
**National Park Service
U.S. Department of the Interior
Gulf Islands National Seashore**



DRAFT

Environmental Assessment



Restore Visitor Access to Fort Pickens Area, Santa Rosa Island

October, 2006

**U.S. Department of the Interior
National Park Service**

**Draft Environmental Assessment:
Restore Visitor Access to Fort Pickens Area, Santa Rosa Island**

**Gulf Islands National Seashore
Escambia County, Florida**

October 2006

Summary

The National Park Service (NPS) proposes to restore public access to the Fort Pickens Area of Gulf Islands National Seashore (GUIS) to pre-Hurricane Ivan levels. Access to this portion of the park has been severely limited since the Fort Pickens Road was destroyed in 2004 and 2005 by Hurricanes Ivan and Dennis. The Fort Pickens Road is approximately 7 miles long and connects Pensacola Beach with Fort Pickens, a listed National Historic District. It has been closed to vehicular traffic since September 2004. Over 700,000 visitors access Fort Pickens Area each year. The Fort Pickens Area is about 1740 acres in area.

This environmental assessment analyzes potential impacts to the human environment resulting from five alternative courses of action. These alternatives are: Alternative A (No action); Alternative B (Provide Access via Alternative Transportation (i.e., a passenger ferry); Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms); Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements), and Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Dune Enhancement). Alternative A is the environmentally preferred alternative. Alternative D is the NPS preferred alternative. The impacts from alternatives B, C, D, and E range from negligible to moderate. Alternatives B, C, D, and E would not impair park resources or values.

Note to Reviewers and Respondents

Our practice is to make comments, including names, home addresses, home phone numbers, and email addresses of respondents, available for public review. Individual respondents may request that we withhold their names and/or home addresses, etc., but if you wish us to consider withholding this information you must state this prominently at the beginning of your comments. In addition, you must present a rationale for withholding this information. This rationale must demonstrate that disclosure would constitute a clearly unwarranted invasion of privacy. Unsupported assertions will not meet this burden. In the absence of exceptional, documentable circumstances, this information will be released. We will always make submissions from organizations or businesses, and from individuals identifying themselves as representatives of or officials of organizations or businesses, available for public inspection in their entirety.

COMMENTS MUST BE RECEIVED BY **December 2, 2006**. The public is requested to submit written comments to the NPS Planning, Environment and Public Comment (PEPC) web page (<http://parkplanning.nps.gov>). Those without computer access may address written comments to:

Superintendent, Gulf Islands National Seashore
1801 Gulf Breeze Parkway
Gulf Breeze, FL 32563-5000

1.0 PURPOSE AND NEED FOR ACTION

1.1 Purpose of the Proposed Action

The National Park Service (NPS) proposes to restore full access to the Fort Pickens Area of Gulf Islands National Seashore (GUIS) and repair associated visitor-use facilities and infrastructure. The purpose of the proposed action is to meet the NPS obligation under the Organic Act (16 USC § 1 et. seq.) to provide opportunities for visitor use and enjoyment of the national parks while protecting park resources unimpaired for future generations. The action is also intended to fulfill the Seashore's enabling legislation, which directs NPS to preserve for public use and enjoyment certain areas possessing outstanding natural, historic and recreational values (Public Law 91-660 (1971)) and to preserve Fort Pickens for the inspiration and benefit of the people of the United States (16 USC § 461).

1.2 Need for the Proposed Action

The proposed action has been made necessary due to the destruction of large portions of the Fort Pickens Road by Hurricane Ivan and subsequent storms. The Fort Pickens Road is a segment of National Park Service-owned and -maintained road on Santa Rosa Island, Escambia County, Florida. The road extends approximately 7 miles between Pensacola Beach and Fort Pickens. This road has been in place for over 50 years under state, and then federal, ownership. During that time the natural processes and dynamics of the barrier island have proceeded, although the location of the road did impact the process of dune migration and development. Sand moved, vegetation and wildlife flourished, wetlands appeared and disappeared with relatively little effect from the road. The eastern four miles of the road were destroyed by Hurricane Ivan in September 2004, and damaged by subsequent tropical events in 2005. The road has been closed to the vehicular traffic since that time.

