Historic Preservation Officer
For Review and Compliance

RECEIVED

SEP 23 2009

DEP Office of
Intergovt'l Programs

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

Director's Office
(850) 245-6300 • FAX: 245-6436

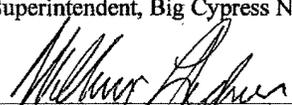
Archaeological Research
(850) 245-6444 • FAX: 245-6452

Historic Preservation
(850) 245-6333 • FAX: 245-6437

APPENDIX D: FLOODPLAINS STATEMENT OF FINDINGS

**Statement of Findings for
Executive Order 11988, "Floodplain Management"
Big Cypress National Preserve — Addition
General Management Plan**

Recommended:  _____ 6/14/10
Superintendent, Big Cypress National Preserve Date

Concurred:  _____ 6/17/10
Chief, Water Resources Division Date

Approved:  _____ 6-22-10
Director, Southeast Region Date

INTRODUCTION

In accordance with Executive Order 11988, “Floodplain Management” and National Park Service (NPS) guidelines for implementing the order, the National Park Service has reviewed the flood hazards in the Big Cypress National Preserve — Addition (Addition) and has prepared this “Statement of Findings” (SOF).

In examining the Addition lands, the structures at the following two sites were identified as being within a regulatory 100-year floodplain:

- 1) Carnestown site (southeast corner of S.R. 29 and U.S. 41/Tamiami Trail in Carnestown, FL)
Two structures: Collier County Sheriff District 7 substation and the Everglades Chamber of Commerce information center (known as “Everglades Welcome Center”)

- 2) Copeland site (east side S.R. 29 in Copeland, FL)
One structure: NPS fire operations center

There are no other occupied structures within a regulatory floodplain at these sites that warrant inclusion in this flood hazard assessment. The 91-meter communication tower owned by Crown Castle adjacent to the other two structures at the Carnestown site is an example of a site facility that is not included in the hazard assessment.

This “Statement of Findings” focuses on evaluating the flood hazards for the three aforementioned structures in the 100-year floodplain. As a part of the effort to develop a general management plan (GMP) for the Addition, the “Statement of Findings” describes the flood hazard, alternatives, and possible mitigation measures for the continued use of this area. Additional detail regarding the Addition lands and resources, future actions to be taken in the area, and environmental impacts may be found in the *Draft General Management Plan / Wilderness Study / Off-Road Vehicle Management Plan / Environmental Impact Statement* (GMP/EIS).

DESCRIPTION OF THE SITES AND USES

Carnestown Site

The Everglades Area Chamber of Commerce, the Collier County Sheriff’s Office, and Crown Castle International, Inc. lease land owned by the National Park Service in the southeast quadrant of the intersection of S.R. 29 and U.S. 41. The federal acquisition of this land was prompted by the Big Cypress National Preserve Addition Act of 1988 (Public Law 100-301). The National Park Service began administering these Addition lands in 1996.

Currently, there are two occupied, one-story, structures on the site: the Everglades Chamber of Commerce visitor information center (the first structure on the site in 1966) and the Collier

County sheriff's substation. These structures existed on this site prior to National Park Service management. The communication tower with a repeater building and an aboveground fuel tank for sheriff operations are nearby on the site. Much of the remaining land at this site has been developed with impervious paved surfaces for ingress and egress and parking, and some is mowed lawn groundcover. Both of the occupied structures, which are about 7 to 8 feet above mean sea level, are immediately west of the Barron River Canal. The surrounding plant communities beyond the manicured landscape portions of the site (and primarily south of the site and west of S.R. 29) consist mainly of mangrove forest. The site sits at the upper reach of a mangrove estuary off Chokoloskee Bay.

Although the onsite facilities are leased, managed, and operated by external entities, the land is owned by the federal government and is part of the planning area covered in the *General Management Plan* for the Addition. All of these facilities provide support services to the Preserve and its visitors, and they operate seven days per week. For example, the Everglades Chamber of Commerce facility provides orientation, visitor information, souvenirs, limited supplies, and a restroom facility. The District 7 sheriff substation (and the adjacent tower) provide emergency and communication services for the Preserve and its visitors.

Copeland Site

The National Park Service uses a former single-family residence at this site (on the east side of both S.R. 29 and the Barron River Canal) as a fire operations center. This structure was on the site prior to NPS management of this land, which began in 1996. The site development consists of a two-story house, an old swimming pool basin, a pump house, and a borrow pit. Material excavated from the borrow pit appears to have been used to raise the building pad prior to house construction. Although the house sits slightly higher than the elevation of the surrounding terrain, the entire structure is within the 100-year floodplain.

