

## CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

### 1 INTRODUCTION

2  
3 The National Environmental Policy Act requires  
4 that environmental documents discuss the  
5 environmental impacts of a proposed federal  
6 action, feasible alternatives to that action, and any  
7 adverse environmental effects that cannot be  
8 avoided if the proposed action is implemented. In  
9 this case the proposed federal action would be the  
10 adoption of a general management plan for Fort  
11 Matanzas National Monument. The following  
12 portion of this document analyzes the  
13 environmental impacts of implementing each of  
14 the three alternatives on natural resources, cultural  
15 resources, transportation, visitor experience,  
16 socioeconomic environment, soundscape, and  
17 park operations. The analysis is the basis for  
18 comparing the beneficial and adverse effects of  
19 implementing the three alternatives. By examining  
20 the environmental consequences of all alternatives  
21 on an equivalent basis, decision-makers can  
22 evaluate which approach would provide the  
23 greatest beneficial results with the fewest adverse  
24 effects on the park.

25  
26 Because of the general, conceptual nature of the  
27 actions described in the alternatives, the impacts of  
28 these actions are analyzed in general qualitative  
29 terms. Thus, this environmental impact statement  
30 should be considered a programmatic analysis. If  
31 and when site-specific developments or other  
32 actions are proposed for implementation  
33 subsequent to this *General Management Plan*,  
34 appropriate detailed environmental and cultural  
35 compliance documentation will be prepared in  
36 accordance with requirements of NEPA and the  
37 NHPA as well as the Coastal Barrier Resources  
38 Act and the Florida Coastal Management  
39 Program.

40  
41 This chapter begins with a description of the  
42 methods and assumptions used for analyzing  
43 impacts. The impact analyses follow next,  
44 organized by alternative and then by impact topic  
45 under each alternative. All of the impact topics  
46 are assessed for each alternative. The existing  
47 conditions for each impact topic are described in  
48 Chapter 3 (“Affected Environment”). For each  
49 impact topic, there is an analysis of the beneficial

50 and adverse effects of implementing the  
51 alternative, a description of cumulative impacts  
52 (in which this plan is considered in conjunction  
53 with other actions occurring in the region), and a  
54 conclusion. At the end of each alternative there is  
55 also a brief discussion of unavoidable adverse  
56 impacts, irreversible and irretrievable  
57 commitments of resources, and the relationship of  
58 short-term uses of the environment and the  
59 maintenance and enhancement of long-term  
60 productivity. The impacts of each alternative are  
61 briefly summarized in Table 6, in Chapter 2  
62 (“Alternatives, Including the Preferred  
63 Alternative”).

### 64 65 METHODS AND ASSUMPTIONS FOR 66 ANALYZING IMPACTS

67  
68 The planning team based the impact analysis and  
69 the conclusions in this chapter largely on a review  
70 of existing literature and studies, information  
71 provided by experts in the NPS and other agencies,  
72 and park staff insights and professional judgment.  
73 It is important to remember that all the impacts  
74 have been assessed assuming mitigation measures  
75 have been implemented to minimize or avoid  
76 impacts. If mitigation measures described in  
77 Chapter 2 (“Alternatives Including the Preferred  
78 Alternative”) were not applied, the potential for  
79 resource impacts and the magnitude of those  
80 impacts would increase.

81 The NPS applied logic, experience, professional  
82 expertise, and professional judgment to analyze  
83 the impacts that each alternative would have on  
84 the socioeconomic environment. Economic data,  
85 historic visitor use data, expected future visitor  
86 use, and projected future expenditures at Fort  
87 Matanzas National Monument were all considered  
88 in identifying, discussing, and evaluating  
89 expected impacts.

### 90 91 Identification of Impacts

92  
93 *NPS Director’s Order 12 and Handbook:*  
94 *Conservation Planning, Environmental Impact*  
95 *Analysis, and Decision Making* presents an  
96 approach to identifying the impacts of a particular  
97 alternative. The analysis considers the duration

(short or long-term), type (adverse, beneficial, or neutral), context (the setting within which an effect would occur), and intensity or magnitude (e.g., negligible, minor, moderate, or major) of impacts. This is the approach that has been used in this document. Where quantitative data were not available, best professional judgment was used to identify impacts.

Unless otherwise described under a specific impact topic, the **duration** of an impact is defined as follows:

*Short-Term* – Impacts that would last less than one year and could be *temporary* in nature.

*Long-Term* – Impacts that would last one year or longer and could be *permanent*.

Impacts are evaluated by **type**, i.e., whether the impacts would be *beneficial*, *adverse*, or *neutral*. Beneficial impacts would improve park resources, the visitor experience, or park operations. Adverse impacts would negatively affect park resources, the visitor experience, or park operations. Neutral impacts would be virtually undetectable or would be equally adverse and beneficial.

*Direct* and *indirect* impacts caused by an action are considered in the analysis. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by the action and occur later in time or farther removed from the place, but are still reasonably foreseeable.

The analysis also considers the **setting** of impacts for each impact topic. Unless otherwise indicated, the setting for each impact topic is Rattlesnake and Anastasia islands, together with surrounding waters.

In this document, the definition of impact **intensity** varies by impact topic. Individual intensity definitions can be found in Table 16 below.

## CLIMATE CHANGE

The impacts of climate change on the National Monument are not expected to differ among the alternatives, and the lack of quantitative information about climate change effects adds to

the difficulty of predicting how these impacts will be realized within the boundaries of Fort Matanzas National Monument. For example, dunes, dune vegetation, and nesting shorebirds and sea turtles may be impacted by sea level rise, and storm frequency and intensity may impact the Fort Matanzas structure itself as well as other cultural resources and visitor facilities.

The range of variability in the potential effects of climate change is large in comparison to what is known about the future under an altered climate regime in the National Monument in particular, even if larger-scale climatic patterns such as increases in air and water temperature, increased seasonal precipitation, and more frequent severe thunderstorms have been accurately predicted for the Atlantic Coast (Loehman and Anderson 2009). Therefore, the potential effects of this dynamic climate on National Monument resources were included in “Chapter 3, Affected Environment.” However, they will not be analyzed in detail in “Chapter 4, Environmental Consequences” with respect to each alternative because of the uncertainty and variability of outcomes, and because these impacts are not expected to differ among the alternatives.

Although many specific effects of climate change, and the rates of changes, are not known at the present time, additional data and climate change modeling will become available during the life of this *General Management Plan*. The best available scientific climate change data and modeling will be incorporated into specific management planning, decisions, or actions that may be taken under any of the alternatives described in this plan.

## IMPACT TOPICS

The following impact topics are addressed in this environmental impact statement:

### Cultural Resources

**Method for Assessing Effects on Cultural Resources.** This environmental impact statement addresses the effects of the three plan alternatives on cultural resources – archeological sites, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections – that are proposed by actions in this

1	General Management Plan. The method for	53	
2	assessing effects on cultural resources is designed	54	
3	to comply with the requirements of both NEPA	55	
4	and Section 106 of the NHPA, and with	56	
5	implementing regulations 40 CFR 1500 and 36	57	
6	CFR 800, respectively, while considering the	58	
7	differences between NEPA and NHPA language	59	
8	and recognizing that compliance with one does	60	
9	not automatically mean compliance with the	61	
10	other. Accordingly, the assessment of effects	62	
11	discusses the following characteristics of effects:	63	
12		64	
13	• Direct and indirect effects	65	
14		66	
15	• Duration of the effect (short-term, long-	67	
16	term)	68	
17		69	
18	• Context of the effect (site-specific, local,	70	
19	regional)	71	
20		72	
21	• Intensity of the effect (negligible, minor,	73	
22	moderate, major, both adverse and	74	
23	beneficial)	75	
24		76	
25	• Cumulative nature of the effect	77	
26		78	
27	In accordance with 36 CFR 800, the regulations	79	
28	implementing Section 106 of NHPA, effects on	80	
29	cultural resources are identified and evaluated by:	81	
30		82	
31	• Determining the area of potential effect	83	
32	(APE) [800.4(a)]	84	
33		85	
34	• Identifying historic properties in the APE	86	
35	that are listed in or eligible for listing in the	87	
36	National Register of Historic Places	88	
37	[800.4(b)-(c)]. The results are either:	89	
38		90	
39		91	
40	○ <i>No historic properties affected</i> – either	92	
41	there are no historic properties present or	93	
42	there are historic properties present but	94	
43	the undertaking will have no effect upon	95	
44	them [800.4(d)(1)]; or	96	
45		97	
46	○ <i>Historic properties affected</i> – there are	98	
47	historic properties that may be affected	99	
48	by the undertaking [800.4(d)(2)].	100	
49		101	
50	• Applying the criteria of adverse effect to	102	
51	affected historic properties in the area of	103	
52	APE [800.5.(a)(1)], as follows:	104	
		105	
			○ An <i>adverse effect</i> is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner than would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. [examples of adverse effect are provided in 800.5(a)(2)]
			○ A finding of <i>no adverse effect</i> is found when the undertaking's effects do not meet the criteria of 800.5(a)(1) [800.5.(b)].
			• Considering ways to avoid, minimize, or mitigate or otherwise resolve adverse effects. The following are considered:
			○ Consultation with the SHPO/THPO and others to develop and evaluate strategies to mitigate adverse effects [800.6].
			○ CEQ regulations and Director's Order 12 call for the discussion of mitigating impacts and an analysis of how effective the mitigation would be in reducing the intensity of an impact, such as reducing it from moderate to minor intensity. Any resultant reduction in impact intensity is, however, an estimate of the effectiveness of mitigation under NEPA only.
			○ Such reduction in impact intensity does not suggest that the level of effect as defined by Section 106 and 36 CFR 800 is similarly reduced. Cultural resources are non-renewable resources and adverse effects generally consume, diminish, or destroy the original historic materials or form, resulting in a loss of integrity that

can never be recovered. Therefore, although actions determined to have an adverse effect under Section 106 and 36 CFR 800 may be mitigated, the effect remains adverse.

A Section 106 Summary is included in the impact analysis sections. The Section 106 summary provides an assessment of effect of the undertaking (implementation of the alternative), on historic properties, based on the Section 106 regulations cited above.

Definitions for impact intensity for archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections are provided in Table 16 below.

## **Natural Resources**

The natural resource impact topics analyzed in this document are *climate, soils and geologic resources, plant communities and vegetation, fish and wildlife, water quality, floodplains, wetlands, and soundscape*. Information about known resources was compiled and compared with the locations of proposed developments and other actions. The impact analysis was based on the knowledge and best professional judgment of planners and biologists; data from park records; and studies of similar actions and effects, when applicable. The planning team qualitatively evaluated the intensities of effects on all the natural resource impact topics.

Definitions of impact intensity as regards climate, soils/geologic resources, plant communities/vegetation, fish and wildlife, water quality, floodplains, wetlands, and soundscape are set forth in Table 16.

## **Visitor Use and Experience**

This impact analysis considers various aspects of visitor use and experience at Fort Matanzas National Monument, including the effects on: the range of recreational opportunities; opportunities for solitude and getting in touch with nature; visitor access including access for visitors with disabilities; opportunities for orientation, education, and interpretation; and visitor safety. The analysis is primarily qualitative rather than

quantitative due to the conceptual nature of the alternatives.

Impacts on visitor use and experience were determined considering the best available information regarding visitor use and experience. Information on visitor use and visitor opinions was taken from data in park files. This information was supplemented by data gathered during the planning process for this management plan, including opinions from National Monument visitors and neighbors and information provided by National Monument staff. Definitions of impact intensity as regards visitor use and experience are set forth in Table 16

## **Socioeconomic Environment**

Fort Matanzas National Monument primarily operates within the local social and economic environment of St. Augustine and the surrounding communities and regionally within St. Johns County and the surrounding counties (Clay, Flagler, and Putnam). As a result, actions proposed in the alternatives could have a direct effect on some parts of the social and economic environment of the region. In the socioeconomic analysis, the duration of effects is considered to be either short-term (lasting less than one year), or long-term (lasting more than one year). Long-term effects could be considered as a permanent change in conditions. Definition of impact intensity as regards the socioeconomic environment is set forth in Table 16.

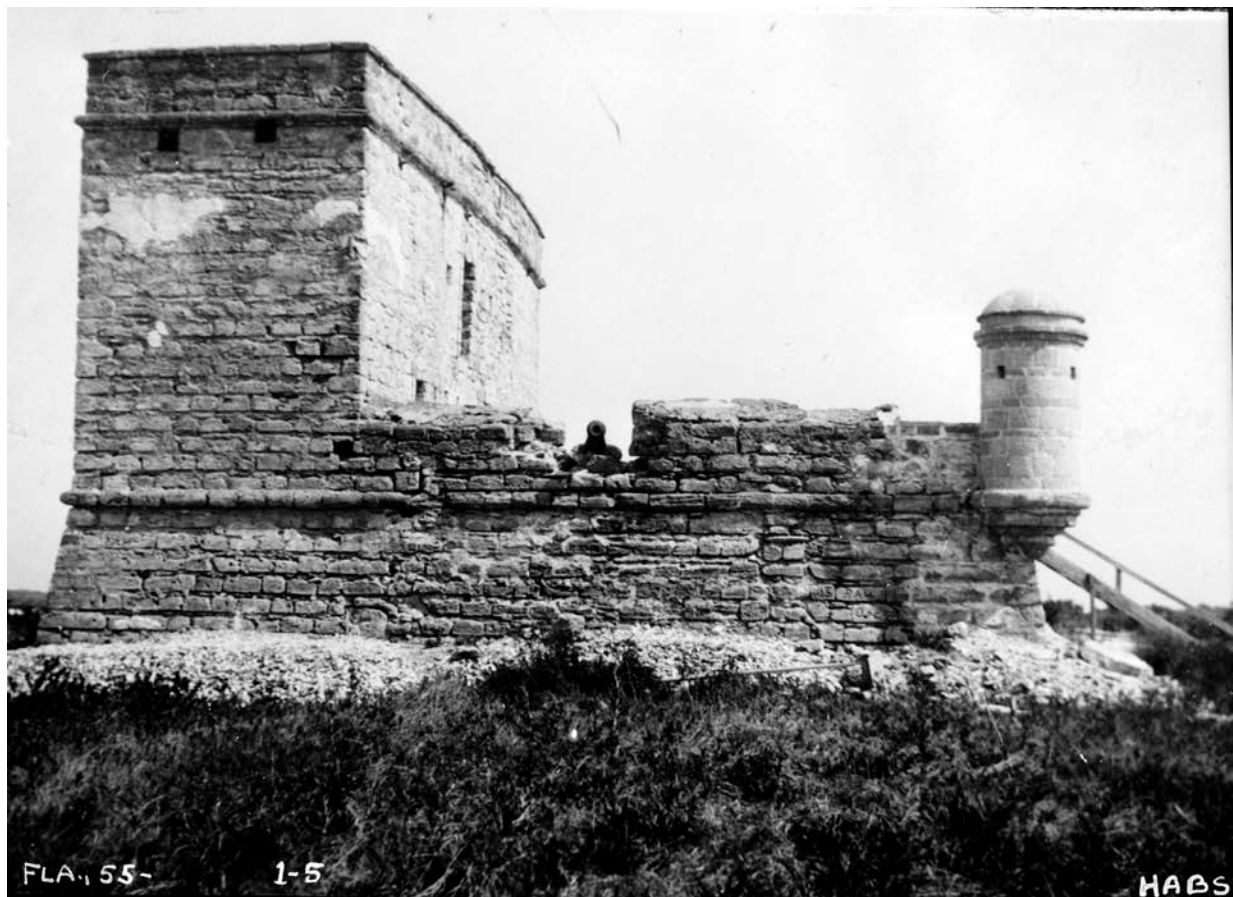
## **Transportation**

None of the alternatives addressed in this GMP would change transportation patterns on park roads to any significant degree. However, the continuation of a ban on beach driving as with Alternatives A and B could contribute to congestion in off-beach parking lots, illegal parking, and generally a strain on circulation within the park. Definition of impact intensity as regards transportation projects are set forth in Table 16.

