



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 socioeconomic 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 in progress), 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 238). 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 238; 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 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.”

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 238) 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 oppor-

tunities 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 county.

- **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.

Impact Topic and Duration	Negligible	Minor	Moderate	Major
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)</p>	<p>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> 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
Wildlife: Major Game Species	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.	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.	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.	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 wide-spread 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.
Wilderness Resources and Values	An action would have no discernable effects on wilderness resources and values.	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.	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.	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.

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. 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>

Impact Topic and Duration	Negligible	Minor	Moderate	Major
NPS OPERATIONS AND MANAGEMENT				
NPS Operations and Management	The effect would be at or below the level of detection, and would not have an appreciable effect on preserve operations and management.	The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on preserve operations and management.	The effects would result in a change in preserve operations and management in a manner readily apparent to staff and possibly to the public.	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.

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. 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, which is expected to be completed in 2010.

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.

"Collier Resources Company Oil and Gas Plan of Operations" — The Collier Resources Company has submitted a plan of operations for the exploration for oil and gas. The plan includes conducting a geophysical survey within portions of the Addition and the original Preserve. Implementation of the plan would use specialized off-road equipment that would travel cross-country. The plan has not received approval from the National Park Service. An environmental analysis of these proposals and their potential cumulative impact has not been finalized.

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 sheetflow 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. Sheetflow 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 South Florida Project.

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.

- 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 affect 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 prohibits 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. 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.

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 the Addition lands that about 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on surface water flow. Collier proposes to use off-road equipment and construct roads and pads, which could 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 canal levee, modification of the L-28 Tieback Canal, and operational changes to various water control structures. Decentralization 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 Addition lands that abut 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on water quality. Collier proposes to use off-road equipment and construct roads and pads, which 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 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on wetlands. Collier proposes to use off-road equipment and construct roads and pads, which could 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. 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on soils. Collier proposes to use off-road equipment and construct roads and pads, which 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation; however, it is unknown what plant

communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads,

which could 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on exotic plants in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which could 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 exotic species and nonnative 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 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 exotic plants and nonnative 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 exotic plants and nonnative vegetation 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, 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. 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on Florida panthers in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which would 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on the red-cockaded woodpecker in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on the wood stork in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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.)

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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on

major game species in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on wilderness resources and values. Collier proposes to use off-road equipment and construct roads and pads, which 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 within the Addition lands 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 lands 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 lands. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, the impacts of the federal water projects will be assessed in separate environmental compliance documents. Implementation of the "Collier Oil and Gas Plan of Operations" could have adverse impacts on archeological resources. Collier proposes to use off-road equipment and construct roads and pads, which 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 contained in alternative A are added to the negligible effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative A would contribute a substantial increment to this cumulative impact.

Conclusion. Under alternative A, impacts on archeological resources would be permanent, minor, and adverse.

There would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative A would contribute a substantial 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 proposals for exploration activities in the “Collier Resources Company Oil and Gas Plan of Operations” 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 to 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 travelling 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 lands 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. Development (including formalization of and improvements to existing trails) of about 140 miles of ORV trails would create barriers to surface water flow due to raised trail treads and ORV use. Culverts and other best management practices used in trail construction 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 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.

Collectively, the impact of these activities on surface water flow would be long term,

moderate, adverse, and mostly localized 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 Addition lands that abut 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on surface water flow. Collier proposes to use off-road equipment and construct roads and pads, which could 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 canal levee, modification of the L-28 Tieback canal, and operational changes to various water control structures. Decentralization 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, 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. 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 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 Addition lands that abut 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 the proposals in the "Collier Resources Company Oil and Gas Plan of Operations could have adverse impacts on water quality. Collier proposes to use off-road equipment and construct roads and pads, which 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 use of ORV trails would also adversely

impact wetland function and integrity. Impacts on wetlands would be reduced by the designated trail system. Maintaining roads, grades, and trails could 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 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 the no-action alternative, impacts on wetlands under alternative B would be long term, minor to moderate, adverse, and localized.

Cumulative Impacts. Cumulative impacts under alternative B would generally be the same as under the no-action alternative. Implementation of proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on wetlands. Collier proposes to use off-road equipment and construct roads and pads, which could 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, minor to 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 140 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 would be reduced by the designated trail system. Nonmotorized use 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on soils. Collier proposes to use off-road equipment and construct roads and pads, which 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. 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 to floodplains beyond what is accounted for under the no-action alternative.

Cumulative Impacts. No cumulative impacts to floodplains would occur under the preferred alternative because there would be no impacts on floodplains resulting from the preferred alternative.