The remaining developed areas around the house, pump house, and pool consist of mowed lawn and a pervious driveway and parking area. The driveway crosses the Barron River Canal, connecting the site to S.R. 29. Beyond the developed area of the site, the generally flat terrain is vegetated with cleared prairie, scrub-shrub, seasonal wetlands, and hardwood hammock. Another private residence exists approximately 100 yards north of the site, and an NPS Preserve employee housing unit exists about 200 yards to the south. The NPS fire operations center at the Copeland site accommodates year-round use, involving unit fire management employees and prescribed fire employees.

GENERAL CHARACTERIZATION OF THE NATURE OF FLOODING AND FLOODPLAIN PROCESSES IN THE AREA

Carnestown Site

The flooding that occurs in the vicinity of the Carnestown site is mainly characterized and driven by rising waters in the adjacent mangrove estuaries and canals during wet seasons, storms, or hurricanes. The rising waters in the canals and mangrove estuaries can result from

long durations of heavy precipitation and from storm surges from the Gulf of Mexico associated with hurricanes and tropical storms. Flooding at the site and its vicinity would occur when the rising water and/or storm surge overtops the banks of canals and natural waterways around the site. During the south Florida wet season, some ponding also occurs in low-lying areas and swales around the site due to the flat terrain and drainage constraints of the site. The only documented flooding of this site occurred after Hurricane Donna in 1960 when canal banks were overtopped in vicinity of the site. At that time, there were no structures on the site. Since 1960 (and since site development) the site has only flooded once — during Hurricane Andrew in 1992. However, the two structures on this site did not flood at that time. In fact, Everglades City (located closer to the Gulf to the south) staged its emergency management system equipment at this site to avoid higher water levels in the city. The National Park Service has not identified any records or physical indications that any other flooding has occurred at this site in the past.

Copeland Site

The flooding that occurs in the vicinity of the Copeland site is primarily characterized by areas of seasonal wetlands and other low-lying areas becoming inundated during the south Florida wet season. Ponding and soil saturation in these nearby wetland areas is typically only seasonal in nature. In a very severe flood, it is possible for flood water to overtop the banks of the Barron River Canal that parallels S.R. 29 along the west side of this site. However, the NPS has no records or physical proof that flooding has occurred at the structure site, even during notable storms or hurricanes. This may be because of local hydrology of the site and the fact that the structure sits on a raised foundation.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Description of Preferred Alternative and Why Facilities Would Be Retained in the Floodplain

Under the preferred alternative in the general management plan, the fire operations center at Copeland, and the Sheriff's substation and Everglades Chamber of Commerce visitor center at Carnestown would be retained in their existing locations. The reasoning behind retaining these three structures in their existing locations in the 100-year floodplain is based on the following reasons:

- The structures at both sites were stable and usable when the National Park Service took over management and ownership of these sites/land.
- The National Park Service has no records of past structural flooding at either of these sites.
- The Chamber of Commerce and Sheriff's Office facilities at the Carnestown site were fully operational before and after the NPS took over management of this land.
- The visitor services and emergency services provided at this site by the Everglades Chamber of Commerce visitor center and the Collier County Sheriff's Office

substation continue to support the Preserve and its visitors and serve as an effective complement to NPS operations and services.

- The structure (house) at the Copeland site has become fully operational and has been an effective location for the NPS fire operations center.
- Relocating the facilities and services at both sites may be infeasible and very costly, from both a financial cost perspective and from a level/quality of service perspective.
- Both of the sites are already on disturbed ground. Moving the facilities would likely result in adverse impacts and the loss of other natural resource values in the area.
- The Carnestown site is served by sewer and water from the Everglades City utility system, which avoids the need for individual septic and well systems and the resource impacts they would bring.
- Both sites have direct access to major highways in the area that provide quick evacuation routes to higher, inland areas (S.R. 29 to the north and U.S. 41 and Interstate 75 to the east and west).

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

Carnestown Site

The potential for storm surges associated with hurricanes and tropical storms is the primary flood risk for the structures at the Carnestown site. Strong storm surges from the southwest have the potential to raise water levels in the canals and mangrove estuary branches near the site. High seasonal rainfall could also contribute to the rising waters in the adjacent canals and estuary. If the canal banks are overtopped, the structures at the site might be flooded from several directions because canals more or less surround the area around the intersection of S.R. 29 and U.S. 41. However, although some ponding occurs in low-lying areas around the site during the wet season and some probable overtopped canal banks near the site may have occurred during storms in 1960 and in the 1990s, the National Park Service has not identified any records or physical indications that structural flooding has occurred at this site in the past.