## **NPS Operations and Management**

The impacts of the alternatives on park operations and facilities were determined by examining the

1 effects and changes on staffing, infrastructure,  
2 visitor facilities, and services.  
3  
4 Definition of impact intensity as regards NPS  
5 operations and management are set forth in Table  
6 16.  
7



**Fort Matanzas – West Face – 1934 Historic American Buildings Survey Photo**

**TABLE 16: IMPACT THRESHOLD DEFINITIONS**

Impact Topic	Negligible	Minor	Moderate	Major
<b>CULTURAL RESOURCES</b>				
<b>Archeological Resources</b>	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The Section 106 determination would be <i>no adverse effect</i> .	The effect is measurable or perceptible, but it is slight and affects a limited area of a site or group of sites. Slight alteration(s) to any of the characteristics that qualify the site(s) for inclusion in the National Register may diminish the integrity of the site(s). For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect is measurable and perceptible. The effect changes one or more of the characteristics that qualify the site(s) for inclusion in the National Register and diminishes the integrity of the site(s), but does not jeopardize the National Register eligibility of the site(s). For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect on the archeological site or group of sites is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the site(s) for inclusion in the National Register, diminishing the integrity of the site(s) to such an extent that it is no longer eligible for listing in the National Register. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .
<b>Museum Collections</b>	The effect would be at the lowest levels of detection, barely perceptible, with no measurable consequences, either adverse or beneficial, to the collections. The Section 106 determination would be <i>no adverse effect</i> .	The effect is measurable or perceptible, but it is slight and affects the integrity of a few items in the museum collection, but would not degrade the usefulness of the collection for future research and interpretation. Slight alteration to any of the characteristics of the collection that qualify its related resource for inclusion in the National Register may diminish the integrity of the resource and its related collection. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect is measurable and perceptible, and would affect the integrity of many items in the collection and diminish the usefulness of the collection for future research and interpretation. The effect changes one or more of the characteristics of the collection that qualify its related resource for inclusion in the National Register and diminishes the integrity of the resource and its related collection, but does not jeopardize the National Register eligibility of the resource related to the collection. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect on the collection is substantial, noticeable, and permanent, and would affect the integrity of most items in the collection and destroy the usefulness of the collection for future research and interpretation. The action severely changes one or more characteristics of the collection that qualify its related resource for inclusion in the National Register, diminishing the integrity of the resource and its related collection to such an extent that the resource is no longer eligible for listing in the National Register. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .
<b>Historic Structures</b>	The effect would be at the lowest levels of	The effect is measurable or	The effect is measurable and	The effect on the structure or group of

Impact Topic	Negligible	Minor	Moderate	Major
	detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The Section 106 determination would be <i>no adverse effect</i> .	perceptible, but it is slight and affects a limited area of a structure or group of structures. Slight alteration(s) to any of the characteristics that qualify the structure(s) for inclusion in the National Register may diminish the integrity of the structure(s). For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	perceptible. The effect changes one or more of the characteristics that qualify the structure(s) for inclusion in the National Register and diminishes the integrity of the structure(s), but does not jeopardize the National Register eligibility of the structure(s). For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	structures is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the structure(s) for inclusion in the National Register, diminishing the integrity of the structure(s) to such an extent that it is no longer eligible for listing in the national Register. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .
<b>Cultural Landscapes</b>	The effect would be at the lowest levels of detection, barely measurable, with no perceptible consequences, either adverse or beneficial, to the resources. The Section 106 determination would be <i>no adverse effect</i> .	The effect is measurable or perceptible, but it is slight and affects a limited area of the landscape or few of its patterns or features. Slight alteration(s) to any of the characteristics that qualify the landscape for inclusion in the National Register may diminish the integrity of the landscape. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect on the patterns and features of the landscape is measurable and perceptible. The effect changes one or more of the characteristics that qualify the landscape for inclusion in the National Register and diminishes the integrity of the landscape, but does not jeopardize the landscape's National Register eligibility. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .	The effect on the cultural landscape, its patterns and features, is substantial, noticeable, and permanent. The action severely changes one or more characteristics that qualify the landscape for inclusion in the National Register, diminishing the landscape's integrity to such an extent that it is no longer eligible for listing in the national Register. For purposes of Section 106, the determination of effect would be <i>adverse effect</i> .
<b>NATURAL RESOURCES</b>				
<b>Geology and Soils</b>	The action would result in a change in soils or a geologic feature 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 and local. Soils or geologic resources might be slightly altered in a way that would be noticeable. There could be changes in a soil's profile in a relatively small area, but the change would not	The action would result in a clearly detectable change in soils or geologic processes – soils would be obviously altered, or a few features would show changes. There could be a loss or alteration of the topsoil in a small area, or the potential for erosion to remove small quantities of	The action would result in the permanent loss of an important soil or geologic resource or there would be highly noticeable, widespread changes in many soils or features. There would be a permanent loss or alteration of soils or geologic resources in a relatively large area, or there

Impact Topic	Negligible	Minor	Moderate	Major
		appreciably increase the potential for erosion.	additional soil would increase.	would be a strong likelihood for erosion to remove large quantities of additional soil as a result of the action.
<b>Plant Communities and Vegetation (including Exotic/Non-native Plants)</b>	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 park. 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 park 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.
<b>Fish and Wildlife</b>	The action might result in a change, 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 and have a local effect on population. This could include changes in the abundance or distribution of individual in a local area, but not changes that would affect the viability of local populations. Changes to local ecological processes would be minimal.	The action would result in a clearly detectable change in a population and could have an appreciable effect. This could include changes in the abundance or distribution of local populations, but not changes that would affect the viability of regional populations. Changes to local ecological processes would be of limited extent.	The action would be severely adverse to a population. The effects would be substantial and highly noticeable, and they could result in widespread change and be permanent. This could include changes in the abundance of or distribution of a local or regional population to the extent that the population would not be likely to recover. Important ecological processes would be altered, and "landscape-level" (regional) changes would be expected.



Impact Topic	Negligible	Minor	Moderate	Major
<b>Water Quality</b>	The action would have no measurable or detectable effect on water quality or the timing and intensity of flows.	The action would have measurable effects on water quality or the timing or intensity of flows. Water quality effects could include increased or decreased loads of sediment, debris, chemical or toxic substances, or pathogenic organisms.	The action would have clearly detectable effects on water quality or the timing or intensity of surface water flows and potentially would affect organisms or natural ecological processes. The impact would be visible to visitors.	The action would have substantial effects on water quality or the timing or intensity of surface water flows and potentially would affect organisms or natural ecological processes. The impact would be easily visible to visitors.
<b>Floodplains</b>	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.	Actions within the regulatory floodplain would interfere with or enhance river 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.
<b>Wetlands</b>	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 storm water 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, but permanent, loss or gain in wetland acreage.	The action would result in a measurable change in all three parameters (size, integrity, and continuity) or a permanent loss of large wetland areas. The impact would be substantial and highly noticeable.
<b>VISITOR USE AND EXPERIENCE</b>				
<b>Visitation of Historic Sites / Recreational Activities</b>	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.	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.	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	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

Impact Topic	Negligible	Minor	Moderate	Major
			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.	implementation of the alternative and would likely express a strong opinion about the change. Visitor satisfaction would markedly decline or increase.
<b>SOCIOECONOMIC ENVIRONMENT</b>				
<b>Local Economy</b>	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.  Effects identified as neutral would be actions that do not produce any changes at all to the social and economic environment.	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.	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.	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.
<b>NPS OPERATIONS AND MANAGEMENT</b>				
<b>NPS Operations and Management</b>	The effect would be at or below the level of detection, and would not have an appreciable effect on park operations and management.	The effects would be detectable, but would be of a magnitude that would not have an appreciable effect on park operations and management.	The effects would result in a change in park 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 park operations and management in a manner readily apparent to staff and the public.
<b>Transportation</b>	The impact on transportation patterns would be barely perceptible, not measurable.	The impact on transportation patterns would be perceptible and measurable.	The impact on transportation patterns would be clearly detectable and could have an appreciable effect.	The impact on transportation patterns would have a substantial, highly noticeable influence on a regional scale.

## CUMULATIVE IMPACT ANALYSIS

A cumulative impact is described in the Council on Environmental Quality's regulation 1508.7 as follows:

*Cumulative impacts* are incremental impacts of the action when added to other past, present, and reasonably foreseeable future 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 a period of time.

To determine potential cumulative impacts, other projects within and surrounding Fort Matanzas National Monument were identified. Fort Matanzas is located in St. John's County, 14 miles south of the city of St. Augustine on the northeast Atlantic coast of Florida. It encompasses a total of 313 acres divided between the tip of Anastasia Island (138 acres) and the northern third of Rattlesnake Island (175 acres). Both Anastasia and Rattlesnake Islands are barrier islands that are separated from the Florida mainland. The

Matanzas River passes between the two islands and the Intracoastal Waterway (ICW) is located west of Rattlesnake Island. Fort Matanzas is located on Rattlesnake Island. This entire area is included in the project area of consideration for cumulative impacts. Projects were identified via discussions with park staff and representatives of county and city governments. Potential projects identified as cumulative actions included any past activities and any planning or development activity that was currently being implemented, or that would be implemented in the reasonably foreseeable future.

These past, current, and reasonably foreseeable actions are evaluated in conjunction with the impacts of each alternative to determine if they have any cumulative effects on a particular natural, cultural, or socioeconomic resource or visitor use. The qualitative evaluation of cumulative impacts was based on a general description of the project.

### **Past, Current, and Foreseeable Actions That Could Contribute to Cumulative Effects**

#### ***Actions and Projects inside Fort Matanzas National Monument.***

Exotic plant management program – The park does not currently have an exotic plant management plan, but does treat exotic plants as needed within the park.

River and Ocean Parking Lot Expansion – To help with traffic flow and to add additional spaces for handicap parking, the park redesigned and expanded existing parking lots within the existing footprints. There was some vegetation disturbance and loss; however, the cabbage palm trees were transplanted within the park.

Shoreline Stabilization and Boat Dock Replacement - The NPS replaced the Rattlesnake Island dock, stabilized and extended the current coquina seawall and bulkhead, and restored the transverse dikes on Anastasia Island to their original condition at Fort Matanzas.

Previous ORV use – Until January of 2010, the park allowed the use of ORV's on the beach. This recreational use was discontinued due to the

acknowledgement that the park did not have the authority to allow this use and that driving off of established park roads and parking lots is in violation of existing legal authorities, Presidential Executive Orders, Regulations, and NPS policy.

The NPS Inventory & Monitoring (I&M) program for the Southeast Coastal Network - The I&M program has a list of projects that they are working on for data collection at Fort Matanzas, including collecting data on coastal shoreline change, collecting data on salt marsh accretion or subsidence, collecting data on trends in plant communities, and analyze data to determine the status and trends of groundwater levels in existing groundwater wells and identify potential relationships between changes in groundwater dynamics and changes in landscape dynamics for the park.

The State of Florida is conducting vegetation classification and mapping of the park.

The University of North Florida is conducting research into the dispersion of invasive green mussels, *Perna viridis* and is using the river system around the park as a model for comparing the effects of nutrient loads for estuaries.

#### ***Actions and Projects outside Fort Matanzas National Monument.***

It can be anticipated that Fort Matanzas National Monument will continue to be affected by regional population growth, with attendant impacts from increased visitation, continued development of adjacent lands, increased storm water runoff, increased upstream discharges of air and water pollutants, and the like. Public access to the beach is a growing problem in the area with the increase in condominiums; the public access areas have been diminished. In addition, the following sites and projects outside of the monument could contribute to cumulative impacts:

Guana Tolomato Matanzas National Estuarine Research Reserve (GTMNERR) The GTMNERR is a federal/state partnership between the National Oceanic and Atmospheric Administration (NOAA) and the Florida Department of Environmental Protection designated in 1999. The reserve encompasses approximately 60,000

1 acres of salt marsh and mangrove tidal wetlands,  
2 oyster bars, estuarine lagoons, upland habitat and  
3 offshore seas in St. Johns and Flagler  
4 Counties. The NERR is a federal program to  
5 facilitate natural and cultural resource protection  
6 through long-term ecological research,  
7 environmental monitoring, environmental  
8 education, and resource stewardship.  
9  
10 Fort Mose Historic State Park - Fort Mose is the  
11 earliest known free African American settlement  
12 in the United States, and one of Florida's most  
13 notable African American heritage sites. A part of  
14 Anastasia State Park, the 34-acre Fort Mose was  
15 designated a National Historic Landmark in 1994.  
16 Fort Mose was originally established as a part of  
17 the northern defense line for the Spanish colonial  
18 town of St. Augustine.  
19  
20 Anastasia State Park - Anastasia State Park,  
21 located just south of historic St. Augustine on  
22 Anastasia Island, has 4 miles of pristine beach, a  
23 tidal salt marsh, and maritime and upland  
24 hammock. The park provides camping, nature  
25 trails, beach, water sports, and an archeological  
26 site where coquina rock was mined to create the  
27 nearby fortress, Castillo de San Marcos National  
28 Monument.  
29  
30 Visitor Center for Castillo de San Marcos - The  
31 proposed project site is located adjacent to state-  
32 owned historic properties that interpret the  
33 civilian life of St. Augustine during the Spanish  
34 Colonial period. The proposed visitor center is  
35 envisioned to orient visitors to the Castillo and  
36 forge a closer link between the military and  
37 civilian interpretive stories. The funding source  
38 for construction has yet to be determined.  
39  
40 Southeast Intracoastal Waterway Park – This park  
41 contains 114 acres and is located between  
42 Crescent Beach and Marineland on Anastasia  
43 Island. State Route A1A defines the eastern  
44 boundary of the site, and the Matanzas River  
45 defines the western boundary of the site. This is a  
46 new park, therefore some activities are ongoing  
47 and some are proposed for future use and  
48 development. The site amenities existing and  
49 planned include nature trails, boardwalks, scenic  
50 views of the Matanzas River and tributaries,  
51 scenic outlooks and interpretive displays. Specific  
52 projects implemented and planned include the  
53 addition of facilities such as hiking trails, nature