Prior to Hurricane Ivan, the Fort Pickens Road ran through a primary dune field along the shore of the Gulf of Mexico. In the past, this road had received frequent damage from storms and hurricanes because of its proximity to the Gulf. Serious erosion, the result of storm overwash, was common. NPS had considered relocating the road after each damaging episode; however, because of funding constraints and the relatively moderate extent of damage, the relocation alternative was not implemented. But with the severe damage inflicted by Hurricane Ivan, NPS was prompted to once more consider altering the road's alignment. In January 2005, the NPS Southeast Regional Director approved reconstruction of Fort Pickens Road along an alignment away from the shore and much closer to Santa Rosa Sound. Reconstruction began in February 2005 along the approved alignment, with a projected opening of June 2005. Unfortunately, within five days of the re-opening of the road, Tropical Storm Arlene made landfall and damaged portions of the newly constructed road. Necessary repairs were underway when Hurricanes Cindy and Dennis subsequently struck the Florida Panhandle in July 2005 destroying portions of the work that had been completed up to that time and resulting in the cessation of all construction activities (approximately 70% of the post-Ivan reconstruction/repair work survived). Storm surges that crossed the island scoured two breaches initially caused by

Hurricane Ivan in 2004. As a result, the island has formed two transient free flowing shallow water courses during storm events. However, current indications are natural processes are beginning to fill and close these breaches. The largest breach area remains wet year round and provides mudflat/sandflat habitat. The second area is predominantly dry for much of the year but continues to experience overwash even during relatively minor storms. Over time, these areas will fill by natural processes of surf, tidal build up of sand, and aeolian transport.

With the destruction of the Fort Pickens Road, land access to Fort Pickens and associated recreational areas has been severely curtailed for over two years. The need exists to restore full access to this area since GUIS is the most visited of all the national seashores and in the top ten most-visited units in the National Park system.

1.3 Project Location

The project is located on Santa Rosa Island, Escambia County, Florida (see Figure 1). The alternatives for restoring public access are described in Section Two below. The road route proposed in alternatives C, D, and E (it is the same route in each alternative) is illustrated in figures 2A and 2B.

Figure 1



Figure 1

1.4 Laws, Policies and Authorities

The authority and limits for considering and implementing the proposed action are found in congressional legislation, regulations and policies that provide guidelines for all federal agencies and /or for administering units of the National Park System. These laws, policies and authorities are extensive and a summary of the federal, NPS, and GUIIS regulations, policies, and guidelines that provide the authority and basis for allowing the proposed action are found in Appendix A.

1.5 Related Plans and Environmental Documents

NPS Management Policies 2006 provides that actions taken that may affect parklands be supported by appropriate documentation of compliance with the National Environmental Policy Act (NEPA), the Endangered Species Act (ESA), the National Historic Preservation Act (NHPA), and other laws. This Environmental Assessment (EA) has been prepared as part of compliance with NEPA. The EA is not tiered from any other environmental document. In 2003, GUIIS began a five year planning process to develop a revised General Management Plan. This General Management Plan will follow its own NEPA and NHPA process.

This EA follows upon and is related to an earlier document entitled Final Environmental Assessment for Relocation of Roads on Santa Rosa Island, December 2004. The administrative record of the earlier effort to repair the Fort Pickens Road may be found in the files of GUIIS.

1.6 Mission, Purpose, and Significance of Gulf Islands National Seashore

Mission. GUIIS preserves for public use and enjoyment certain outstanding natural, cultural, and recreational resources along the Northern Gulf Coast of Florida and Mississippi. These include several coastal defense forts spanning more than two centuries of military activity, archeological values, pristine examples of intact Mississippi coastal barrier islands, salt marshes, bayous and submerged seagrass beds, complex terrestrial communities, emerald green water, and white sand beaches.

Purpose. The purpose of GUIIS is to preserve and interpret for public use and enjoyment the Gulf Coast barrier island and bayou ecosystem and its system of coastal defense fortifications.

Significance. The significance of GUIIS stems in large part from the following factors:

- The Seashore contains one of the most complete collections of publicly accessible structures relating to the evolution of seacoast defense in the United States, representing a continuum of development from early Spanish exploration and colonization through World War II.

- The Seashore contains publicly accessible natural and scenic barrier islands, beach, dune and water resource areas in close proximity to major population centers.
- Protected and undeveloped natural resource areas provide habitat for several endangered species in diverse ecosystems, as well as stop-over habitat for migratory birds and critical nursery habitat for marine flora and fauna. These areas serve as an enclave for complex terrestrial and aquatic plant and animal communities which characterize the northern Gulf Coast and fully illustrate to the public the natural processes which shape these unique areas.
- The land and marine archeological resources located throughout the Seashore represent a continuum of human occupation in a coastal environment and are important in enhancing the public knowledge of the past, including interactions between the earliest settlers and original inhabitants of this area of the Gulf Coast.
- The Seashore provides a benchmark to compare conditions in developed areas of the Gulf Coast to natural areas.
- The Seashore possesses a rare combination of recreational opportunities on publicly accessible undeveloped barrier islands, of which two are designated wilderness areas.