The timing and duration of potential flooding at the Carnestown site structures may vary depending on the source of flooding (i.e., storm surge or high seasonal rainfall). At the Carnestown site, flooding caused by storm surges is the most likely scenario, and flooding could occur over a short period of time if a hurricane or tropical storm nears the area at the right trajectory. Since this type of flooding would result from rising water in the Barron River Canal, other adjacent canals, and the nearby estuary, the flooding could occur in a matter of hours. Thus, the available time for advanced warning and evacuation would be somewhat limited because of the rapid approach of storm surges. However, with effective hurricane forecasting and early evacuation orders, structure occupants should be provided with enough advanced notice to avoid the flood risk (many hours to several days). Typically, Collier County evacuation orders are issued for areas south of U.S. 41 in response to storm surge threats.

If the flooding is a result of high seasonal rainfall, it could take weeks or perhaps months to occur. This type of flooding at the Carnestown site would allow a substantial amount of time for advanced warning to structure occupants (days or weeks). The flood duration in this case would also have a long duration because of fully saturated soils, flat terrain, and slow rate of recession.

Because of the very subtle variations of landscape elevation in this area, there are very few issues related to erosion, sediment deposition, and channel changes that would result from flooding. Notable hydrologic changes from geomorphic and erosion processes in this area are primarily only measureable at the scale of geologic time. There could be some sediment and debris deposition at this site as a result of storm surge, but the typical seasonal inundation at the Carnestown site would lack the energy to produce detectable erosion or channelization.

Copeland Site

Only during periods of extreme high water could the elevated building foundation and structure be flooded. Floodwater in an extreme event could originate from rising water in surrounding lowlands from high seasonal rainfall or from overtopped banks in the adjacent Barron River Canal from extreme storm surges from the southwest. If rising water from very high seasonal rainfall occurs, the flow direction at the Copeland site would generally be towards the south-southwest and into the adjacent canal. If the flooding results from overtopped banks, the direction may be reversed. However, although ponding in nearby wetlands and low areas during the wet season is not uncommon, the National Park Service has identified no records or physical indication that the structure has been flooded in the past.

The timing and duration of potential flooding at the Copeland site structure would vary depending on the source/type of flooding. If the flooding is a result of high seasonal rainfall, it could take weeks or perhaps months to occur. This type of flooding at the Copeland site would allow a substantial amount of time for advanced warning to structure occupants (days or weeks). The flood duration in this case would also have a long duration due to fully saturated soils, flat terrain, and slow rate of recession.

If the flooding at the Copeland site structure results from a strong hurricane or tropical storm, the timing would be shortened considerably. Because this type of flooding would result from a storm surge and rising water in the Barron River Canal, the flooding could occur in a matter of hours. Thus, the available time for advanced warning and evacuation would be more limited because of the rapid approach of storm surges. However, forecasted hurricane warnings and early evacuation notices/orders should provide structure occupants with flood awareness hours to days in advance of the risk.

Because of the very subtle variations of landscape elevation in this area, there are very few issues related to erosion, sediment deposition, and channel changes that would result from flooding. Notable hydrologic changes from geomorphic and erosion processes in this area are primarily only measureable at the scale of geologic time. There could be some sediment and debris deposition at this site as a result of storm surge, but the typical seasonal inundation at the Copeland site would lack the energy to produce detectable erosion or channelization.

FLOOD MITIGATION MEASURES

The highest level of flood mitigation for both the Carnestown site and the Copeland site would be to relocate the facilities and/or services out of the floodplain. This option is not currently feasible and has several costs associated with it. Thus, this option has not been chosen by the National Park Service. If or when the structures reach their usable lifespan, or if a future flood results in severe damage, then the National Park Service should assess possibilities for relocating the facilities.

The continued use of the Carnestown and Copeland sites for the various facilities and services would necessitate the development (and future implementation) of evacuation plans for both sites. Given the proximity of these sites to flooding risks, the early, prompt, and safe evacuation of people from the sites is the primary flood mitigation measure available to the National Park Service. This plan would include strategies that ensure proper storm monitoring, emergency communication methods, effective evacuation routes, and timely emergency evacuation notification for staff and visitors at both sites.