54 interpretation, picnicking, fishing,  
55 restrooms/visitor center, entrance road/parking,  
56 security, historic restoration and a playground.  
57  
58 Matanzas State Forest – Matanzas State Forest is  
59 located in St. Johns County and was created from  
60 the Matanzas Marsh Northeast Florida Blueway  
61 Florida Forever Project. The forest protects the  
62 last remaining undisturbed salt marsh within the  
63 GuanaTolomato-Matanzas National Estuarine  
64 Research Reserve. Using sound ecosystem  
65 science, the Division of Forestry manages for  
66 multiple uses of forest resources which include  
67 timber management, wildlife management, natural  
68 resource-based recreation, and ecological  
69 restoration.  
70  
71 City of St. Augustine – Beginning in 1959 Florida  
72 has had an ongoing preservation effort to restore  
73 many colonial structures to their original  
74 appearance. Much of the city center of St.  
75 Augustine has been preserved or restored and  
76 retains the distinctive plan of a 16th century  
77 Spanish Colonial walled town. There are  
78 numerous remaining colonial buildings in the  
79 historic district which represent architecture from  
80 1703 to 1898 (The Plaza de la Constitución,  
81 including the Government House, Trinity  
82 Episcopal Church (1825), and the Basilica  
83 Cathedral of St. Augustine). The City continues  
84 efforts to protect and restore its many cultural  
85 resources, including the rehabilitation of the  
86 National Register listed Bridge of Lions which  
87 connects the historic heart of St. Augustine to  
88 Anastasia Island over the Matanzas River.  
89  
90 Dredging near the Matanzas Inlet – Matanzas  
91 Inlet is a natural inlet that is strongly affected by a  
92 bridge abutment and revetment on the south  
93 shoreline, the dredging of the Intracoastal  
94 Waterway and stabilization of Rattlesnake Island.  
95 The Intracoastal Waterway, separated from the  
96 inlet by Rattlesnake Island, is dredged about every  
97 three years and the sand placed at Summer Haven,  
98 south of the inlet. (Source: Flagler-Volusia  
99 Beaches Florida Department of Environmental  
100 Protection, Bureau of Beaches and Coastal  
101 Systems, *Strategic Beach Management Plan for  
102 the Northeast Atlantic Coast Region*, May 2008  
103 Subregions: Sea Islands, St. Johns Beaches,  
104 Flagler-Volusia Beaches).  
105

1 St. Johns County Habitat Conservation Plan - In  
2 August 2006, St. Johns County received approval  
3 from the United States Fish and Wildlife Service  
4 (USFWS) for a 20 year Incidental Take Permit  
5 (ITP) and Habitat Conservation Plan (HCP) to  
6 minimize the negative impacts, resulting from  
7 beach driving, to the natural beach/dune  
8 environment and the protected species that depend  
9 on its health. The take of any federally listed  
10 species of plants or animals is prohibited under  
11 the Endangered Species Act (ESA) of 1973, as  
12 amended, unless specifically authorized through a  
13 section 10 Incidental Take Permit (ITP). The ESA  
14 defines the term take as an action “to harass,  
15 harm, pursue, hunt, shoot, wound, kill, trap,  
16 capture, or collect, or to attempt to engage in any  
17 such conduct” (ESA section 3(18)). Harassment  
18 includes the disruption of normal behavioral  
19 patterns, like breeding, feeding, and sheltering (50  
20 CFR 222.102). Harming includes habitat  
21 modification or degradation (50 CFR 17.3). Thus,  
22 both direct and indirect impacts can constitute a  
23 take under the ESA.

24  
25 St. Johns County applied to the U.S. Fish and  
26 Wildlife Service (USFWS) for a 20-year section  
27 10 ITP that has authorized the incidental take of  
28 Anastasia Island beach mice and five species of  
29 sea turtles causally related to public vehicular  
30 beach access initiated under the County’s  
31 authorization. The Habitat Conservation Plan  
32 (HCP) is a mandatory element of the County’s  
33 ITP application. The HCP outlines programs and  
34 policies to allow for limited public beach driving  
35 to continue in a manner and extent that is  
36 compatible with protected species conservation  
37 within the HCP Plan Area. The HCP Plan Area  
38 includes all beaches along St. Johns County  
39 between the Duval County Line on the north and  
40 the Flagler County Line on the south, except for  
41 those beaches fronting Fort Matanzas National  
42 Monument. (Source: *Habitat Conservation Plan,*  
43 *a Plan for the Protection of Sea Turtles and*  
44 *Anastasia Island Beach Mice on the Beaches of*  
45 *St. Johns County, Florida*, Prepared for the U.S.  
46 Fish and Wildlife Service by St. Johns County  
47 Planning Division, St. Augustine Florida, August  
48 18, 2003).

49  
50 Beach Driving in St. Johns County – The history  
51 of driving on the public beaches of Florida and St.  
52 Johns County is summarized in Appendix F.  
53 Currently there are about 14 miles of beach in St.

54 Johns County on which motorized vehicular  
55 driving is allowed. Beach gates are closed from  
56 7:30 pm to 8:00 am during sea turtle nesting  
57 season May 1 through October 31. Vehicles must  
58 be cleared from beaches to avoid receiving a  
59 citation. There is a fee to park on beaches from  
60 March 1 through Labor Day. A special permit is  
61 required from St. Johns County Beach Services  
62 for 4X4 vehicle access. The beaches where  
63 driving is allowed include 9 miles of continuous  
64 beach from the A Street vehicle access point in St.  
65 Augustine Beach south to the Matanzas Ramp and  
66 parking area at the northern boundary of Fort  
67 Matanzas National Monument. It also includes  
68 the Porpoise Point area of Vilano Beach. Beach  
69 driving for 4X4 vehicles with permits is allowed  
70 from the Vilano Road Walkover at the north end  
71 of the Porpoise Point area for about 4.3 miles to a  
72 point about 1 mile north of the Usina Ramp  
73 Vehicle Access point. Driving on the beach south  
74 of the Matanzas Ramp within the boundary of the  
75 National Monument was banned effective January  
76 1, 2010 to bring the park into compliance with  
77 Presidential Executive Orders and Federal Law  
78 that had been in effect for many years. The ban  
79 affects approximately one mile of beach on the  
80 southern-most tip of Anastasia Island. (Source of  
81 beach driving access information: St. Johns  
82 County Department of Recreation & Parks Beach  
83 Access Map  
84 ([http://www.sjcfcl.us/BCC/Land\\_Management/GIS/](http://www.sjcfcl.us/BCC/Land_Management/GIS/Map_Mart/index.aspx#anchBeachAccessAll)  
85 [Map\\_Mart/index.aspx#anchBeachAccessAll](http://www.sjcfcl.us/BCC/Land_Management/GIS/Map_Mart/index.aspx#anchBeachAccessAll) )  
86 Accessed 1-27-11.

## 87 **Comparison of Alternatives**

88  
89  
90 Once impacts are identified, each alternative is  
91 compared to a baseline, represented by future  
92 conditions that would occur under the no-  
93 action/continue current management alternative  
94 (Alternative A). For the no-action alternative, the  
95 impact analysis compares future resource  
96 conditions in 2025 to existing conditions in 2010,  
97 assuming continuation of current management  
98 direction.

99  
100 The impact analysis for the action alternatives  
101 (Alternatives B and C) compares the action  
102 alternatives in the year 2025 to the no-action  
103 alternative in the year 2025. Said differently, the  
104 description of the impacts of the action alternatives  
105 sets forth the *difference between* implementing the  
106 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 take into consideration the impacts that would occur under the no-action alternative.

## **IMPACTS COMMON TO ALL ALTERNATIVES**

**Public Health and Safety.** There are inherent safety risks with park use such as crossing park roads, parking on road shoulders, activity-based hazards associated with recreational (trail use, etc.) and beach use (sunburn, sea life, sea conditions, etc.), which would continue under all alternatives as a minor, adverse effect. In addition, under all alternatives there would be improvements to parking and circulation of visitors which would alleviate some of the congestion in the park and result in a minor, beneficial effect to public safety.

## **IMPACTS OF IMPLEMENTING ALTERNATIVE A (No Action or Continue Current Management)**

### **Cultural Resources**

**Archeological Resources.** Under Alternative A, impacts on archeological resources could result from ongoing visitor activities such as hiking, picnicking, cycling, and exploring. Some parking lot expansion and redesign has already occurred. There would be limited expansion of off-beach parking at the Matanzas ramp to compensate for the loss of on-beach parking. Because this is part of the historic district that includes the visitor center and its parking area, there would be no construction or ground disturbance associated with this project. The number of spaces would be expanded by restriping or other design changes within the existing footprint. Therefore there would be no impact to archeological resources as a result of this expansion. Previous archeological surveys of the park have been rather comprehensive and suggest that there is a low potential of finding additional sites on land, therefore, should the discovery of artifacts occur during construction, those impacts would be permanent, adverse, and of negligible to minor intensity. Archeological resources adjacent to or

easily accessible from roads or trails could be vulnerable to looting and vandalism. Continued ranger patrol and emphasis on visitor education would minimize adverse effects and any adverse effects would be anticipated to range in intensity from negligible to minor and would be permanent.

**Cumulative Impacts.** Ongoing park management and visitor use activities have resulted in relatively little disturbance of archeological resources in the monument. However, there have been a number of archeological investigations for park projects such as for sewer and power lines, fort stabilization, nearby middens, boardwalk construction, and inventory and monitoring, where archeological material was discovered and preserved. In 2004, the National Park Service constructed a climate-controlled storage building at the Timucuan Ecological and Historic Preserve in Jacksonville, Florida. This building provides significant protection to artifacts, including a sophisticated security and fire protection system, and a back-up generator. Although these items were disturbed due to park activities, the uncovering of artifacts provides invaluable information on the history of the area and the use of the collection facility preserves these items. Archeological finds have also occurred nearby at Anastasia State Park and the Guana Tolomato Matanzas National Estuarine Research Reserve, where rich history is preserved through research, education, and protection of those resources. When the permanent, negligible to minor adverse effects of implementing the actions contained in Alternative A are added to the minor effects of other past, present, and reasonably foreseeable actions as described above, there would be a permanent, negligible to minor, adverse cumulative impact on archeological resources. The actions contained in Alternative A would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative A, impacts on archeological resources would be permanent, negligible to minor, and adverse. Cumulative impacts would be permanent, minor, and adverse. The actions contained in Alternative A would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative A would have no adverse effect on archeological resources.

**Museum Collections.** Under Alternative A, museum collections would be co-located with the collections of other parks in a multi-park facility located at Timucuan Ecological and Historic Preserve (TIMU) in Jacksonville, Florida, thereby eliminating their vulnerability to storm surge and wind damage. Impacts to museum collections would be permanent and beneficial.

**Cumulative Impacts.** In 2004, the National Park Service constructed a climate-controlled storage building at TIMU. This building provides significant protection to artifacts, including a sophisticated security and fire protection system, and a back-up generator.

**Conclusion.** Under Alternative A, impacts to museum collections would be permanent and beneficial. Cumulative impacts would be permanent, minor, and adverse. The actions contained in Alternative A would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative A would have no adverse effect on museum collections.

**Historic Structures.** Under Alternative A, impacts to historic structures would continue to occur due to aging of the historic fabric, normal wear and tear, and vandalism. Use of the New Deal era structure as a visitor center would continue. Impacts for the most part would be

permanent, adverse, and of negligible to minor intensity. Continued fort stabilization / cyclic maintenance activities would minimize damage to historic structures. Adverse effects would be anticipated to be short-term, and negligible to minor in intensity. No historic structures would be modified or removed under this alternative.

**Cumulative Impacts.** The continued preservation and restoration of structures within the neighboring parks and protected areas would provide a long-term beneficial effect to the historic resources. The development of some sites could result in damage to historic structures and resources; particularly if the development of the site was not performed in compliance with the Secretary of Interior's Standards; however the neighboring parks and protected areas would likely implement similar protection measures to avoid adverse effects to resources when possible. Previous impacts to historic resources from deterioration and existing and future effects from use would equate to minor to moderate effects for those areas that are now protected. Accordingly, when the short-term, negligible to minor, and adverse effects of implementing Alternative A are added to the minor to moderate adverse effects of other past, present, and reasonably foreseeable actions as described above, there would remain a long-term, minor to moderate adverse cumulative impact to historic structures. Alternative A would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative A, impacts to historic structures would be long-term, negligible to minor, and adverse, mostly due to normal wear and tear. Cumulative impacts would remain minor to moderate and adverse due to continued development in the local and regional area. The actions contained in Alternative A would constitute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National

Register and therefore concludes that implementation of Alternative A would have no adverse effect on historic structures.

**Cultural Landscapes.** To date no cultural landscape research has been completed at Fort Matanzas and no specific cultural landscapes have been identified or documented either on Rattlesnake Island or on Anastasia Island. The surrounding landscape of the visitor center (Anastasia Island) remains largely unchanged since its initial development in 1937. Both the HQ/VC and its designed setting continue to reflect the intentions of the original development plans and retain their original character and integrity to a high degree. Following the approval of the GMP, the park would actively pursue funding for a cultural landscape report to help define potential cultural landscapes and identify measures to preserve them.

**Cumulative Impacts.** Exotic plant removal through the park's exotic plant management program reduces the intrusion of non-native plants into the landscape. Projects where ground disturbance will occur may remove native and desirable species. The preparation of a cultural landscape report will provide the needed information and direction to the park to more actively manage the identified potential cultural landscape, particularly surrounding the visitor center and the Fort.

**Conclusion.** Under Alternative A, there would be long-term, beneficial, and minor impacts on the potential cultural landscape due to a gradual reduction in non-native vegetation. Cumulative impacts would be long-term, minor to moderate, beneficial and adverse. Alternative A would contribute a minor 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that

implementation of Alternative A would have no adverse effect on potential cultural landscapes.

## Natural Resources

**Geology and Soils.** Under Alternative A, geological, physiographical, and soil resources would continue be subject to current management practices and policies. Impacts to these resources would be due to soil erosion from existing roads and trails, shoreline erosion from ongoing boating activities in the river, soil compaction at trailheads and parking areas, and soil disturbance resulting from miscellaneous facility maintenance activities. Very few additional impacts to soils would result from clearing and construction for off-beach parking at the Matanzas ramp. Impacts to soils and geologic resources would be negligible to minor, local, short- and long-term, direct, and adverse.

**Cumulative Impacts.** 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 to major, adverse cumulative impact on soils. The actions contained in Alternative A would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative A, impacts to soils and geologic resources would be long-term, negligible to minor, adverse, and localized. There would be a long-term, moderate to major, adverse cumulative impact on soils and geologic resources. The actions contained in Alternative A would contribute a negligible increment to this cumulative impact.

**Plant Communities and Vegetation.** There are six major community types represented at the park: open beach, foredune, backdune, maritime forest, salt marsh, and disturbed areas. Vegetation resources would continue to be subject to current management practices and policies. Impacts would be due primarily to removal of dead, diseased, or hazardous trees, as well as fuel



removal in accordance with an approved fire management plan. Additional impacts would occur from the potential expansion of off-beach parking at the beach parking areas on the east and west sides of Highway A1A, unauthorized parking at various locations, and possible continued spread of non-native vegetation, as well as from trampling and other visitor use of existing facilities. Expansion of the number of spaces at the visitor center would be accomplished by restriping and redesign and therefore there would be no additional paving or other construction that would affect plant communities or vegetation. Collectively, impacts to plant communities and vegetation from implementing Alternative A would continue to be negligible to minor, adverse, long-term, and localized.

**Cumulative Impacts.** Regional growth and development is expected to result in an increase in the disturbance or destruction of plant communities and vegetation. The impact of these activities on vegetation and vegetative communities 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 to major, and adverse cumulative impact on plant communities and vegetation. The actions contained in Alternative A would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative A, impacts on plant communities and vegetation would be long-term, adverse, negligible to minor, and localized. There could be long-term, moderate to major, and adverse cumulative impacts to vegetation and plant communities in the surrounding region. The actions contained in Alternative A would contribute a negligible increment to this cumulative impact.