1.7 Objectives in Taking Action

NEPA requires that any decision made with respect to the proposed action be based on analysis of a reasonable range of alternatives that are likely to meet project objectives. Objectives, in turn, are “what must be achieved to a large degree for the action to be considered a success” (NPS Director’s Order #12). All alternatives selected for detailed analysis must meet these objectives to a large degree, as well as fulfill the project purpose and need for action. Objectives for restoring access to the Fort Pickens Area must be grounded in the park’s enabling legislation, as well as its purpose, significance, and mission goals. The objectives must also be compatible with direction and guidance provided by the park’s GMP.

Since Hurricane Ivan in 2004, public access to the Fort Pickens area has been limited to foot, bicycle, or private boat. The specific objective in taking this action is to re-establish a broader range of public access to the Fort Pickens area. As a general matter, it is the objective of GUIIS to be a leader in stewardship, science, resource management, education, and recreation. It is the goal of the action proposed in this EA to fulfill the park’s purpose by providing public access, use and enjoyment of the Fort Pickens Area and the natural, historic, and recreational values it provides.

The following specific objectives related to restoration of access to the Fort Pickens Area were developed with park staff during internal scoping:

General

- Make park resources available to the public while ensuring that these natural and cultural resources are conserved for future generations.

- Minimize future restoration and maintenance expenditures by methods and techniques that can withstand future storm impacts to a significant degree.

Geological Resources

- Protect the sand budget of the barrier island resource and otherwise allow geologic processes to function as naturally as possible, while at the same time protecting park infrastructure from future storm damage.

Species of Special Concern

- Design infrastructure in such a way as to minimize impacts on critical habitat for species of special concern, including any federal or state listed threatened and endangered species.
- Protect species of special concern from impacts associated with infrastructure construction, use, and maintenance.

Cultural Resources

- Protect cultural resources, including documented archeological sites and other structures and those on or eligible for listing on the National Register of Historic Places.

Visitor Use and Experience

- Provide opportunities for all visitors to experience a wide variety of park resources.
- Ensure that proposed means of access will protect human health and safety.

Park Management and Operations

- Choose infrastructure designs that are sustainable and will minimize future demands on maintenance staff.

1.8 Issues and Impact Topics

Park staff conducted internal and external scoping in January 2006 to identify issues and concerns arising out of the proposed action. External scoping was done with staff and consultants of the Florida Department of Transportation, the Federal Highway Administration, and various offices within NPS, including the Southeast Regional Office, Geologic Resources Division, Environmental Quality Division and GUIS staff.

The subject of restoring access to the Fort Pickens Area has received substantial coverage in the local media; it has been a topic of frequent discussion between GUIS staff and the public. This project has undergone thorough examination via a number of review processes, including a value analysis study, a working group meeting in October 2006 comprised of engineering and environmental subject experts, and oversight by the NPS

Development Advisory Board. A press release announcing a call for public scoping comments was posted in the local newspaper and on the GUIS web page. The public has been directed to the NPS Planning, Environment and Public Comment (PEPC) web page (<http://parkplanning.nps.gov>) devoted to the topic of restoration of public access.

Based on the results of internal and external scoping, the major issues raised by the proposed action are as follows:

1.8.1 Issues

Issue 1. *Health and safety of the public.*

Will the proposed access provide a safe, convenient, and rewarding recreational experience?

Issue 2. *Visitor experience and aesthetics.*

Will the proposed access take visitors to places they wish to see and experience, and will it accommodate the numbers of people and their uses that have traditionally existed, while preserving the scenic qualities of the Fort Pickens Area?

Issue 3. *Environmental impacts.*

Will the proposed access have significant environmental impacts on the geology, wildlife, vegetation, archeology, or other natural, cultural, and recreational resources of the Fort Pickens Area? Will the proposed access all natural barrier island processes continue unabated?

Issue 4. *Impacts to Park Operations.*

Is the proposed access sustainable? Can it can be maintained adequately by the park’s maintenance staff; and minimize reconstruction costs that may result from future storms?