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 the alternative B because there would be no impacts on floodplains resulting from 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 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 140 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which 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

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.

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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on exotic plants in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which could 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 exotic species and nonnative vegetation 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 exotic plants and nonnative 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 exotic plants and nonnative vegetation 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 (such as at existing access points along major highways), but 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, adverse, and localized.

Public ORV use in the Addition under alternative B would be allowed on up to 140 miles of designated trails and through the issuance of up to 700 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 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. 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on Florida panthers in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which would 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 (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 in the Addition under alternative B would be allowed on up to 140 miles of designated trails and through the issuance of up to 700 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 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on the red-cockaded woodpecker in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 140 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 next 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on the wood stork in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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.)

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 140 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 140-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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on major game species in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 140 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 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 48,919 acres of the Addition would be proposed for designation as wilderness (44% of those lands considered eligible under the wilderness study and 33% 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on wilderness resources and values. Collier proposes to use off-road equipment and construct roads and pads, which 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 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 minor to moderate. Increased visitor use under this alternative would increase the potential for looting and vandalism, resulting in permanent, adverse, moderate impacts. Development could also result in impacts on archeological resources. Unauthorized off-trail ORV use could displace soils and cause erosion of archeological sites. These 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 lands. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, the impacts of the federal water projects will be assessed in separate environmental compliance documents.

Implementation of the “Collier Oil and Gas Plan of Operations” could have adverse impacts on archeological resources. Collier proposes to use off-road equipment and construct roads and pads, which 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, moderate, adverse effects of implementing the actions contained in alternative B are added to the negligible effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative B would contribute a substantial increment to this cumulative impact.

Conclusion. Under alternative B, impacts on archeological resources would be permanent, moderate, and adverse.

There would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative B would contribute a substantial 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 B would generally result in a potential adverse effect on archeological resources. NPS staff would work with the state historic preservation officer to prevent an 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. Past actions, including road construction and agricultural development, may have impacted ethnographic resources at Deep Lake and other sites within the Addition. The intensity and duration of these impacts is unknown. Therefore, the cumulative impact is unknown. However, the actions under alternative B would contribute a very small component to any cumulative impact on ethnographic resources.

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 cumulative impact, but the intensity and duration is not known. 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 140 miles of primary ORV trails, issuance of a maximum of 700 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 proposals for exploration activities in the “Collier Resources Company Oil and Gas Plan of Operations” could adversely impact the experience of visitors. 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 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 140 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 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 travelling 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 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 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. Development (including improvements to existing trails) of up to 140 miles of ORV trails would create barriers to surface water flow due to raised trail treads and ORV use. Culverts and other best management practices used in trail construction 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 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.

Collectively, the impact of these activities on surface water flow would be long term, moderate, adverse, and mostly localized 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 Addition lands that abut 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on surface water flow. Collier proposes to use off-road equipment and construct roads and pads, which could 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 canal levee, modification of the L-28 Tieback canal, and operational changes to various water control structures. Decentralization 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 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 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 Addition lands that abut 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on water quality. Collier proposes to use off-road equipment and construct roads and pads, which 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 use of ORV trails could also adversely impact wetland function and integrity. Maintaining roads, grades, and trails could 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 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 wetlands under the preferred alternative would be long term, minor to 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on wetlands. Collier proposes to use off-road equipment and construct roads and pads, which could 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 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on soils. Collier proposes to use off-road equipment and construct roads and pads, which 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 140 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 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.

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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on exotic plants in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which could 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 exotic species and nonnative vegetation 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 exotic plants and nonnative 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 exotic plants and nonnative vegetation 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 (such as at existing access points along major highways), but 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, 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 140 miles of designated trails and 700 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 backcountry 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. 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on Florida panthers in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which would 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 (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.

Public ORV use in the Addition under the preferred alternative would be allowed on up to 140 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on the red-cockaded woodpecker in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 140 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on the wood stork in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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.)

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 140 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 140-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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on major game species in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 140 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 85,862 acres of the Addition would be proposed for designation as wilderness (77% of those lands considered eligible and 58% 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on wilderness resources and values. Collier proposes to use off-road equipment and construct roads and pads, which 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 under 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. Development under this alternative would be similar to that under alternative B, which could pose impacts on archeological resources. Impacts related to these actions would be permanent, adverse, and of minor 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 the "Collier Oil and Gas Plan of Operations" could have adverse impacts on archeological resources. Collier

proposes to use off-road equipment and construct roads and pads, which 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 lands. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, the impacts of the federal water projects will be assessed in separate environmental compliance documents.