**Exotic/Non-native/Nuisance Plants.** Based on the 2004 study, *A Floristic Study of Fort Matanzas National Monument*, at the time there were 12 cultivated exotics and 46 introduced species of plants at the park. Five of those were listed as invasive exotics and four of those five (*Asparagus aethiopicus*, *Cinnamomum camphora*, *Nephrolepis cordifolia*, *Lantana camara*) are

ranked as Category I (invasive exotics altering native plant communities by displacing native species, changing community structures/ecological functions, or hybridizing with natives), and one, *Pteris vittata*, as Category II (invasive exotics increasing in abundance/frequency but not yet altered Florida plant communities to the extent shown by Category I). Exotic plants can have severe effects on the integrity of native systems and habitats. Visitors can be agents for seed dispersal, increasing the threat to native plant communities. Under Alternative A, impacts to park resources from the growth and spread of exotic/nonnative/nuisance plants would continue to occur. Some limited removal of Category I and II exotics would take place as funding became available, but large scale restoration would not be likely to take place in the near term. Non-native and nuisance vegetation would therefore continue to displace desirable native vegetation throughout the park, with corresponding impacts to natural processes and native wildlife. Impacts from exotic/nonnative/nuisance species would be long-term, adverse, and moderate.

**Cumulative Impacts.** Regional growth and development are expected to result in an increase in the conversion of natural lands to developed areas and thereby increase the amount of disturbed land available for colonization by exotic species. The impact of these activities on native plants and plant communities 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 to major, adverse cumulative impact on native natural processes resulting from the loss of vegetative cover and the spread of exotic and nuisance plants. The actions contained in Alternative A would contribute a very small increment to this cumulative impact.

**Conclusion.** Under Alternative A, impacts from exotic plants and nonnative/nuisance vegetation would be long-term, adverse, and moderate. There could be a long-term, moderate to major, adverse cumulative impacts on native natural processes. The actions contained in Alternative A would contribute a very small increment to this cumulative impact.

**Fish and Wildlife.** Under Alternative A, minor adverse impacts to fish and wildlife would continue to occur, primarily from disturbance to soils and vegetation caused by ongoing visitor use and NPS management and monitoring activities. Some vegetation management efforts, including hazardous vegetation removal and limited management of exotic and nuisance vegetation, would improve habitat by decreasing competition from exotic and nuisance plants and increasing the availability of desirable native plants as food sources. Impacts from these management activities would be beneficial. Construction of additional parking could disturb habitat for various species of reptiles and amphibians, however they would likely move to other locations at the start of disturbance. If habitat of protected species (Table 17) would be impacted by construction of parking areas, appropriate surveys would occur prior to construction. Overall, impacts on fish and wildlife from the continuation of current management (Alternative A) would be long-term, minor, and both beneficial and adverse.



**Anastasia Island Beach Mouse**

**Threatened and Endangered Species.** The Anastasia Island beach mouse is found primarily in the undeveloped dune systems of Anastasia Island. They show the greatest preference for open dunes sparsely vegetated with sea oats and other vegetation, of which Fort Matanzas contains 1.8 miles of continuous dune habitat. Least terns have formed one of the largest nesting colonies in Florida at Fort Matanzas. The colony is approximately seven acres in size, and extends from the toe of the dunes seaward in a relatively narrow hook shape to the inlet. There were approximately 500 least terns inhabiting the breeding grounds at Fort Matanzas in 2010. Piping plovers breed in northern latitudes; they are migratory and winter in southern climates, including Florida.



**Piping Plover**

**TABLE 17. FEDERALLY PROTECTED THREATENED AND ENDANGERED SPECIES**

Scientific Name	Common Name	Federal Status	Federal Agency with Jurisdiction
<b>Birds</b>			
<i>Charadrius melodus</i>	Piping plover	Threatened	USFWS
<i>Mycteria americana</i>	Wood stork	Endangered	USFWS
<b>Mammals</b>			
<i>Peromyscus polionotus phasma</i>	Anastasia Island Beach Mouse	Endangered	USFWS
<i>Trichechus manatus latirostris</i>	West Indian (Florida) Manatee	Endangered/Critical Habitat Designated	USFWS
<b>Reptiles</b>			
<i>Caretta caretta</i>	Loggerhead sea turtle	Threatened	USFWS/NMFS
<i>Drymarchon corais couperi</i>	Eastern Indigo snake	Threatened	USFWS
<i>Chelonia mydas</i>	Green sea turtle	Endangered	USFWS/NMFS
<i>Dermochelys coriacea</i>	Leatherback sea turtle	Endangered	USFWS/NMFS
<i>Lepidochelys kempii</i> turtle	Kemp's Ridley sea turtle	Endangered	USFWS/NMFS

1 At Fort Matanzas itself, two piping plovers were  
2 observed in 1991. In 2001, one bird was seen in  
3 the park. In 2010, six piping plovers were  
4 documented during wintertime shoreline surveys  
5 conducted with the Audubon Society. A  
6 contributing factor to the increase in piping  
7 plovers *could* be the cessation of beach driving on  
8 January 1, 2010; however, five to ten years of  
9 data will be required to establish more reliable  
10 conclusions in this regard. Shorebird surveys at  
11 Fort Matanzas documented at least 17 red knots  
12 (*Tringa canutus*) in 2008 and 13 red knots in  
13 2009. There have also been red knots observed in  
14 the park in 2010. The red knot is a Federal  
15 candidate for listing. The reddish egret forages on  
16 broad, barren sand or mud flats, usually in water  
17 less than six inches deep (Paul 1996).

18  
19 Fort Matanzas National Monument consists of  
20 portions of two coastal islands, and both islands  
21 contain estuarine habitat (approximately 100 acres  
22 total) along the Matanzas River. Reddish egrets  
23 have been documented in the park in the past, but  
24 there is no current data on their presence or  
25 absence, and thus no information on their  
26 distribution and/or abundance at Fort Matanzas.  
27 The estuarine habitat at Fort Matanzas could  
28 potentially be utilized by wood storks for feeding  
29 and breeding, which amounts to approximately  
30 100 acres. Wood storks have been documented in  
31 the park in the past, but there is no current data on  
32 their presence or absence, and thus no information  
33 on their distribution and/or abundance. There are  
34 no active nests in the park, but bald eagles are a  
35 relatively common sight at Fort Matanzas,  
36 especially along the Matanzas River. Wilson's

37 plovers have been documented feeding on the  
38 beach and nesting in the tern colony in small  
39 numbers.

40  
41 Fort Matanzas contains upwards of 150 acres of  
42 potential gopher tortoise habitat. At Fort  
43 Matanzas, gopher tortoises are a relatively  
44 common site throughout the sand dune system.  
45 Eastern indigo snakes are found in dune  
46 meadows, and will sometimes co-opt a gopher  
47 tortoise burrow for their own use. Habitat  
48 destruction is primarily responsible for the decline  
49 of eastern indigo snake species throughout its  
50 range, although intentional killings and collection  
51 by people is not uncommon. It has been  
52 documented as being present at Fort Matanzas,  
53 but rarely seen.

54  
55 In 2007, Fort Matanzas had one documented  
56 green turtle nest within the park. Fort Matanzas  
57 documented the following numbers of loggerhead  
58 turtle nests in the park during the previous five  
59 years: 2006-2 nests, 2007-2 nests, 2008-2 nests,  
60 2009-0 nests, and 2010-4 nests. No Kemp's  
61 Ridley sea turtle nests have ever been recorded in  
62 St. Johns County or Fort Matanzas. Fort Matanzas  
63 contains at least 50 acres of foredunes dominated  
64 by sea oat grasses.

65  
66 The Endangered Species Act of 1973 prohibits  
67 harming any species listed by the U.S. Fish and  
68 Wildlife Service as being either threatened or  
69 endangered. Harming such species includes not  
70 only directly injuring or killing them, but also  
71 disrupting the habitat on which they depend.  
72 Section 7 of the act also requires federal agencies

1 to consult with the U.S. Fish and Wildlife Service  
2 when any activity permitted, funded, or conducted  
3 by that agency may affect a listed species or  
4 designated critical habitat or is likely to  
5 jeopardize proposed species or adversely modify  
6 proposed critical habitat.

8 Some of the impacts to threatened and endangered  
9 species from Alternative A (the no-action or no-  
10 change from current management alternative)  
11 would be related to ongoing monitoring,  
12 treatment, and removal of exotic and invasive  
13 species. Exotic and invasive species can displace  
14 native species and alter the local ecology. When  
15 invasive exotic plant species dominate an area, the  
16 populations of native animals, particularly  
17 sensitive threatened and endangered species can  
18 decline. Therefore, the impacts of treatment and  
19 removal of exotic and invasive species would be  
20 primarily beneficial.

22 This section, along with the impacts analysis for  
23 the preferred alternative in Chapter 4 of this plan,  
24 fulfills the NPS's obligation under Section 7 to  
25 document federally listed species and impacts of  
26 the preferred alternative on these species via an  
27 embedded Biological Assessment. The U. S. Fish  
28 and Wildlife Service Office in Jacksonville,  
29 Florida, the NPS has concurred with this finding  
30 in a letter dated August 31, 2012 that is  
31 reproduced at the end of Chapter 5 of this Final  
32 GMP/EIS.

34 The park has implemented Endangered Species  
35 Protection Protocols, such as night closure of the  
36 beach during sea turtle nesting season, daily  
37 surveys for sea turtle nests, a conservation zone  
38 for the protection of dune species (Anastasia  
39 Island beach mouse, eastern indigo snake), and  
40 regular patrols of the beach and dune system.  
41 These protocols provide necessary and adequate  
42 protection to the threatened and endangered  
43 species known to live and nest within the park.

45 **Cumulative Impacts.** The loss of natural areas  
46 and the increasing urbanization of the region have  
47 led to a loss of wildlife habitat. Continued  
48 urbanization will fragment remaining natural  
49 areas and increase the risks and threats to wildlife,  
50 including automobile collisions, exotic species,  
51 and pathogens. Rainwater runoff and industrial  
52 discharges from urban areas may lead to a  
53 deterioration of water quality, with corresponding

54 impacts on fish species. On the other hand, there  
55 are significant stands of protected lands in the  
56 area – Anastasia State Park, Guana Tolomato  
57 Matanzas National Estuarine Research Reserve,  
58 Fort Mose State Park, and Matanzas State Forest.  
59 These areas provide contiguous habitat and  
60 protection for wildlife. Overall, the effects of the  
61 activities described above would likely be long-  
62 term, moderate, and adverse on fish and wildlife  
63 in the region. When the likely effects of  
64 implementing the actions contained in Alternative  
65 A are added to the effects of other past, present,  
66 and reasonably foreseeable actions as described  
67 above, there would be a long-term, moderate,  
68 adverse cumulative impact on fish and wildlife.  
69 The actions contained in Alternative A would  
70 contribute a very small increment to this  
71 cumulative impact.

73 **Conclusion.** Under Alternative A, impacts on fish  
74 and wildlife from the continuation of current  
75 management would be long-term, minor, and both  
76 beneficial and adverse. Minor adverse impacts to  
77 soil, water quality, and vegetation would result in  
78 minor adverse effects on some fish and wildlife  
79 species. In contrast, the removal of exotics would  
80 result in minor beneficial effects on some wildlife  
81 species. This alternative would result in long-  
82 term, moderate, adverse cumulative impacts on  
83 fish and wildlife. The actions contained in  
84 Alternative A would contribute a very small  
85 increment to this cumulative impact.

87 **Water Quality.** The Matanzas River in the  
88 vicinity of Fort Matanzas is classified by the state  
89 as a Class II conditionally approved harvesting  
90 area. A conditionally approved area is defined as  
91 an area periodically closed to shellfish harvesting  
92 based on events that may increase pollution in the  
93 harvesting area, such as rainfall or increased river  
94 flow. Impacts would be due to sedimentation from  
95 existing roads and trails, as well as from oil and  
96 grease discharges at parking areas and road  
97 crossings over waterways. Additional impacts  
98 could occur from the use of herbicides to control  
99 nonnative vegetation and the expansion of the  
100 Highway A1A beach parking areas/impervious  
101 surfaces and associated runoff. Any expansion of  
102 the parking at the visitor center or the Matanzas  
103 ramp would be accomplished by restriping and  
104 reconfiguration within the existing footprints.  
105 Therefore there would be no impacts to water  
106 quality resulting from expansion of the number of

spaces associated with these two parking areas. To mitigate impacts from herbicide, NPS would use the appropriate class of herbicide for the vegetation setting in question, would strictly adhere to application directions, and would use appropriate best management practices. Alternative A would result in impacts to hydrology and water quality that are negligible to minor, long-term, indirect, and adverse.

**Cumulative Impacts.** 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. Inputs would derive both from point sources (e.g., sewer outfalls) and non-point sources (e.g., storm water runoff). The impact on water quality within the watershed is expected to be adverse, 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, negligible to 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.

## Floodplains

**Analysis.** Under Alternative A, existing structures in the 100-year floodplain would remain in place. Such structures include the historic fort, the visitor center, administrative structures, access roads and trails, visitor parking area, sidewalks and trails, etc. These structures would remain in place because they either constitute the resource that the monument was designated to protect, or they provide administrative or visitor services in the only practical locations available. Ground

disturbance would result in floodplain impacts because all of Fort Matanzas is in a 100-year floodplain with a wave velocity hazard zone extending from the beach on Anastasia Island to AIA and following around Matanzas Inlet. AIA was built as a levee, but is not able to protect park areas because the park is surrounded by water on two sides. The south end of Anastasia is more vulnerable to flooding than the north end. There would be little, if any, impact to floodplains from additional parking construction. Overall impacts to floodplain functions would be negligible to minor.

**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 the floodplain modification and structures in floodplains could be long-term, minor to major (depending on the location and the nature of the impact, and adverse. When the likely effects of implementing the actions contained in Alternative A are added to the effects of other past, present, and reasonably foreseeable actions as described above, there would be a long-term, minor to major, adverse cumulative impact on floodplains. The actions contained in Alternative A would contribute a very small increment to this cumulative impact.

**Conclusion.** Impacts to floodplain functions under Alternative A would be local, direct and indirect, negligible to minor, and adverse. Impacts to infrastructure in the event of flooding would be short- and long-term, moderate to major, and adverse.

## Wetlands

**Analysis.** No filling of wetlands or other reduction in wetland function or values would occur as a result of Alternative A. Accordingly, there would be no new impacts to wetlands under this Alternative. Impacts on wetlands would be attributed primarily to the retention and maintenance of existing facilities, such as roads, grades, and trails. Impacts would include those from past vegetation loss and alteration of soils,

1 which have resulted in permanent effects on  
2 wetland size and integrity that are long-term,  
3 minor, adverse, and localized. Indirect impacts,  
4 such as increased runoff and sedimentation, are  
5 and will continue to be long-term, minor, adverse,  
6 and localized. The NPS would continue to collect  
7 data on salt marsh accretion or subsiding and  
8 collecting trends in plant communities under the  
9 Inventory and Monitoring Program. In addition,  
10 the University of North Florida is studying  
11 nutrient loads in estuaries and has included the  
12 park boundary in the study. The information  
13 gained from studies such as these can be used in  
14 future park planning and protection of its  
15 resources. Collectively, impacts on wetlands  
16 under Alternative A would continue to be long-  
17 term, minor, adverse, beneficial, and localized.