1.8.2 Identifying Resources and Concerns

Based in part on the issues raised during internal scoping, the interdisciplinary team identified a number of resources and values that could be affected by implementation of the proposed action. These resources and values generated “impact topics” for further analysis, as set forth in the following table:

**TABLE 1.1
IMPACT TOPICS AND APPLICABLE LEGAL AND POLICY REQUIREMENTS**

Impact Topic	Relevant Regulations or Policies
Shoreline and Barrier Island Geology	National Park Service Management Policies 4.8.1.1 and 9.1.1.6 (2006)
Soils	National Park Service Management Policy 4.8.2.4 (2006)
Air Quality	Federal Clean Air Act (CAA); CAA Amendments of 1990 (CAAA); National Park Service Management Policy 4.7.1 (2006)

Natural Soundscape/Noise	National Park Service Management Policy 4.9 (2006)
Natural Lightscape (night sky)	National Park Service Management Policy 4.10 (2006)
Aquatic Resources	National Park Service Management Policy 4.6 (2006); Federal Water Pollution Control Act [The Clean Water Act of 1972 (as amended in 1977)]; Magnuson-Stevens Fishery Conservation and Management Act
Hydrology and Water Quality	Executive Order 12088 (Federal Compliance with Pollution Control Standards); Executive Order 11990 (Protection of Wetlands); National Park Service Management Policy 4.6.3 (2006); Federal Water Pollution Control Act [The Clean Water Act of 1972 (as amended in 1977)]
Vegetation	National Park Service Management Policy 4.4.2 (2006) ; Executive Order 13112 (Invasive Species)
Floodplains and Wetlands	Executive Order 11990 (Protection of Wetlands); Clean Water Act Section 404; National Park Service Director’s Order #77-1; Executive Order 11988 (Floodplain Management); Federal Coastal Zone Management Act; National Park Service Management Policies 4.6.4, 4.6.5, and 9.1.1.6 (2006)
Fish and Wildlife	National Park Service Management Policy 4.4.2 (2006); Executive Order 13186 (Migratory Birds)
Species of Special Concern and their Habitats	Endangered Species Act of 1973; National Park Service Management Policy 4.4.2.3 (2006); 40 Code of Federal Regulations Part 1500 (regulations for implementing the National Environmental Policy Act)
Ecologically Critical Areas or other Unique Natural Resources	36 Code of Federal Regulations Part 62 (criteria for national natural landmarks); National Park Service Management Policies (2006)
Visitor Use and Experience	National Parks Act of August 25, 1916 (“Organic Act”); National Park Service Management Policy 8.2 (2006)
Public Health and Safety	National Park Service Management Policy 8.2.5 (2006); U.S. Coast Guard Boating Safety Regulations

Cultural Resources (i.e., important scientific, archeological, and other cultural resources)	Section 106 of the National Historic Preservation Act; Section 110 of the National Historic Preservation Act (16 U.S.C. § 470); 36 Code of Federal Regulations 800; National Environmental Policy Act; Executive Order 13007 (Indian Sacred Sites); National Park Service Director’s Order 28; National Park Service Management Policy 5.3.5 (2006); Native American Graves Protection and Repatriation Act (NAGPRA); Archeological Resources Protection Act (ARPA); National Parks Act of August 25, 1916 (“Organic Act”); Antiquities Act of 1906; 40 CFR 1500 (regulations for implementing National Environmental Policy Act), section 1508.27
Sacred Sites	Executive Order 13007 (Indian Sacred Sites); National Park Service Management Policy 5.3.5.3.2 (2006)
Indian Trust Resources	Department of the Interior Secretarial Order No. 3206; Secretarial Order No. 3175
Park Operations	National Park Service Management Policy 9.1 (2006)
Concessionaires and Contracts	National Park Service Management Policy 10.2 (2006)
Economics and Socioeconomics	40 Code of Federal Regulations Part 1500 (regulations for implementing National Environmental Policy Act)
Transportation (local and regional)	National Park Service Management Policy 9.2 (2006)
Socially or Economically Disadvantaged Populations	Executive Order 12898 (Environmental Justice)
Accessibility for Individuals with Disabilities	National Park Service Management Policy 9.1.2 (2006); Architectural Barrier Act of 1968 (42 U.S.C. § 4151 et seq.); Rehabilitation Act of 1973 (29 U.S.C. 701 et seq.); Americans with Disabilities Act of 1990 (Public Law 101-336, 104 Stat. 327)
Mineral and Agricultural Resources	National Park Service Management Policies 8.6.7 and 8.7 (2006)
Prime and Unique Agricultural Lands	Council on Environmental Quality 1980 memorandum on prime and unique farmlands; 40 Code of Federal Regulations Part 1500 (regulations for implementing National Environmental Policy Act), section 1508.27