Because both sites are located at or near the intersection of two major highways in the area (S.R. 29 and U.S. 41), multiple evacuation routes are available to staff or visitors at these sites. Depending on storm trajectory or flooding dynamics, evacuees could seek higher ground by driving north along S.R. 29, with the option of heading east or west on Interstate 75. Evacuees could also exit the area to the east or west via U.S. 41. The most ideal and safest evacuation route would be determined by local emergency management system authorities during the time of the storm.

The plan would be developed in concert with the protocol and strategy of the existing Collier County emergency management system and the National Weather Service. This Collier County emergency management system is already well developed and has proven to be very successful at providing people in the area with advanced warning of potential floods. During past floods, this emergency management system has given warning well in advance of storm activity, leaving ample time for evacuation. Also, since the Collier County Sheriff's Office substation is at the Carnestown site, the collaboration and communication between the National Park Service and the Collier County emergency management system should be rather seamless and efficient. This would also benefit the Copeland site, since the Collier County Sheriff's Office substation at Carnestown is only 3 miles south of the Copeland site.

Once the plan is developed, all Preserve staff, Everglades Chamber of Commerce staff, and Collier County Sheriff's Office staff would be informed of the plan's details and their respective implementation responsibilities. Staff at all facilities would also be informed on how to appropriately disseminate evacuation information to visitors who may be at any of the facilities when a flood occurs.

SUMMARY

The National Park Service has determined that there is no practicable alternative to maintaining the use of the fire operations center at the Copeland site and continuing to allow the use of the structures at the Carnestown site for Everglades Chamber of Commerce and Collier County Sheriff's Office services. This determination is primarily based on: (1) the low risk and minimal safety concerns related to potential flooding at these sites, and (2) the notable costs and impacts that would be incurred by moving and/or constructing these facilities in new locations outside the floodplain.

The primary flood mitigation measure for both sites is to develop an evacuation plan for all facilities at these sites and keep all NPS staff, Chamber of Commerce staff, and Sheriff's Office staff informed of the plan. Although the sites are within or near areas subject to flooding, there would be ample time to warn staff and visitors using the facilities to evacuate the area. If a flood occurs, visitors and staff could evacuate to higher ground via S.R. 29, U.S. 41, and/or Interstate 75. The location of the Collier County Sheriff's Office substation on the Carnestown site, only 3 miles south of the Copeland site, would benefit the emergency communication for both sites and would help ensure early and safe evacuation.

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GLOSSARY

TERMS RELEVANT TO TRAILS

Primary Trail: An ORV trail that starts from a designated access point and is a principal ORV route.

Secondary Trail: A short ORV trail that branches off a primary trail and provides access to a specific destination.

TERMS RELEVANT TO WILDERNESS

Wilderness: Areas protected by provisions of the Wilderness Act of 1964. These areas are characterized by a lack of human interference in natural processes; generally, there are no roads, structures, or installations, and the use of motorized equipment is not allowed. General references to the term wilderness can include the categories of eligible, marine, wilderness study, designated, potential, proposed, and recommended wilderness. Potential wilderness may be a subset of any of these five categories.

Eligible Wilderness: Eligible wilderness are lands determined by the National Park Service to be eligible for inclusion in the national wilderness preservation system because the lands meet wilderness criteria as identified in the Wilderness Act.

Marine Wilderness: Like wilderness, these designated marine wilderness areas are characterized by a lack of human interference in natural processes, and there are generally no roads, structures, or installations. The use of motorized boating is permitted in these areas according to the provisions of the Wilderness Act.

Wilderness Study: A study of areas eligible for wilderness designation. The study typically evaluates lands and waters against

the criteria outlined in the Wilderness Act of 1964. The findings of a wilderness study are forwarded to the director of the National Park Service, and sometimes are incorporated into a general management plan.

Designated Wilderness: Designated wilderness are federal lands designated by Congress as a wilderness area and a component of the National Wilderness Preservation System. The National Park Service is required to manage these lands according to the Wilderness Act of 1964.

Potential Wilderness: Lands that are surrounded by or adjacent to lands proposed for wilderness designation but that do not themselves qualify for immediate designation due to temporary nonconforming or incompatible conditions can be deemed “potential wilderness.” If so authorized by Congress, these potential wilderness areas will become designated wilderness upon the secretary’s determination, published in the *Federal Register*, that they have finally met the qualifications for designation by the cessation or termination of the nonconforming use.

Proposed Wilderness: Proposed wilderness is an area that has been studied by the National Park Service that has been submitted as a proposal for designation by a park or region to the director of the National Park Service but has not been approved by the Department of the Interior.