18  
19 **Cumulative Impacts.** Some reduction in wetland  
20 function or values inside the park could take place  
21 as a result of development occurring outside of  
22 the park boundary. Short-term impacts on  
23 wetlands would be adverse, moderate, and  
24 localized; long-term residual impacts would be  
25 adverse, minor, and localized. Regional growth  
26 and development is expected to result in an  
27 increase in the conversion of natural lands to  
28 development and alter the hydrology of the  
29 general area. Changes in sheet flow and water  
30 quality would affect the size, integrity, and  
31 function of wetlands in the watershed. The impact  
32 of these activities on wetlands would be long-  
33 term, moderate to major, and adverse. The  
34 adverse impacts would be at least partially offset  
35 by wetlands mitigation required by permitting  
36 agencies. Overall, the effects of the projects  
37 discussed above would be adverse on wetlands.  
38 When the likely effects of implementing the  
39 actions contained in Alternative A are added to  
40 the effects of other past, present, and reasonably  
41 foreseeable actions as described above, there  
42 would be a long-term, minor to major, adverse  
43 cumulative impact on wetlands. The actions  
44 contained in Alternative A would not contribute  
45 any new impacts to this cumulative impact.

46  
47 **Conclusion.** Under Alternative A, past impacts on  
48 wetlands would continue and would be long-term,  
49 minor, adverse, and localized. There would be a  
50 long-term, minor to major, adverse cumulative  
51 impact on wetlands. The actions contained in  
52 Alternative A would not contribute any new  
53 impacts to this cumulative impact.

## 54 **Soundscape / Natural Sounds**

55  
56  
57 **Analysis.** Under Alternative A the park would  
58 continue to be managed as it is today, with no  
59 major change in management direction. The main  
60 focus would be to preserve and maintain the  
61 natural and cultural environment to the fullest  
62 extent possible according to applicable laws and  
63 policies, standards and guidelines. The park  
64 would strive to maintain an area for quiet,  
65 reflective experience on the west side of  
66 Anastasia Island and Rattlesnake Island and to  
67 allow enjoyment of the natural coastal beach  
68 environment on the east side of Highway A1A.

69  
70 Visitor and park management produced sounds  
71 would remain at current levels from programs  
72 presented just outside of the visitor center, the  
73 ferry, exploration of the park and particularly the  
74 fort on their own or via interpretive programs,  
75 nature programs and bird walks presented on the  
76 park trails and/or beach, and re-enactors  
77 portraying Spanish soldiers with occasional  
78 musket demonstrations. Other than limited  
79 construction for parking lot expansion, the overall  
80 level of human-related noise in all areas of Fort  
81 Matanzas would not change from existing levels  
82 as a result of implementing the no-action  
83 alternative. Consequently, no new impacts would  
84 be anticipated and current levels would remain at  
85 a long-term, minor, adverse impact to natural  
86 quiet throughout those areas of the park where a  
87 natural quiet experience is desired. Limited  
88 construction would add a temporary, minor  
89 adverse impact to the soundscape during the time  
90 and in the immediate area of construction.

91  
92 **Cumulative Impacts.** In general, the natural  
93 soundscape has been affected from activities on  
94 lands and waters adjacent to Fort Matanzas  
95 boundaries such as recreational boaters, tourists,  
96 vehicles, and other human-caused sounds in small  
97 cities. These continuous sources of sound are not  
98 likely to change significantly or decrease from the  
99 current levels and result in a moderate adverse  
100 effect to natural sounds in the area. This  
101 alternative would contribute limited additional  
102 sounds to other past, present and reasonably  
103 foreseeable project sounds, so there would be  
104 negligible additional cumulative impacts on the  
105 natural soundscape resulting from implementing  
106 this alternative.

**Conclusion.** Alternative A would have a continued long-term, minor effect on the natural soundscape.

## **Visitor Use and Experience**

**Analysis.** The no-action alternative would not change the current management of the park. Visitors would continue to have access to the historic fort and park staff would continue to offer a variety of interpretive programs. Opportunities for hiking, biking, and picnicking would continue to be available. Overall, access to historic resources and the availability of varied recreational opportunities would result in long-term, beneficial impacts to visitor use and experience. Beneficial impacts would result from increased interpretation of Fort Matanzas resources and utilization of the monument as a focal point for Anastasia Island. Current trails would remain with no further expansion. The space for orientation, interpretive programs, and displays would continue to be small and inadequate. Although park programs would continue, the conditions of the space would contribute a minor adverse effect to the visitor experience. The continued ban on the use of vehicles on the beach would be beneficial to those visitor's who desire a beach experience without the presence of vehicles. Park users who prefer to access the beach via their vehicle, including those who use their vehicle to transport fishing equipment, would consider the continued ban a moderate to major, adverse effect to their park experience.

**Cumulative Impacts.** Regional growth is expected to result in increased development in the vicinity of the monument. The use of vehicles on the beach is allowed just north of the park boundary, giving those that prefer the experience of having a vehicle on the beach an opportunity to do so. 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 park would be long-term, negligible to minor, and beneficial. The actions contained in the no-action alternative would not contribute an appreciable increment to this cumulative impact.

**Conclusion.** Under the no-action alternative, impacts on visitor use and experience would be long-term, major, adverse and long-term, major beneficial. The cumulative impact on visitor use and experience in the monument would be long-term, negligible to minor, and beneficial. The actions contained in the no-action alternative would not contribute an appreciable increment to this cumulative impact.

## **Socioeconomic Environment**

**Analysis.** Analysis of economic impacts under Alternative A was based on projected visitation to the monument 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 more or less as it is today, with some slight increase due to anticipated population growth in the local area. The no-action alternative assumes the current management of the prohibition of driving off of established park roads and parking lots in accord with existing legal authorities, Presidential Executive Orders, Regulations and NPS policy. The continued prohibition may attract those visitors desiring the experience of a natural coastal beach environment without the presence of vehicles; however those visitors that previously came to the park to enjoy recreation with the use of their vehicle on the beach may choose to seek other areas for recreation or use the beaches north of the park boundary where vehicles are allowed on the beach.

**Local Economy Employment.** Because no large projects or hiring opportunities would be created under Alternative A, St. Johns County would not realize any changes or the changes would be negligible to its employment levels. As a result, long-term impacts resulting from Alternative A would be localized, negligible, and neutral. Furthermore, because there would only be small new capital expenditures in the monument, short-term employment impacts would also remain negligible. Consequently, short-term impacts of Alternative A would be localized, negligible, and neutral.

**Housing.** Alternative A would entail hiring one additional staff member; therefore, demand for residential housing would be noticed at the lowest

1 levels. Short-term impacts resulting from  
2 Alternative A would be localized, negligible, and  
3 neutral.

4  
5 **Sales.** Total sales of goods and services in St.  
6 Johns County, as a result of visitor spending,  
7 would remain more or less unchanged under the  
8 no-action alternative. Although prior to January  
9 2010 allowance of ORV's on the beach may have  
10 contributed to visitation from fishermen who  
11 would expend funds in the area, the ban of ORV's  
12 appears to have developed an opportunity for  
13 those visitors who would like a beach experience  
14 without the presence of ORV's. The ban of  
15 ORV's from the beach has not removed the  
16 opportunity for beach driving, since beach driving  
17 is allowed immediately north of the park and can  
18 be accessed from the park's ramp. Because  
19 Alternative A does not increase or decrease sales  
20 revenue, long-term impacts would be localized,  
21 negligible, and neutral.

22  
23 **Cumulative Impacts.** The action area for  
24 evaluating cumulative impacts on the  
25 socioeconomic environment is St. Johns County.  
26 The implementation of Alternative A does not  
27 have a strong likelihood of attracting new visitors  
28 and locals to the monument. Relatively steady  
29 visitation would translate into more or less  
30 unchanged spending in the area, resulting in  
31 neutral impacts for St. Johns County in terms of  
32 employment, housing, and taxable annual sales.  
33 A surge in retirees in coming years is expected to  
34 increase populations near the coast with  
35 concomitant impacts on construction, health care,  
36 and related industries. Combining the likely  
37 effects of implementing the no-action alternative  
38 with the effects of other past, present, and  
39 reasonably foreseeable actions described above,  
40 the cumulative socioeconomic impacts would be  
41 localized, moderate, and beneficial. Alternative A  
42 would contribute a negligible increment to this  
43 cumulative impact.

44  
45 **Conclusion.** Because there would be negligible  
46 changes to visitor spending or construction  
47 activity within St. Johns County under Alternative  
48 A, long-term and short-term impacts on the  
49 socioeconomic environment would be localized,  
50 negligible, and neutral. As a result, county  
51 employment, housing, and sales would remain  
52 constant. In terms of cumulative impacts, long-  
53 term and short-term impacts would be localized,

54 moderate, and beneficial. Alternative A would  
55 contribute a negligible increment to this total  
56 cumulative effect.

57  
58 **Park Operations.** Alternative A would maintain  
59 the status quo with respect to park staff and  
60 facilities. Current staff levels are generally  
61 adequate to protect existing park resources and  
62 serve visitors. Thus, the no action alternative  
63 would result in minor, long-term, neutral impacts  
64 on NPS operations.

65  
66 **Cumulative Impacts.** Cooperation and  
67 coordination with neighboring agencies and  
68 entities regarding planning, land use, resources,  
69 and development proposals near the monument  
70 would continue to require varying amounts of  
71 staff time and result in minor to moderate, long-  
72 term, adverse impacts. Combined with other past,  
73 present, and reasonably foreseeable future  
74 impacts, the no action alternative would result in  
75 minor to moderate, long-term, neutral cumulative  
76 impacts on NPS operations.

77  
78 **Conclusion.** Operation of existing visitor and  
79 administrative facilities in the monument would  
80 result in continuing minor, long-term, neutral  
81 impacts on NPS operations. The cumulative  
82 impacts of the no-action alternative and other  
83 reasonably foreseeable future actions required of  
84 park staff would be minor to moderate, long-term,  
85 and neutral.

## 86 87 **Transportation**

88  
89 **Analysis.** Impacts to transportation would result  
90 from any minor construction of parking and  
91 rerouting of traffic, if necessary. The resulting  
92 extra parking spaces would be beneficial to traffic  
93 circulation; however, parking would likely  
94 continue to be an issue for the park without a  
95 significant increase in parking opportunities.  
96 Overall, effects would be negligible to minor,  
97 long-term, and adverse.

98  
99 **Cumulative Impacts.** Previous parking lot  
100 expansion has provided the opportunity for more  
101 parking since the absence of on-beach parking.  
102 Although vegetation was removed for the  
103 construction, the park was able to transplant some  
104 species. When added to the congestion of tourist  
105 traffic to and from St. Augustine, the additional



congestion at the park would add a long-term, negligible to minor adverse effect.

**Conclusion.** Although the direct effects of construction and rerouting of traffic for any additional parking spaces would be noticeable, the result of additional parking could alleviate some congestion at the park in the immediate area. The effects of Alternative A would be long-term, negligible to minor adverse and long-term beneficial. The cumulative impacts of Alternative A and other reasonably foreseeable future and past actions regarding transportation would be long-term, minor, and adverse.

### **Effects on Energy Requirements and Conservation Potential**

Under Alternative A, other than parking lot expansion, no new facilities would be developed, thereby eliminating any new energy requirements for facility construction. Public use of the monument would remain at about its current level. The fuel and energy consumed by visitors traveling to the monument would not be likely to increase because visitation is not likely to increase substantially. Energy would still be consumed to maintain existing facilities and for resource management of the monument.

### **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 monument, resulting from limited public use or NPS management activities.

### **Irretrievable or Irreversible Commitments of Resources**

Under Alternative A, the energy requirements identified above would not result in an irreversible commitment of resources. There would be no permanent effects on monument resources.

### **Relationship Between Local Short-Term Uses of the Environment and Maintenance or Enhancement of Long-Term Productivity**

In this alternative, most of the monument would be protected in a natural state and would maintain its long-term productivity. Only a small percentage of the monument would be maintained as developed areas.

### **IMPACTS OF IMPLEMENTING ALTERNATIVE B (NPS PREFERRED ALTERNATIVE)**

#### **Cultural Resources**

**Archeological Resources.** Impacts to archeological resources would be the same as under Alternative A. Although this alternative does not call for any changes in the management of archeological resources, ground disturbance from expansion of parking may increase the likelihood of encountering artifacts. Archeological surveys of the park have been rather comprehensive and suggest that there is a low potential of finding additional sites on land, but if the discovery of artifacts were to occur during construction, those impacts would be permanent, adverse, and of negligible to minor intensity.

**Cumulative Impacts.** Same as Alternative A. The actions contained in Alternative B would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative B, impacts on archeological resources would be permanent, negligible to minor, and adverse. Cumulative impacts would be permanent, minor, and adverse. The actions contained in Alternative B would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the

characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative B would have no adverse effect on archeological resources.

**Museum Collections.** Impacts to museum collections would be the same as under Alternative A. This alternative does not call for any changes in the management of museum collections. Museum collections would be co-located with the collections of other parks in a multi-park facility located at Timucuan Ecological and Historic Preserve, thereby eliminating their vulnerability to storm surge and wind damage. Impacts to museum collections would be permanent and beneficial.

**Cumulative Impacts.** Same as Alternative A. The actions contained in Alternative B would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative B, impacts to museum collections would be permanent and beneficial. Cumulative impacts would be permanent, minor, and adverse. The actions contained in Alternative B would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative B would have no adverse effect on museum collections.

**Historic Structures.** Fort stabilization work would continue. In addition, the park would explore additional adaptive reuse of the existing New Deal era visitor center while minimizing changes to the natural environment. Two buildings make up the HQ/VC: a multi-use building that serves as both the primary visitor contact point and a ranger residence, and a secondary utility building that now serves as a ranger office. Since their construction in 1936,

the two buildings have been in continual use and have undergone only modest alterations. Adaptive re-use of existing structures on the west side of SR A1A (Johnson House and New Deal era structures) would help the park in meeting the needs of increased visitation and increased local population, especially school-age population.

Impacts on historic structures due to adaptive reuse and fort stabilization would be long-term and beneficial. However, continued use of the structures would result in negligible to minor adverse impacts.

**Cumulative Impacts.** Same as Alternative A. The actions contained in Alternative B would constitute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative B, impacts to historic structures would be long-term, negligible to minor, and adverse, mostly due to normal wear and tear. Cumulative impacts would be moderate to major and adverse due to continued development in the local and regional area. The actions contained in Alternative B would constitute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative B would have no adverse effect on historic structures.

**Potential Cultural Landscapes.** The northern section of the Anastasia Island section of the National Monument, consisting of the visitor center, headquarters, park roads and driveways, parking areas, surrounding landscape, and the Matanzas Ramp (access road to the Atlantic Ocean beach) has not been designated a cultural landscape, however this potential cultural landscape remains largely unchanged since its initial development in 1937. Both the HQ/VC and its designed setting continue to reflect the

intentions of the original development plans and retain their original character and integrity to a high degree. Impacts would be local, long-term, direct and indirect, moderate to major, and beneficial. Periodic removal of non-native vegetation would continue to occur under this alternative through periodic employment of NPS exotic plant management teams. Impacts on the potential cultural landscape would be long-term and beneficial. No facility development is planned; the expansion of parking (2 spaces for buses) would not result in any adverse effects to the potential cultural landscape features because it would be accomplished by restriping the existing paved area only.