Energy Requirements and Conservation Potential; Natural or Depletable Resource Requirements and Conservation Potential	National Park Service Management Policy 9.1.7 (2006) ; 40 CFR Part 1500 (regulations for implementing National Environmental Policy Act), section 1502.16
Urban Quality, Historic and Cultural Resources, and Design of the Built Environment	40 Code of Federal Regulations section 1502.16 (regulations for implementing the National Environmental Policy Act); National Park Service Director’s Order #12
Community Character	National Park Service Management Policy 8.11 (2006)
Possible Conflicts between the Proposal and Land Use Plans, Policies, or Controls for the Area Concerned (including local, state, or Indian tribe) and the Extent to which the Park Would Reconcile the Conflict	40 Code of Federal Regulations Part 1500 (regulations for implementing National Environmental Policy Act), sections 1502.16, 1506.2(d)

All of the impact topics listed above were presented and discussed by the planning team during the scoping process. At the end of this process, the planning team selected a subset of these topics for detailed analysis in the EA, as discussed in more detail below.

1.8.3 Impact Topics Analyzed in this Environmental Assessment

Regulations issued by the Council on Environmental Quality require the NPS to “identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review . . . , narrowing the discussion of these issues in the statement to a brief presentation of why they will not have a significant effect on the human environment or providing a reference to their coverage elsewhere” (40 CFR 1501.7(a)(3)).

Of the impact topics initially listed, the following were considered environmental issues warranting further study, and are carried through the EA for detailed analysis:

1. Geology – Geology is addressed because there would be surface disturbance during construction of infrastructure. In addition, three of the alternatives call for the construction of piers, abutments, berms or protective measures that may influence how geologic features and processes are affected by tides, currents, ship wakes, overwash, sea level rise, wind and other factors.

2. Vegetation -- Vegetation is addressed because even though much of the pre-existing vegetation has been swept away or buried, and only a short stubble of past plants is present, the possible reconstruction of road and other facilities could affect future vegetation communities and successional patterns. Alternatives have been framed in

such a way as to avoid to the greatest extent possible all areas showing indications of past vegetation.

3. *Fish and Wildlife* -- Wildlife is addressed because the island is home to a number of terrestrial species and because construction activities could take place during shore bird or sea turtle nesting season. The park also contains unique or important fish and wildlife habitat. NPS would coordinate with U. S. Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS) and state agencies, as appropriate, to address any wildlife impacts or other environmental matters of concern associated with the proposed action.

4. *Threatened & Endangered Species* – GUIS provides habitat for 12 threatened or endangered species. Some of the activities described in the alternatives could occur in or adjacent to habitat for threatened or endangered species. NPS will consult with the Panama City Field office of the USFWS and the St. Petersburg office of the NMFS to determine whether the proposed action is likely to adversely affect federally listed threatened or endangered species.

5. *Wetlands* -- Wetlands are addressed because some of the activities described in the alternatives could occur adjacent to areas where wetlands may have existed prior to, or become established after, the recent storms. Additionally, three of the alternatives call for the re-construction of the Fort Pickens Road along a route spanning various areas of sandflats/mudflats. Mudflats are considered special aquatic sites under applicable federal regulations. 40 CFR § 230.42. Construction in these areas can trigger federal permitting requirements under Section 404 of the Clean Water Act. 33 U.S.C. § 1344(a). Route layouts are arranged to avoid wetlands and special aquatic sites as much as possible. When, as here, it is not practicable to locate or relocate development or incompatible human activities to a site outside and not affecting wetlands or special aquatic sites, NPS will prepare and approve a Statement of Findings, in accordance with procedures described in NPS Procedural Manual 77-1: Wetland Protection.

6. *Floodplains* -- Floodplains are addressed because each of the action alternatives call for development in what may be characterized as a floodplain, and it is NPS policy to avoid direct and indirect support of development and actions in areas that may be prone to periodic inundation. When, as here, it is not practicable to locate or relocate development or incompatible human activities to a site outside and not affecting the floodplain, NPS will prepare and approve a Statement of Findings, in accordance with procedures described in NPS Procedural Manual 77-2: Floodplain Management.