Recommended Wilderness: Recommended wilderness is an area that has been studied and proposed by the National Park Service, recommended for wilderness designation by the secretary to the president, and then transmitted by the president to Congress. Once approved by the secretary, the area can be considered recommended wilderness for management purposes.

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D. Shapiro

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PREPARERS AND CONSULTANTS

PLANNING TEAM MEMBERS

National Park Service, Big Cypress National Preserve

Pedro Ramos, Superintendent and former
Deputy Superintendent
J. D. Lee, Deputy Superintendent and former
Chief Ranger
Damon Doumlele, Environmental Protection
Specialist
Ron Clark, Chief of Resource Management
Bob DeGross, Chief of Interpretation
Edward Clark, Chief Ranger
Dennis Bartalino, Chief of Maintenance
Christine Clark, Management Assistant
Jim Burch, Botanist
Steve Schulze, Wildlife Technician
Robert Sobczak, Hydrologist
Ryan Levins, former North District Ranger
John Nobles, Fire Management Officer
John Adams, Roads and Trails Technician
John Donahue, former Superintendent
Karen Gustin, former Superintendent
Carol Clark, former Deputy Superintendent
and former Acting Superintendent
Sandy Snell-Dobert, former Chief of
Interpretation
Jimi Sadle, former Biological Science
Technician (Exotic Plants)
Scott Pardue, former Acting Deputy
Superintendent

National Park Service, Washington D.C. Office

Rick Potts, former Chief, Wilderness
Stewardship and Recreation
Management Division
Gary Oye, Chief, Wilderness Stewardship and
Recreation Management Division

National Park Service, Southeast Regional Office

Rich Sussman, former Chief of Park Planning
and Environmental Compliance
Mark Kinzer, Environmental Protection
Specialist, Wilderness Coordinator
Tim Bemisderfer, Landscape Architect
Jami Hammond, Environmental Coordinator

PREPARERS

National Park Service, Denver Service Center

Pat Kenney, Branch Chief and former Project
Manager (through September 2008);
Overall responsibility for preparation of
the plan. B.S., Zoology; 20 years with the
National Park Service.
Patrick Malone, Project Manager (October
2008 to present) and former Natural
Resource Specialist. Overall responsibility
for preparation of the plan; responsible for
writing the descriptions of natural
resources and assessing impacts on these
topics. B.S., Natural Resources and
Environmental Management; M.P.A.,
Environmental Policy Analysis; 5 years
with the National Park Service; 9 years
with state and local government; 2 years
with a nonprofit land trust.
Don Wojcik, Natural Resource Specialist.
Responsible for writing portions of the
descriptions of natural resources and
assessing impacts on these topics. B.S.,
Civil & Environmental Engineering;
M.P.A., Natural Resource Management
and Environmental Policy; 1 year with the
National Park Service; 10 years with local
government open space programs; 5 years
with nonprofit and academic environ-
mental law and policy organizations; 2
years with local civil engineering
department.

Thomas A. Thomas, Cultural Resource Specialist. Responsible for writing cultural resources affected environment and cultural resources impact analysis sections. Ph.D. in History; 19 years with the National Park Service.

Ian Shanklin, Landscape Architect. Responsible for writing the visitor use and experience affected environment. B.L.A., Landscape Architecture; 9 years with National Park Service.

Andrew Coburn, Community Planner. Responsible for writing the environmental consequences for visitor use and experience. B.A. Economics; B.S. Business Administration; Master of Urban and Regional Planning, Land Use and Environmental Planning and M.P.A; 3 years with the National Park Service.

Sarah Bodo, Community Planner. Responsible for developing cost estimates and writing the NPS operations sections. B.S., Commerce; Master of Urban and Regional Planning; 4 years with the National Park Service.

CONSULTANTS

Pia Franzese and Casey Cornwell, Dornbusch and Associates.

Kerri Cahill, Technical Specialist, User Capacity, NPS Denver Service Center.

Greg Cody, Technical Specialist, Cultural Resource Compliance, NPS Denver Service Center.

Dave Kreger, former Technical Specialist, Natural Resource Compliance, NPS Denver Service Center.

Kevin Noon, Water Resources Division, Natural Resource Program Center, NPS

Gary Smillie, Water Resources Division, Natural Resource Program Center, NPS

Paul Wharry, Technical Specialist, Natural Resource Compliance, NPS Denver Service Center.

PUBLICATION SERVICES

James Corbett, Visual Information Specialist, NPS Denver Service Center

Christy Fischer, Writer-Editor, NPS Denver Service Center

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As the nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