**Cumulative Impacts.** On balance impacts to the potential cultural landscape of the area surrounding the monument are long-term, minor to moderate, and both beneficial and adverse. When the long-term, moderate to major, and beneficial effects of implementing Alternative B are added to the minor to moderate effects of other past, present, and reasonably foreseeable actions as described above, there would be long-term, moderate, beneficial cumulative impacts to the potential cultural landscape. Alternative B would contribute a minor increment to this cumulative impact.

**Conclusion.** Under Alternative B, there would be long-term, beneficial, and minor to moderate impacts on the potential cultural landscape due to the removal of exotic vegetation and the maintenance of native vegetation surrounding the historic structures of the park. Cumulative impacts would be long-term, moderate, and beneficial. Alternative B would contribute a minor 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative B would have no adverse effect on potential cultural landscapes.

## Natural Resources

**Geology and Soils.** Impacts would include those from Alternative A along with additional impacts from additional parking expansion, an expansion of interpretive programs for natural resources, and low impact recreational opportunities. Impacts would result from the compaction of soils, the disturbance to soils as a result of construction, and erosion due to construction and continued use. Some of these impacts would be partially mitigated by use of best management practices during clearing; therefore impacts to soils and geologic resources as defined in this document would be local, short- and long-term (during construction versus continued use), direct, moderate, and adverse. In addition, the NPS Inventory & Monitoring program has begun the process of collecting data on coastal shoreline change. The information obtained through this program will provide data that the park can use for future decision-making. This would result in a beneficial effect to park resources.

**Cumulative Impacts.** 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 local, short- and long-term, direct, minor, and adverse 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 soils. The actions contained in Alternative B would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative B, impacts to soils and geologic resources would be localized, long-term, minor, and adverse. There would be a long-term, moderate to major, adverse cumulative impact on soils and geologic resources. The actions contained in Alternative B would contribute a negligible increment to this cumulative impact.

**Plant Communities and Vegetation.** There are six major community types represented at the park: open beach, foredune, backdune, maritime forest, salt marsh, and disturbed areas. Impacts

would include those from Alternative A (continue current management) due primarily to removal of dead, diseased, or hazardous trees, as well as fuel removal in accordance with an approved fire management plan. Additional impacts would occur from the expansion of off-beach parking at the beach parking lots on the east and west sides of Highway A1A, unauthorized parking at various locations, and possible continued spread of non-native vegetation, as well as from trampling and other visitor use of existing facilities. The parking areas at the visitor center and the Mantanzas ramp would only be expanded by restriping within the existing footprint and therefore there would be no adverse impacts on plant communities resulting from parking spaces expansion at those two areas. Collectively, impacts to plant communities and vegetation from implementing Alternative B would be negligible to minor, adverse, long-term, and localized. These impacts would be beneficial to the extent the removed vegetation consisted of non-native species. Overall impacts would be mitigated by new plantings outside the historic core of the park.

**Cumulative Impacts.** The closure of the Fort Matanzas National Monument Atlantic Ocean Beach to motorized vehicles on January 1, 2010 is expected to result in long-term beneficial impacts to dune vegetation. Regional growth and development is expected to result in an increase in the conversion of natural lands to developed areas and thereby increase the amount of disturbed land available for colonization by exotic species. The cumulative impact of these activities on native plants and plant communities is expected to be long-term, moderate to major, and adverse. The NPS Inventory & Monitoring program has begun the process of collecting data on trends in plant communities and the State of Florida is conducting vegetation classification and mapping of the park. The use of this information for future park planning would result in a beneficial effect to park resources.

When the local, short- and long-term, direct, minor, and adverse 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 native natural processes

resulting from the loss of vegetative cover and the spread of exotic plants. The actions contained in Alternative B would contribute a very small increment to this adverse cumulative impact, and could even offset it to a negligible degree to the extent it results in the removal of non-native vegetation.

**Conclusion.** Under Alternative B, impacts on plant communities and vegetation would be local, short- and long-term, direct, minor, and adverse. There could be long-term, moderate to major and adverse cumulative impacts to vegetation and plant communities in the surrounding region. The actions contained in Alternative B would contribute a very small increment to this cumulative impact.

**Exotic/Nonnative/Nuisance Plants.** Based on the 2004 study, *A Floristic Study of Fort Matanzas National Monument*, at the time there were 12 cultivated exotics and 46 introduced species of plants at the park. Five of those were listed as invasive exotics and four of those five (*Asparagus aethiopicus*, *Cinnamomum camphora*, *Nephrolepis cordifolia*, *Lantana camara*) are ranked as Category I (invasive exotics altering native plant communities by displacing native species, changing community structures/ecological functions, or hybridizing with natives), and one, *Pteris vittata*, as Category II (invasive exotics increasing in abundance/frequency but not yet altered Florida plant communities to the extent shown by Category I). Exotic plants can have severe effects on the integrity of native systems and habitats. Visitors can be agents for seed dispersal, increasing the threat to native plant communities. Under Alternative B, impacts to park resources from the growth and spread of exotic/nonnative/nuisance plants would continue to occur. Removal of Category I and II exotics would take place as funding became available, but large scale restoration would not be likely to take place in the near term. Impacts from exotic/nonnative/nuisance species would be the same as those described under Alternative A, long-term, adverse, and moderate.

**Cumulative Impacts.** Regional growth and development is expected to result in an increase in the conversion of natural lands to developed areas and thereby increase the amount of disturbed land

available for colonization by exotic and nuisance species. The impact of these activities on desirable native plants and plant communities is expected to be long-term, moderate to major, and adverse. When the long-term, moderate to major, and adverse 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 native natural processes resulting from the loss of vegetative cover and the spread of exotic plants.

**Conclusion.** Under Alternative B, impacts from exotic plants and nonnative/nuisance vegetation would be long-term, adverse, and moderate to major. There could be a long-term, moderate to major, adverse cumulative impacts on native natural processes. The actions contained in Alternative B would offset these cumulative adverse impacts to a negligible degree.

**Fish and Wildlife.** Impacts would include those from Alternative A (continue current management). However, this alternative could include larger areas of clearing for parking lot expansion of the two beach parking lots on the east and west sides of Highway A1A (excluding the visitor center parking lot and the Matanzas ramp parking area), therefore resultant impacts and disturbance to wildlife would be larger in context. Adverse impacts to fish and wildlife would result from increased siltation in adjacent waterways and loss of habitat due to removal of plant cover. Impacts to wildlife would be beneficial to the extent that removed vegetation consisted of invasive, non-native species. On balance, impacts to fish and wildlife would be local, short- and long-term, direct and indirect, minor, and both beneficial and adverse.

**Threatened and Endangered Species (See Table 17 for T&E Species List).** The impacts would be the same as those described under Alternative A, except there is a larger potential for habitat loss and fragmentation due to parking lot expansion and construction of the two beach parking areas on the east and west sides of Highway A1A (excluding the visitor center parking area and the Matanzas ramp parking area). The NPS will implement necessary mitigations and continue with current closures and

management for the protection of these species. The park has implemented Endangered Species Protection Protocols (see Chapter 3), such as night closure of the beach during sea turtle nesting season, daily surveys for sea turtle nests, closure for least tern nesting, a conservation zone for the protection of dune species (Anastasia Island Beach Mouse, Eastern Indigo Snake, Gopher Tortoise), and regular patrols of the beach and dune system. These protocols provide necessary and adequate protection to the threatened and endangered species known to live and nest within the park.

**Cumulative Impacts.** 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. Continued urbanization will fragment remaining natural areas and increase the risks and threats to wildlife, including automobile collisions, exotic species, and pathogens. Rainwater runoff and industrial discharges from urban areas may lead to a deterioration of water quality, with corresponding impacts on fish species. Overall, the effects of the activities described above would likely be long-term, moderate, and adverse on fish and wildlife in the region. The University of North Florida is conducting research into the dispersion of invasive Green Mussels, *Perna viridis*. The information obtained from this research could ultimately lead to the extirpation of the species from the park.

When the local, short- and long-term, direct, minor, and both beneficial and adverse 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 fish and wildlife. The actions contained in Alternative B would contribute a very small increment to this cumulative impact.

**Conclusion.** Under Alternative B, impacts on fish and wildlife would be local, short- and long-term, direct and indirect, minor, and both beneficial and adverse. Minor adverse impacts to soil, water quality, and vegetation would result in minor adverse effects on some fish and wildlife

species. In contrast, the removal of exotics would result in minor beneficial effects on some wildlife species. This alternative would result in long-term, moderate, adverse cumulative impacts on fish and wildlife. The actions contained in Alternative B would contribute a very small increment to this cumulative impact.

**Water Quality.** Impacts would include those from Alternative A (continue current management). Additional impacts could occur from the use of herbicides to control nonnative vegetation and the expansion of parking areas (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area) with impervious surfaces and associated runoff. To mitigate impacts from herbicide, NPS would use the appropriate class of herbicide for the vegetation setting in question, would strictly adhere to application directions, and would use appropriate best management practices. Alternative B would result in impacts to hydrology and water quality that are negligible to minor, long-term, indirect, and adverse. Overall, impacts to water quality would be local, short- and long-term, direct, minor, and adverse. These impacts would be partially mitigated by use of best management practices during clearing and site recovery.

**Cumulative Impacts.** 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. Inputs would derive both from point sources (e.g., sewer outfalls) and non-point sources (e.g., storm water runoff). The impact on water quality within the watershed is expected to be adverse, but the intensity is unknown. When the local, short- and long-term, direct, minor, and adverse 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 local, short- and long-term, direct, minor, and adverse. 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 adverse increment to this cumulative impact.

## Floodplains

**Analysis.** Impacts would be the same as those from Alternative A (continue current management). Paving for parking lot expansion (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area) would result in floodplain impacts because all of Fort Matanzas is in a 100-year floodplain with a wave velocity hazard zone extending from the beach on Anastasia Island to AIA and following around Matanzas Inlet. Depending on where additional parking construction would occur, the impacts to floodplains could be more or less. Overall, however impacts to floodplain functions would be negligible to minor.

**Cumulative Impacts.** Cumulative Impacts would be the same as under Alternative A. The actions contained in Alternative B would contribute a very small increment to this cumulative impact.

**Conclusion.** Impacts to floodplain functions under Alternative B would be local, direct and indirect, negligible to minor, and adverse. Impacts to infrastructure in the event of flooding would be short- and long-term, moderate to major, and adverse.

## Wetlands

**Analysis.** Impacts would be the same as those from Alternative A (continue current management). Collectively, impacts on wetlands under Alternative B would continue to be long-term, minor, adverse, beneficial, and localized.

**Cumulative Impacts.** Cumulative Impacts would be the same as under Alternative A.

**Conclusion.** Under Alternative B, past impacts on wetlands would continue and would be long-term, minor, adverse, and localized. There would be a long-term, minor to major, adverse cumulative impact on wetlands. The actions contained in Alternative B would not contribute any new impacts to this cumulative impact.

## **Soundscape / Natural Sounds**

**Analysis.** Alternative B would have the same effects on the natural sounds of the park as Alternative A with the emphasis on the preservation of the park's natural and cultural environment. Alternative B includes measures to increase interpretation of the natural environment and to encourage low-impact recreational activities. Alternative B would also include actions to adaptively reuse the existing visitor center, but minimizing changes to the natural environment.

The limited construction for parking lot expansion (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area), construction to adapt the visitor center, and potential increase in interpretive programs and recreational programs would contribute a minor and potential increase of human-related sounds to the natural and cultural environment of the park. However, the overall level of human-related noise in all areas of Fort Matanzas would not change appreciably from existing levels as a result of implementing Alternative B. Consequently, negligible impacts would be anticipated and current levels would remain at a long-term, minor, adverse impact to natural quiet throughout those areas of the park where a natural quiet experience is desired. Limited construction would add a temporary, adverse minor impact to the soundscape during the time and in the immediate area of construction.

**Cumulative Impacts.** Cumulative impacts would be the same as those discussed under Alternative A. The continuous sources of sound in the area are not likely to change significantly or decrease from the current levels and result in a moderate adverse effect to natural sounds in the area. This alternative would contribute limited additional sounds to other past, present and reasonably foreseeable project sounds, so there would be

negligible additional cumulative impacts on the natural soundscape resulting from implementing this alternative.

**Conclusion.** Alternative B would have a continued long-term, minor effect on the natural soundscape and a temporary, minor adverse effect to the soundscape during the time of construction of the expansion of the parking lots and construction within the visitor center.

## **Visitor Use and Experience**

**Analysis.** Impacts would generally be the same as Alternative A, except that implementation of Alternative B would remove vegetation to a greater extent for parking lot expansion. In addition, the park would explore adaptive reuse of the existing New Deal era visitor center, minimizing changes to the surrounding natural environment. No new recreational opportunities would be provided under this alternative. Overall, enhanced appreciation of the historic scene and continued availability of varied recreational opportunities would result in long-term, moderate, beneficial impacts to visitor use and experience.

**Cumulative Effects.** Regional growth is expected to result in increased development in the vicinity of the monument. The use of vehicles on the beach is allowed just north of the park boundary, giving those that prefer the experience of having a vehicle on the beach an opportunity to do so. Combining the long-term, moderate, beneficial effects of implementing Alternative B with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative impact on visitor use and experience in the park would be long-term, moderate, and beneficial. The actions contained in Alternative B would contribute substantially to this cumulative impact.

**Conclusion.** Impacts to visitor use and experience would stem primarily from the creation of expanded parking and the adaptive reuse of the visitor center and would be local, short- and long-term, moderate, and both beneficial and adverse, depending on a given visitor's individual preferences.

## **Socioeconomic Environment**

**Analysis.** Under Alternative B, visitation is unlikely to increase to any appreciable degree over current levels, but may increase some due to population growth. Impacts to the local economy from increased visitation-related spending would be long-term, direct and indirect, negligible, and beneficial.

**Local Economy Employment.** Three permanent jobs would be created under Alternative B for law enforcement, interpretation, and maintenance needs. As a result, St. Johns County would realize very minor measurable long-term changes to its employment levels and long-term impacts resulting from Alternative B would be localized, negligible to minor, and beneficial. In addition, there may be a realization of short-term hiring due to the expansion of the parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area) and the reuse of the visitor center; however, any impact would be negligible to minor. Short-term impacts of Alternative B would be localized, negligible to minor, and beneficial.

**Housing.** Because Alternative B would entail hiring additional permanent staff, demand for residential housing would likely increase subject to the new employees relocation. Short-term impacts resulting from Alternative B would be localized and beneficial.

**Sales.** Under Alternative B, total sales of goods and services in St. Johns County, as a result of visitor spending, would likely increase a small amount over the life of this plan. Because Alternative B would result in only a small increase in sales revenue, long-term impacts would be localized, negligible, and beneficial.

**Cumulative Impacts.** The action area for evaluating cumulative impacts on the socioeconomic environment is St. Johns County. The implementation of Alternative B does not have a strong likelihood of attracting significant numbers of new visitors and locals to the monument. Relatively steady to slightly increased visitation would translate into slightly increased spending in the area, resulting in negligible beneficial impacts for St. Johns County in terms of employment, housing, and taxable annual sales. Combining the likely effects of

implementing Alternative B with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative socioeconomic impacts would be localized, moderate, and beneficial. Alternative B would contribute a negligible increment to this cumulative impact.

**Conclusion.** Because there would be only slight increases to visitor spending or park expenditures within St. Johns County 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 would not be measurably affected. In terms of cumulative impacts, long-term and short-term impacts would be localized, moderate, and beneficial. Alternative B would contribute a negligible increment to this total cumulative effect.