7. *Archeological Resources* -- Archaeology is addressed because the realigned portion of the road called for in three of the alternatives requires an archeological survey. In addition, these three alternatives call for installing a sewer line beneath the roadbed of the reconstructed Fort Pickens Road. In this regard, recent surveys in the area suggest the proposed action is not likely to adversely effect any known within or adjacent to the project area. Early project coordination with the NPS Southeast Archeological Center in

June, 2006, has resulted in a findings report that identifies prescription measures to offset and mitigate any effect from road reconstruction to the three documented sites.

8. *Solid Waste and Hazardous Substances* – Solid waste is addressed because each of the alternatives calls for the cleanup and recycling of asphalt debris resulting from destruction of the former road to Fort Pickens. Moreover, any sand used to reconstruct Fort Pickens Road would be tested for the presence of possible contaminants and other hazardous substances.

9. *Visitor Use and Experience* – Visitor Use and Experience are addressed because all of the alternatives would directly affect the manner in which visitors could access and use the Fort Pickens Area and the types of experiences they would be able to have.

10. *Park Operations* – Park Operations are addressed because all of the alternatives differ in the extent to which they facilitate administration of the Fort Pickens Area.

11. *Socioeconomic Environment* – The socioeconomic environment is addressed because the Fort Pickens Area is a significant contributor to well being of the public as well as the economy of Escambia County and Pensacola. Restoring full public access to the Fort Pickens Area would be important to the socioeconomic environment of the local area.

1.11.3 Impact Topics Dismissed from Further Analysis

All impact topics not discussed in Table 1.1 in section 1.11.2 above have been dismissed from further analysis because they are not germane to the proposed action or impacts are expected to be nonexistent or negligible. Additional explanation for dismissing selected impact topics is provided below:

1. *Water Quality* – Water quality is not addressed because the proposed action would not impinge on the quality of any known existing water sources.

2. *Air Quality* – Air quality is not addressed because the proposed action is not a contributor to current air quality conditions.

3. *Soils* – Soils are not addressed as a separate impact topic because impacts to soils per se are expected to be negligible. Some disturbance to island sands would result from construction activities, but these impacts would be negligible in the context of natural disturbance from hurricane storm surge and normal sand migration. Substantial amounts of asphalt from prior road construction would be removed under all alternatives, with beneficial, localized temporary impacts on sands/soils. Impacts resulting from the importation of sand for the construction of berms would be addressed under “geology.”

4. *Ethnographic Resources* – There are no known ethnographic attachments to the areas where roads or other facilities are considered for construction.

5. Cultural Landscape – The sites where construction would occur are not components of any cultural landscapes.

6. Prime or Unique Farmland – The Fort Pickens Area does not contain prime or unique farmland.

7. Environmental Justice – The environmental consequences of the proposed action would fall solely on the property of GUIs. There are no known minorities, low-income populations, or communities in the vicinity.

2.0 PROJECT ALTERNATIVES

2.1 Introduction

Four alternatives are considered in this EA. They are:

- Alternative A – No Action (conduct only limited repair of surviving pavement in specified areas and remove asphalt debris);
- Alternative B – Provide Ferry Access (initiate passenger ferry service with shuttle);
- Alternative C – Reconstruct Fort Pickens Road with Protective Sand Berms;
- Alternative D – Reconstruct Fort Pickens Road with a Mix of Protective Elements.
- Alternative E – Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Dune Enhancement

It should be noted that public and agency comment on the EA and further review may add additional information and perspective which could result in the development of additional alternatives. Should new substantive issues be raised by commenters or new alternatives developed by NPS, the EA may be rewritten as appropriate and reissued for additional public comment.

2.2 Actions Common to All Alternatives

The laws, regulations, and policies presented in Appendix A would apply to all alternatives considered. All alternatives would involve the removal of all or some of the remaining materials and debris from the original road. Alternatives B, C, D, and E have surface disturbance related to construction in common. Under Alternatives C, D, and E, asphalt would be recycled and road base material would be reused in the new alignment. Alternatives C, D, and E would entail some realignment of the road route approved in January 2005.

2.3 Alternative A (No Action)

Regulations promulgated by the President's Council on Environmental Quality (CEQ) require NPS to consider a "no action" alternative. The no action alternative serves as a baseline against which to compare the impacts of the other alternatives under consideration.