When the permanent, minor to moderate effects of implementing the actions contained in the preferred alternative are added to the negligible effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in the preferred alternative would contribute a substantial increment to this cumulative impact.

Conclusion. Under the preferred alternative, impacts on archeological resources would be permanent, adverse, and moderate.

There would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in the preferred alternative would contribute a substantial 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 the preferred alternative would generally result in a potential adverse effect on archeological resources. NPS staff would

work with the state historic preservation officer to prevent an 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. Past actions, including road construction and agricultural development, may have impacted ethnographic resources at Deep Lake and other sites within the Addition. The intensity and duration of these impacts is unknown. Therefore the cumulative impact is unknown. However, the actions under the preferred alternative would contribute a very small component to any cumulative impact on ethnographic resources.

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 cumulative impact, but the intensity and duration is not known. 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 140 miles of primary ORV trails, issuance of a maximum of 700 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 proposals for exploration activities in the “Collier Resources Company Oil and Gas Plan of Operations” could adversely impact the experience of visitors. 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 to 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 140 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 travelling 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 lands. 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 Addition lands that abut 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on surface water flow. Collier proposes to use off-road equipment and construct roads and pads, which could 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 canal levee, modification of the L-28 Tieback 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 Addition lands that abut 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on water quality. Collier proposes to use off-road equipment and construct roads and pads, which 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 lands 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on wetlands. Collier proposes to use off-road equipment and construct roads and pads, which could 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 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.

Frontcountry 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 proposals in the “Collier Resources Company Oil and Gas Plan of

Operations” could have adverse impacts on soils. Collier proposes to use off-road equipment and construct roads and pads, which 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 Fire Operations Center at Copeland, which is located 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected.

Collier proposes to use off-road equipment and construct roads and pads, which could 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 frontcountry 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on vegetation; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment

and construct roads and pads, which could 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on vegetation in the Addition; however, it is unknown what plant communities would be affected. Collier proposes to use off-road equipment and construct roads and pads, which could 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.

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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on exotic plants in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which could 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 exotic species and nonnative 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 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 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 exotic plants and nonnative vegetation 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. 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on Florida panthers in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which would 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 contained 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on the red-cockaded woodpecker in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 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 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 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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on the wood stork in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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.)

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 proposals in the “Collier Resources Company Oil and Gas Plan of Operations” could have adverse impacts on major game species in the Addition. Collier proposes to use off-road equipment and construct roads and pads, which 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 111,601 acres of the Addition would be proposed for designation as wilderness (100% of those lands considered eligible under the wilderness study and 76% 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. Addition lands 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 proposals in the "Collier Resources Company Oil and Gas Plan of Operations" could have adverse impacts on wilderness resources and values. Collier proposes to use off-road equipment and construct roads and pads, which 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. The construction of trails for hiking, camping, cycling, 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 backcountry users, and trampling or disturbance could result. Impacts related to these activities would be permanent, adverse, and of minor intensity. Visitor use under this alternative could result in the potential for looting and vandalism. Related impacts would be permanent, adverse, and of minor intensity. Development under this alternative could also pose impacts on archeological resources. Impacts related to these actions would be permanent, adverse, and of minor intensity. Unauthorized off-trail ORV use could displace soils and cause erosion of archeological sites. These impacts would be permanent, adverse, and of minor intensity.

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 the “Collier Oil and Gas Plan of Operations” could have adverse impacts on archeological resources. Collier proposes to use off-road equipment and construct roads and pads, which 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 lands. The number and extent of these archeological resources is unknown so the potential impact cannot be assessed with any degree of accuracy. However, the impacts of the federal water projects will be assessed in separate environmental compliance documents.

When the permanent minor effects of implementing the actions contained in alternative F are added to the negligible effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative F would contribute a substantial increment to this cumulative impact.

Conclusion. Under alternative F, impacts on archeological resources would be permanent, adverse, and minor.

There would be a permanent, minor, adverse cumulative impact on archeological resources. The actions contained in alternative F would contribute a substantial 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 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. Past actions, including road construction and agricultural development, may have impacted ethnographic resources at Deep Lake and other sites in the Addition. The intensity and duration of these impacts is unknown. Therefore, the

cumulative impact is unknown. However, the actions under alternative B would contribute a very small component to any cumulative impact on ethnographic resources.

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 proposals for exploration activities in the "Collier Resources Company Oil and Gas Plan of Operations" 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 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 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 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 due to 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 travelling 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.