## Park Operations

**Analysis.** The impacts of Alternative B to park operations would include those of Alternative A. No addition of permanent staff is necessary to implement Alternative B. Thus, Alternative B would result in minor, long-term, neutral impacts on NPS operations.

**Cumulative Impacts.** Same as Alternative A.

**Conclusion.** Operation of existing and projected visitor and administrative facilities in the monument would result in minor, long-term, neutral impacts on NPS operations. The cumulative impacts of Alternative B and other reasonably foreseeable future actions required of park staff would be minor to moderate, long-term, and neutral.

## Transportation

**Analysis.** The impacts would be essentially the same as Alternative A; however, the effect would likely be diminished if more extensive parking is accomplished through this alternative. The increase in parking would be beneficial to overall circulation through the park and to and from the beach. Effects would be minor, long-term, and beneficial.



**Cumulative Impacts.** Recent (2009) parking lot expansion has provided some mitigation for on-beach parking which was discontinued within the boundaries of Fort Matanzas National Monument in January 2010. Although vegetation was removed for the construction, the park was able to transplant some species. When added to the congestion of tourist traffic to and from St. Augustine, the additional congestion at the park would add a long-term, negligible to minor adverse effect.

**Conclusion.** The loss of on-beach parking that existed prior to January 2010 plus the crowded conditions of existing parking lots on the east and west sides of Highway A1A would be partially mitigated through the expansion of off-beach parking (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area). Although the direct effects of construction would be noticeable, the result of additional parking would alleviate some congestion at the park. The effects of Alternative B would be long-term, minor, and beneficial. The cumulative impacts of Alternative B and other reasonably foreseeable future and past actions regarding transportation would be long-term, minor, and adverse.

### **Effects on Energy Requirements and Conservation Potential**

Under Alternative B, no new facilities would be developed other than parking lot expansion, thereby resulting in very slight new energy requirements for facility construction. Some fuel would be consumed in the course of restoring historic sites, but the amounts would be minor. Public use of the monument would remain at about its current level. The fuel and energy consumed by visitors traveling to the monument would not be likely to increase because visitation is not likely to increase substantially. Energy would still be consumed to maintain existing facilities and for resource management of the monument.

### **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 monument, resulting from limited public use or NPS management activities.

### **Irretrievable or Irreversible Commitments of Resources**

Under Alternative B, the energy requirements identified above would result in an irreversible commitment of resources. There would be no permanent effects on monument resources.

### **Relationship between Local Short-Term Uses of the Environment and Maintenance or Enhancement of Long-Term Productivity**

In this alternative, most of the monument would be protected in a natural state and would maintain its long-term productivity. Only a small percentage of the monument would be maintained as developed areas.

## **IMPACTS OF IMPLEMENTING ALTERNATIVE C**

### **Cultural Resources**

**Archeological Resources.** Alternative C does not call for any changes in the management of archeological resources; however, the unearthing of artifacts could occur during construction of new trails, the expansion of parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area), the use of off-road vehicles, and visitor circulation patterns. Impacts to these resources would be mitigated by the use of surveys prior to ground disturbance when possible; therefore, impacts would be negligible to minor, adverse.

**Cumulative Impacts.** Same as Alternative A and B. The actions contained in Alternative C would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative C, impacts on archeological resources would be permanent, negligible to minor, and adverse. Cumulative impacts would be permanent, minor to moderate,

and adverse. The actions contained in Alternative C would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative C would have no adverse effect on archeological resources.

**Museum Collections.** Impacts to museum collections would be the same as under Alternative A. This alternative does not call for any changes in the management of museum collections. Museum collections would be co-located with the collections of other parks in a multi-park facility located at Timucuan Ecological and Historic Preserve, thereby eliminating their vulnerability to storm surge and wind damage. Impacts to museum collections would be permanent and beneficial.

**Cumulative Impacts.** Same as Alternative A. The actions contained in Alternative C would contribute a negligible increment to this cumulative impact.

**Conclusion.** Under Alternative C, impacts to museum collections would be permanent and beneficial. Cumulative impacts would be permanent, minor, and adverse. The actions contained in Alternative C would contribute a negligible 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative C would have no adverse effect on museum collections.

## Historic Structures

**Analysis.** Same as Alternative B plus the 1937 visitor center, park headquarters, and associated roads, driveways, and parking areas would be interpreted as a National Register Historic District as a result of the listing of these resources on the National Register on December 31, 2008. Impacts on historic structures due to adaptive reuse and fort stabilization and the emphasis on the site as a National Register Historic District would be long-term and beneficial. However, continued use of the structures would result in negligible to minor adverse impacts from routine use.

**Cumulative Impacts.** Cumulative impacts would be the same as those with Alternative A and B. The continued preservation and restoration of structures within the neighboring parks and protected areas would provide a long-term beneficial effect to historic resources. The development of some sites could result in the damage of historic structures, particularly if the development of the site was not to the Secretary of Interiors Standards; however, the neighboring parks and protected areas would likely implement similar protection measures to avoid adverse effects to resources when possible. The actions contained in Alternative C would offset these cumulative adverse impacts to a negligible degree.

**Conclusion.** Under Alternative C, impacts to historic structures would be would for the most part be local, long-term, direct and indirect, moderate and beneficial. Some short-term, negligible to minor adverse impacts would occur, mostly due to normal wear and tear. Cumulative impacts would be minor to moderate and adverse due to continued development in the local and regional area. The beneficial actions contained in Alternative C would offset these cumulative adverse impacts to a negligible degree.

**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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the

characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative C would have no adverse effect on historic structures.

## Potential Cultural Landscapes

**Analysis.** Following completion and approval of a Cultural Landscape Report for the park, the northern section of the Anastasia Island section of the National Monument, consisting of the visitor center, headquarters, park roads and driveways, parking areas, surrounding landscape, and the Matanzas Ramp (access road to the Atlantic Ocean beach) would be restored or preserved as directed by data indicated in the report. The area has not been designated a cultural landscape. However, the surrounding landscape of the visitor center remains largely unchanged since its initial development in 1937. Both the HQ/VC and its designed setting continue to reflect the intentions of the original development plans and retain their original character and integrity to a high degree. Impacts would be local, long-term, direct and indirect and beneficial. Periodic removal of non-native vegetation would continue to occur under this alternative through periodic employment of NPS exotic plant management teams. Impacts on the potential cultural landscape would be long-term and beneficial. No facility development is planned and the expansion of parking would be accomplished by restriping and reconfiguration of parking spaces within the existing footprint. Therefore there would be no adverse impacts to the potential cultural landscape from an expansion of the number of parking spaces.

**Cumulative Impacts.** Cumulative impacts would generally be the same as under Alternative B. The actions contained in Alternative C would contribute a moderate increment to this cumulative impact.

**Conclusion.** Under Alternative C, impacts would be local, long-term, direct and indirect and beneficial from the maintenance of the area as a potential cultural landscape and minor, adverse from the removal of vegetation and expansion of parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area). Cumulative impacts would be

long-term, minor to moderate, and both beneficial and adverse. Alternative C would contribute a moderate, beneficial 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 NPS has determined that the adverse impacts identified under the NEPA analysis above would not alter or diminish, directly or indirectly, any of the characteristics of the National Monument that qualify the property for inclusion in the National Register and therefore concludes that implementation of Alternative C would have no adverse effect on potential cultural landscapes.

## Natural Resources

**Geology and Soils.** Impacts would include those from Alternative B along with additional impacts from a notable increase in interpretive programs and an increase in visitor services such as new trails. Impacts to soils and geologic resources would be local, short-term, direct, moderate adverse and long-term, direct, moderate adverse. Impacts would result from the compaction of soils, the disturbance to soils as a result of construction, and erosion due to construction and continued use. Some of these impacts would be partially mitigated by use of best management practices during clearing. In addition, the NPS Inventory & Monitoring program has begun the process of collecting data on coastal shoreline change. The information obtained through this program will provide data that the park can use for future decision-making. This would result in a beneficial effect to park resources. Potential minimal expansion of the following parking areas: beach ramp (by restriping and reconfiguration within the existing footprint only – no ground disturbance), both parking areas at south end of Anastasia Island. Impacts resulting from the effort to obtain authority to allow ORV use on the beach, should such an effort be successful, would be determined as part of the ORV plan, environmental impact statement and related rulemaking process,

**Cumulative Impacts.** Cumulative impacts would generally be the same as under Alternative B.

The actions contained in Alternative C would contribute a minor increment to this cumulative impact.

**Conclusion.** Impacts would include those discussed under Alternative B, together with additional erosion from construction and use of new trails, other recreational facilities. Impacts to soils would be local, short-term, moderate adverse and long-term, moderate adverse. There would be a long-term, moderate to major, adverse cumulative impact on soils and geologic resources. The actions contained in Alternative C would contribute a minor increment to this cumulative impact.

**Plant Communities and Vegetation.** There are six major community types represented at the park: open beach, foredune, backdune, maritime forest, salt marsh, and disturbed areas. Impacts would occur from the expansion of off-beach parking (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area), unauthorized parking at various locations, trail development, and possible continued spread of non-native vegetation, as well as from trampling and other visitor use of existing facilities. Collectively, impacts to plant communities and vegetation from implementing Alternative C would be minor to moderate, adverse, long-term, and localized. These impacts would be beneficial to the extent the removed vegetation consisted of non-native species. The use of ORV's can have a detrimental effect on vegetation if not managed (i.e. driving too close to the dune vegetation, not following authorized routes, not using the on-ramps and cutting through the dunes). Should the use of ORV's on the beach occur in the future, an in depth analysis on effects would occur as part of the required ORV plan, environmental impact statement, and related rulemaking process.

**Cumulative Impacts.** Cumulative impacts would generally be the same as under Alternative B. The actions contained in Alternative C would contribute a minor increment to this adverse cumulative impact.

**Conclusion.** Under Alternative C, impacts on plant communities and vegetation would be local, short-term, direct, minor to moderate adverse and

long-term, direct, minor to moderate adverse. There could be long-term, moderate to major and adverse cumulative impacts to vegetation and plant communities in the surrounding region. The actions contained in Alternative C would contribute a minor increment to this cumulative impact.

**Exotic/Nonnative/Nuisance Plants.** Based on the 2004 study, *A Floristic Study of Fort Matanzas National Monument*, at the time there were 12 cultivated exotics and 46 introduced species of plants at the park. Five of those were listed as invasive exotics and four of those five (*Asparagus aethiopicus*, *Cinnamomum camphora*, *Nephrolepis cordifolia*, *Lantana camara*) are ranked as Category I (invasive exotics altering native plant communities by displacing native species, changing community structures/ecological functions, or hybridizing with natives), and one, *Pteris vittata*, as Category II (invasive exotics increasing in abundance/frequency but not yet altered Florida plant communities to the extent shown by Category I). Exotic plants can have severe effects on the integrity of native systems and habitats. Visitors can be agents for seed dispersal, increasing the threat to native plant communities. Under Alternative C, impacts to park resources from the growth and spread of exotic/nonnative/nuisance plants would continue to occur. Some limited removal of exotics would take place as funding became available, but large scale restoration would not be likely to take place in the near term. Impacts from exotic/nonnative species would be the same as those described under Alternative A and B, long-term, adverse, and moderate.

**Cumulative Impacts.** Cumulative impacts would generally be the same as under Alternative B.

**Conclusion.** Under Alternative C, impacts from exotic plants and nonnative vegetation would be long-term, adverse, and moderate to major. There could be a long-term, moderate to major, adverse cumulative impacts on native natural processes. The actions for exotic plant control contained in Alternative C would offset these cumulative adverse impacts to a negligible degree.

**Fish and Wildlife.** Impacts would include those from Alternative B, however, this alternative

could include larger areas of clearing for parking lot expansion and trail development. Adverse impacts to fish and wildlife would result from increased siltation in adjacent waterways and loss of habitat due to removal of plant cover. Impacts to wildlife would be beneficial to the extent that removed vegetation consisted of non-native species. On balance, impacts to fish and wildlife would be local, short- and long-term, direct and indirect, minor to moderate, and both beneficial and adverse. Impacts resulting from the effort to obtain authority to allow ORV use on the beach, should such an effort be successful, would be determined as part of the ORV plan, environmental impact statement and related rulemaking process.

**Threatened and Endangered Species (See Table 17 for T&E Species List).** The impacts would include those described under Alternative A and B, except there is a larger potential for habitat loss and fragmentation due to parking lot expansion and construction and the potential for future regulations allowing beach driving. The operation of motor vehicles on the beach affects sea turtle nesting by interrupting or striking a female turtle on the beach, headlights disorienting or misorienting emergent hatchlings, vehicles running over hatchlings attempting to reach the ocean, and vehicle tracks traversing the beach that interfere with hatchlings crawling to the ocean. Hatchlings appear to become diverted not because they cannot physically climb out of the rut (Hughes and Caine 1994), but because the sides of the track cast a shadow and the hatchlings lose their line of sight to the ocean horizon (Mann 1977). The extended period of travel required to negotiate tire tracks and ruts may increase the susceptibility of hatchlings to dehydration and depredation during migration to the ocean (Hosier *et al.* 1981). Driving on the beach can cause sand compaction, which may result in adverse impacts on nest site selection, digging behavior, clutch viability, and emergence by hatchlings, decreasing nest success and directly killing pre-emergent hatchlings (Mann 1977, Nelson and Dickerson 1987, Nelson 1988).

The physical changes and loss of plant cover caused by vehicles on dunes can lead to various degrees of instability and therefore encourage dune migration. As vehicles move either up or down a slope, sand is displaced downward,

lowering the trail. Since the vehicles also inhibit plant growth, and open the area to wind erosion, dunes may become unstable, and begin to migrate. Unvegetated sand dunes may continue to migrate across stable areas as long as vehicle traffic continues. Vehicular traffic through dune breaches or low dunes on an eroding beach may cause an accelerated rate of overwash and beach erosion (Godfrey *et al.* 1978). If driving is required, the area where the least amount of impact occurs is the beach between the low and high tide water lines. Vegetation on the dunes can quickly reestablish provided the mechanical impact is removed. The NPS has prepared a Biological Assessment for the species presented in the analysis portion of Alternative A and submitted it to the USFWS. The NPS will implement necessary mitigations and continue with current closures and management for the protection of these species. The park has implemented Endangered Species Protection Protocols (see Chapter 3), such as night closure of the beach during sea turtle nesting season, daily surveys for sea turtle nests, closure for least tern nesting, a conservation zone for the protection of dune species (Anastasia Island Beach Mouse, Eastern Indigo Snake, Gopher Tortoise), and regular patrols of the beach and dune system. These protocols provide necessary and adequate protection to the threatened and endangered species known to live and nest within the park. Future consultation with the U.S. Fish and Wildlife Service would be necessary to determine necessary mitigation for the protection of these species if an ORV regulation is pursued and if it is approved.

While access to public lands improves the experience of ORV users, motorized access to sensitive environments, such as coastal ecosystems, can pose a threat to sensitive species that rely on the beach habitat. Loud engines in quiet environments can disturb wildlife and affect visitor enjoyment for those who use parks as places of peace and solace (Proescholdt 2007). If Alternative C were to be selected and an ORV regulation pursued and approved, a thorough environmental analysis would occur prior to implementation.

**Cumulative Impacts.** Cumulative impacts would generally be the same as under Alternative B. The actions contained in Alternative C could

1 contribute a minor to moderate increment to this  
2 cumulative impact if an ORV regulation were to  
3 be approved.