In the present instance, the no action alternative would entail leaving the roadway to Fort Pickens largely in its present, damaged condition. Some limited repairs would take place to surviving portions of the roadway serving unaffected visitor use areas. In addition, efforts would be made to remove asphalt debris. Under this alternative the public access to Fort Pickens and the unaffected visitor use areas on the west end of Santa Rosa Island would be by foot, bicycle, or private watercraft.

2.4 Alternative B – Provide Ferry Access to Fort Pickens

Under this alternative, a concessionaire would operate a ferry service between the mainland and Fort Pickens, similar to the ferry service which has shuttled passengers to Ship Island, Mississippi, since 1926. On the island itself, a shuttle service would transport visitors to recreational and cultural sites reachable on surviving or lightly damaged roadways.

2.5 Alternative C – Reconstruct Fort Pickens Road with Protective Sand Berms

Under Alternative C, the eastern four miles of Fort Pickens Road (from the Ranger Station at Langdon to the Fort Pickens entrance gate) would be reconstructed and/or repaired in a widened corridor that generally follows the northerly alignment approved in January 2005 (see figures 2A and 2B). At the western end of this project area, approximately 4,000 feet of the road would be realigned to the north (see Table 2.5 and Figure 2A).

Figure 2A

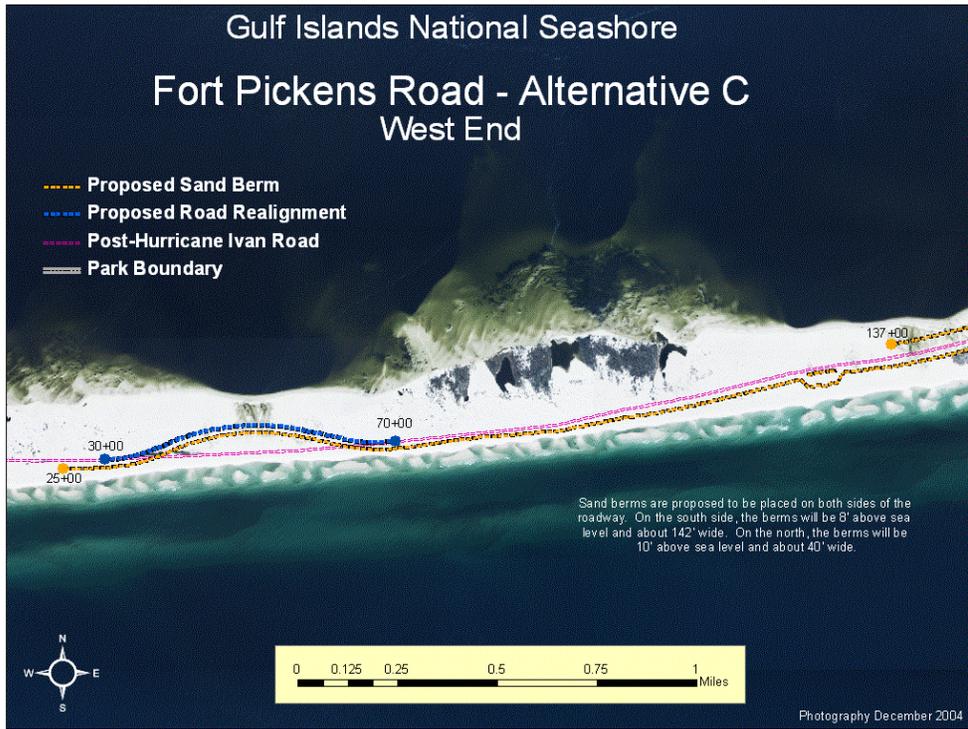


Figure 2B



Table 2.5

**Fort Pickens Road
Realignment**

Location	From*	To*	Distance (FT)	Description
1	30+00	70+00	4,000	Fort Pickens Road is recommended for realignment due to the current location of the road adjacent to the receding southern shoreline. The southern shoreline has receded in this location due to recent storm events. The shoreline has receded to a location close to the existing roadway putting the roadway in increased danger of being damaged. The recommended alignment would move the roadway further north away from the southern shoreline. This realignment should provide increased protection to storm damage to the roadway.
Total			4,000	

* The numbers in this column are station numbers drawn from Figure 2A. See this figure for the locations of the realigned section.