4  
5 **Conclusion.** Under Alternative C, impacts on fish  
6 and wildlife would be local, short- and long-term,  
7 direct and indirect, minor to moderate, and both  
8 beneficial and adverse. Impacts would result  
9 primarily from modifications of the natural  
10 environment to accommodate new trails,  
11 expanded parking lots (the two beach parking  
12 areas on the east and west sides of Highway A1A  
13 – not the visitor center parking lot or the  
14 Mantanzas ramp parking area), and visitor  
15 circulation patterns. Minor adverse impacts to  
16 soil, water quality, and vegetation would result in  
17 minor adverse effects on some fish and wildlife  
18 species. In contrast, the removal of exotics would  
19 result in minor beneficial effects on some wildlife  
20 species. This alternative would result in long-  
21 term, moderate, adverse cumulative impacts on  
22 fish and wildlife. The actions contained in  
23 Alternative C would contribute a minor to  
24 moderate increment to this cumulative impact. If  
25 this alternative were selected, NPS would seek to  
26 promulgate an ORV regulation with an ORV plan  
27 and environmental impact statement that would  
28 fully assess the effects of re-established driving  
29 on the beach under a number of alternative  
30 scenarios.

31  
32 **Water Quality.** Impacts would include those  
33 from Alternative A (continue current  
34 management). Additional impacts could occur  
35 from the use of herbicides to control nonnative  
36 vegetation and the addition of parking areas /  
37 impervious surfaces and associated runoff. To  
38 mitigate impacts from herbicides, the NPS would  
39 use the appropriate class of herbicide for the  
40 vegetation setting in question, would strictly  
41 adhere to application directions, and would use  
42 appropriate best management practices.  
43 Additional impacts could occur due to the use of  
44 ORVs when a regulation is pursued and if it is  
45 approved. Impacts resulting from the effort to  
46 obtain authority to allow ORV use on the beach,  
47 should such an effort be successful, would be  
48 determined as part of the ORV plan,  
49 environmental impact statement and related  
50 rulemaking process. Alternative C would result in  
51 impacts to hydrology and water quality that are  
52 negligible to minor, long-term, indirect, and  
53 adverse. Overall, impacts to water quality would

54 be local, short- and long-term, direct, minor, and  
55 adverse. These impacts would be partially  
56 mitigated by use of best management practices  
57 during clearing and site recovery.

58  
59 **Cumulative Impacts.** Cumulative impacts would  
60 generally be the same as under Alternative B.  
61 The actions contained in Alternative C would  
62 contribute a minor increment to this adverse  
63 cumulative impact.

64  
65 **Conclusion.** Under Alternative C, impacts on  
66 water quality would be local, short- and long-  
67 term, minor, and adverse. There would be a long-  
68 term, adverse cumulative impact on water quality  
69 in the watershed. The intensity of the impact is  
70 unknown. The actions contained in Alternative C  
71 would contribute a minor increment to this  
72 cumulative impact. Impacts would be partially  
73 mitigated by use of best management practices  
74 during clearing and site recovery.

## 75 76 **Floodplains**

77  
78 **Analysis.** Impacts would be the same as those  
79 from Alternative A and B (continue current  
80 management). Ground disturbance would result  
81 in floodplain impacts because all of Fort  
82 Matanzas is in a 100-year floodplain with a wave  
83 velocity hazard zone extending from the beach on  
84 Anastasia Island to AIA and following around  
85 Matanzas Inlet. Depending on where additional  
86 parking construction would occur, the impacts to  
87 floodplains could be more or less. Overall,  
88 however impacts to floodplain functions would be  
89 negligible to minor.

90  
91 **Cumulative Impacts.** Cumulative Impacts  
92 would be the same as under Alternative A and B.  
93 The actions contained in Alternative C would  
94 contribute a very small increment to this  
95 cumulative impact.

96  
97 **Conclusion.** Impacts to floodplain functions  
98 under Alternative C would be local, direct and  
99 indirect, negligible to minor, and adverse.  
100 Impacts to infrastructure in the event of flooding  
101 would be short- and long-term, moderate to  
102 major, and adverse.

## 103 104 **Wetlands**

105

**Analysis.** Impacts would be the same as those from Alternative A and B. Collectively, impacts on wetlands under Alternative C would continue to be long-term, minor, adverse, beneficial, and localized.

**Cumulative Impacts.** Cumulative Impacts would be the same as under Alternative A and B.

**Conclusion.** Under Alternative C, past impacts on wetlands would continue and would be long-term, minor, adverse, and localized. There would be a long-term, minor to major, adverse cumulative impact on wetlands. The actions contained in Alternative C would not contribute any new impacts to this cumulative impact.

## **Soundscape / Natural Sounds**

Alternative C would have the same effects to the natural sounds of the park as Alternative B with the emphasis on the preservation of the park's cultural environment. Alternative C includes measures to increase interpretation of the cultural environment, expand parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area), add new trails, and improve visitor circulation patterns. Alternative C would also include actions to seek the authority to permit use of ORVs on the Anastasia Island beach within the boundary of the National Monument. The construction of new trails, potential increase in interpretive programs, and potential changes to visitor circulation would contribute a noticeable increase in sounds related to human activity on the natural and cultural environment of the park. These sounds would include construction activities during the time and in the immediate area of construction that would result in temporary and minor adverse effects. Effects would be apparent to those visitors seeking natural quiet, the sounds of the ocean, and the wildlife of a coastal environment. The effects of sounds attributable to the re-establishment of beach driving at Fort Matanzas, should Alternative C be selected and should the effort to promulgate a special regulation be successful, would be analyzed in detail in the required ORV plan and environmental impact statement that would be part of the rulemaking process.

**Cumulative Impacts.** Cumulative impacts would be the same as those discussed under Alternative B. The continuous sources of sound in the area are not likely to change significantly or decrease from the current levels and result in a moderate adverse effect to natural sounds in the area. This alternative would contribute some additional human generated sounds to other past, present and reasonably foreseeable project sounds, so there would be minor additional cumulative impact on the natural soundscape resulting from implementing this alternative.

**Conclusion.** Alternative C would have a long-term, minor adverse effect from ongoing visitor and park management sources and a temporary, minor adverse effect to the soundscape during the time of construction related to the expansion of the parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area) and new trails. Effects on the soundscape from the potential re-establishment of beach driving following the promulgation of a rulemaking, should it be successful, would be determined through the preparation of an ORV plan and environmental impact statement.

## **Visitor Use and Experience**

**Analysis.** Impacts would generally be the same as Alternative A and B, except that implementation of Alternative C would include enhanced opportunities throughout the park interpreting the park's evolution and development, the addition of new trails, changes in visitor circulation patterns, more interpretive emphasis on the cultural history than the natural history of the site, and removal of vegetation to a greater extent for parking lot expansion. In addition, the park would explore adaptive reuse of the existing New Deal era visitor center, minimizing changes to the surrounding natural environment. Visitors may have vehicle access to the beach if Alternative C is selected and if the promulgation of a special regulation to permit beach driving is successful. In addition, the environmental analysis in the required ORV Plan would have to demonstrate no impairment of resources. There would be a focus on the north end of the Anastasia Island (west of A1A) section of the park with the New Deal era visitor center and interpretation of the land donations and other

activities of St. Augustine organizations to restore and commemorate the Fort for local residents and tourists.

Overall, enhanced appreciation of the historic scene, improved visitor circulation, new opportunities for trail walks, and continued availability of varied recreational opportunities would result in long-term, beneficial impacts to visitor use and experience.

Under Alternative C, personal vehicular access to the Fort Matanzas beach would initially continue to be prohibited in accord with current law, regulation, NPS policy and presidential executive orders. However, the NPS would attempt to promulgate a regulation to permit beach driving within limits and conditions that would be established as part of the rulemaking process. If the regulation were to be approved, the effects on visitor use and experience would be analyzed in detail in the ORV plan and environmental impact statement that would be required as part of the process.

**Cumulative Effects.** Regional growth is expected to result in increased development in the vicinity of the monument. The use of vehicles on the beach is allowed just north of the park boundary. Combining the long-term, beneficial effects and long-term minor to moderate adverse effects of implementing Alternative C with the effects of other past, present, and reasonably foreseeable actions described above, the cumulative impact on visitor use and experience in the park would be long-term, and beneficial or adverse, depending on the beach experience desired by the visitor. The actions contained in Alternative C would contribute minor to moderate impacts to cumulative effects.

**Conclusion.** Impacts to visitor use and experience would stem primarily from the expansion of existing parking lots (the two beach parking areas on the east and west sides of Highway A1A – not the visitor center parking lot or the Mantanzas ramp parking area) and the adaptive reuse of the visitor center. Impacts would be local, short- and long-term, moderate, and both beneficial and adverse, depending on a given visitor's individual preferences. The impacts on visitor use and experience due the potential re-establishment of beach driving would be

determined in detail as part of the required rulemaking process which includes an ORV plan and an environmental impact statement.

## **Socioeconomic Environment**

**Analysis.** Under Alternative C, visitation is unlikely to increase to any appreciable degree over current levels, but may increase some due to population growth. Impacts to the local economy from increased visitation-related spending would be long-term, direct and indirect, negligible, and beneficial. There is a possibility of a loss of visitation, particularly from those who are currently enjoying the beach without the conflict of ORV use.

**Local Economy Employment.** Five new permanent jobs would be created under Alternative C for law enforcement, interpretation, and maintenance. As a result, St. Johns County would realize very minor measurable long-term changes to its employment levels and long-term impacts resulting from Alternative C would be localized and beneficial. In addition, there may be a realization of short-term hiring due to the construction resulting from the expansion of the parking lots and the reuse of the visitor center; however, any impact would be negligible to minor. Short-term impacts of Alternative C would be localized and beneficial.

### **Housing.**

Because Alternative C would entail hiring additional permanent staff, demand for residential housing would likely increase subject to the new employees relocation. Short-term impacts resulting from Alternative C would be localized and beneficial.

**Sales.** Under Alternative C, total sales of goods and services in St. Johns County, as a result of visitor spending, would likely increase a small amount over the life of this plan. Because Alternative C would result in only a small increase in sales revenue, long-term impacts would be localized, negligible, and beneficial.

**Cumulative Impacts.** The action area for evaluating cumulative impacts on the socioeconomic environment is St. Johns County. The implementation of Alternative C does not have a strong likelihood of attracting significant



1 numbers of new visitors and locals to the  
2 monument. Relatively steady to slightly  
3 increased visitation would translate into slightly  
4 increased spending in the area, resulting in  
5 negligible beneficial impacts for St. Johns County  
6 in terms of employment, housing, and taxable  
7 annual sales. Combining the likely effects of  
8 implementing Alternative C with the effects of  
9 other past, present, and reasonably foreseeable  
10 actions described above, the cumulative  
11 socioeconomic impacts would be localized,  
12 moderate, and beneficial. Alternative C would  
13 contribute a negligible increment to this  
14 cumulative impact.

15  
16 **Conclusion.** Because there would be only slight  
17 increases to visitor spending or park expenditures  
18 within St. Johns County under Alternative C,  
19 long-term and short-term impacts on the  
20 socioeconomic environment would be localized,  
21 negligible, and beneficial. As a result, county  
22 employment, housing, and sales would not be  
23 measurably affected. In terms of cumulative  
24 impacts, long-term and short-term impacts would  
25 be localized, moderate, and beneficial. Alternative  
26 C would contribute a negligible increment to this  
27 total cumulative effect.

## 30 **Park Operations**

31  
32 **Analysis.** The impacts of Alternative C on park  
33 operations would include those of Alternative A  
34 and B. Four new permanent employees would be  
35 necessary to implement Alternative C. This  
36 additional staffing would have minor to moderate  
37 beneficial effects on operations from the point of  
38 view of effectively achieving critical park work  
39 goals and objectives. The impacts on park  
40 operations resulting from re-established driving  
41 on the beach, should Alternative C be selected  
42 and should the effort to promulgate a regulation  
43 permitting beach driving be successful, would be  
44 determined in detail in the required ORV plan and  
45 environmental impact statement.

46  
47 **Cumulative Impacts.** Same as Alternative A and  
48 B.

49  
50 **Conclusion.** Operation of existing and projected  
51 visitor and administrative facilities in the  
52 monument would result in minor, long-term,  
53 neutral impacts on NPS operations. The

54 cumulative impacts of Alternative C and other  
55 reasonably foreseeable future actions required of  
56 park staff would be minor to moderate, long-term,  
57 and neutral.

## 59 **Transportation**

60  
61 **Analysis.** The impacts would be the same as  
62 those listed under Alternative B; however, the  
63 effect to transportation could vary depending on  
64 the extent of the expanded parking. The increase  
65 in parking would be beneficial to overall  
66 circulation through the park and to and from the  
67 beach. The temporary effects from the rerouting  
68 of traffic during the construction of extended  
69 parking would be short-term, minor, and adverse.  
70 The effects from the reinstatement of ORV use on  
71 the beach, should Alternative C be selected,  
72 would be determined in the resulting ORV plan  
73 and environmental impact statement.

74  
75 **Cumulative Impacts.** Previous parking lot  
76 expansion has provided the opportunity for more  
77 parking since the absence of on-beach parking.  
78 Although vegetation was removed for the  
79 construction, the park was able to transplant some  
80 species. When added to the congestion of tourist  
81 traffic to and from St. Augustine, the additional  
82 congestion at the park would continue to add a  
83 negligible to minor effect.

84  
85 **Conclusion.** Although the direct effects of  
86 construction would be noticeable due to rerouting  
87 of traffic, the effect would be temporary. The  
88 result of additional parking would alleviate some  
89 congestion at the park. The effects of Alternative  
90 C would be short-term, minor and long-term,  
91 beneficial. The cumulative impacts of Alternative  
92 C and other reasonably foreseeable future and  
93 past actions regarding transportation would be  
94 long-term, minor, and adverse.

## 96 **Effects on Energy Requirements and 97 Conservation Potential**

98  
99 Under Alternative C, no major new facilities  
100 would be developed, thereby eliminating any new  
101 long-term energy requirements for facility  
102 construction and maintenance. Some fuel would  
103 be consumed in the course of restoring historic  
104 sites and views and installing new recreational  
105 facilities, but the amounts would be minor. Public  
106 use of the monument would remain at about its

1 current level. The fuel and energy consumed by  
2 visitors traveling to the monument would not be  
3 likely to increase because visitation is not likely to  
4 increase substantially. Energy would still be  
5 consumed to maintain existing facilities and for  
6 resource management of the monument.

### 7 **Unavoidable Adverse Impacts**

8  
9 Unavoidable adverse impacts are defined as  
10 impacts that cannot be fully mitigated or avoided.  
11 Adverse impacts on natural and cultural resources  
12 and visitor experience could occur in some areas  
13 throughout the monument, resulting from limited  
14 public use or NPS management activities.

### 16 **Irretrievable or Irreversible** 17 **Commitments of Resources**

18  
19 Under Alternative C, the energy requirements  
20 identified above would result in an irreversible  
21 commitment of resources. There would be no  
22 permanent effects on monument resources.

### 25 **Relationship between Local Short-** 26 **Term Uses of the Environment and** 27 **Maintenance or Enhancement of** 28 **Long-Term Productivity**

29  
30 In this alternative, most of the monument would  
31 be protected in a natural state and would maintain  
32 its long-term productivity. Only a small  
33 percentage of the monument would be maintained  
34 as developed areas.



**Fort Matanzas Visitor Center**