The roadway would be 4 feet above sea level and consist of two 11 foot lanes and 6 feet of stabilized shoulders (4 feet of which would be paved bike lanes). Note that the roadbed along almost the entire 4-mile reach would have to be built up with sand in order to achieve the desired 4-foot elevation. On the south side of the road, a sand berm 4 feet high, about 8 feet above sea level, and 3 miles long would be placed seaward of the road as a protective measure. The berm would be about 5 to 6 feet above ground level in the area just west of the entrance station due to the extremely low elevations of the island in this area. The berm would be approximately 142 feet wide at the base, and located about 18 feet from and parallel to the road. In cross section this would be a low triangular shaped mound with acute angles of about 3° and an apex angle of around 174°.

On the north (sound) side the berm would be lower and shorter in length with approximately 2.2 miles of berm being constructed. These northern berm segments would be 4 to 5 feet high and about 10 feet above sea level. The north berm would be approximately 40 feet wide at the base, and would be placed within 10 feet and parallel to the road. Sand for the north and south berms would come from a spoil pile of existing sand near Fort Pickens and possibly other sources from off the island. The Seashore would not use local island borrow because this locks sand out of the dynamic sand budget of the island, an interference with natural processes that is contrary to NPS Management

Policy Section 4.8.1.1 (2006). However, sand within the 250 foot project corridor, or road prism, that must be removed as a result of construction activity, could be repositioned as may be determined appropriate during reconstruction of the roadway. If the Army Corps of Engineers were to supply any sand for the berms, any such activity would be carried out under an NPS-approved sand placement plan as required by the GUIS enabling statute, 16 U.S.C. § 459h-5. The sand from the Fort Pickens spoil site would also be further analyzed to assure compatibility of grain size and color to sand in proximity to the project corridor.

Despite the presence of the berms, portions of the newly constructed road would, in all probability, still have to be rebuilt after a future hurricane or other major storm. Areas of present weakness (i.e., where the road was destroyed by the storms of 2004 – 2005) are geologically forced. That is, geologic conditions such as (a) the absence of foredunes, (b) the presence of reflective (steep) zones directly offshore, and (c) elevation differences between the front and rear of the road set these areas up for failure in the past, and will likely do so again in the future.¹ Dune recovery is slow in these areas due to moisture and “lag.” (Lag comprises small pieces of shell and asphalt (former road surface) that prevent sand from blowing naturally and hence impede normal dune formation.) The artificial berms may compensate to an extent for the lack of foredunes in these areas, but the protection they provide is limited and will not fully protect the road in major storms. Given that the Gulf of Mexico has now entered a period of heightened hurricane activity that may last decades, it is anticipated that dune recovery will continue to be slower than in the past. The Fort Pickens Road was originally built ca. 1940, a period of lower hurricane activity and a time when Santa Rosa Island was relatively stable. The area may now have entered a new period of beach movement, meaning that the Fort Pickens Road will continue to be vulnerable to washouts and other damage.

It must be recognized and emphasized that the berm system would not be a dune replacement or a beach restoration installation. This berm would be a roadway protective device composed of sand. Its function would be to provide material to cover the road

¹ The conditions leading to road failure during Hurricane Ivan have been tentatively summarized as follows:

No road damage: These stretches of road tended to be close to the beachface but where the road was protected by a relatively large foredune and was within a relatively wide section of the island (weak overwash currents).

1/4 damage: This level of damage occurred on road sections near the back of the island and in areas characterized by narrow island width and relatively low foredune height.

1/2 damage: Roads with 1/2 damage were near the back of the island in areas characterized by a relatively low foredune.

Full damage: These sections of road tended to be adjacent to a reflective (steep) offshore profile where the foredune height was relatively low. These sections also tended to be close to the beach and in areas where the island was narrow (strong overwash currents).

(Houser pers. com. 2006).

when overwash events occur. During an overwash event, sand would be deposited over the roadway, thereby serving as a protective layer preventing the turbulent erosive action of flowing water that could damage the roadway. The berm would be a temporary source of sand placed as a sacrificial layer to be available until natural dune fields develop.

The total width of the road corridor, including protective sand berms, would be approximately 250 feet. This is approximately 90 feet wider than the corridor approved in January 2005. A sewer line to Fort Pickens would be installed, and phone and electric lines would be re-installed beneath or adjacent to the road.

2.6 Alternative D – (Preferred Alternative) Reconstruct Fort Pickens Road with a Mix of Protective Elements

Alternative D follows the same alignment and adopts the same road/utility design as Alternative C (see figures 3A and 3B), but uses a wider range of protective elements to protect the roadway against future storm damage. Alternative D calls for the use of a combination of protective berm, sheet pile, geoweb, articulated concrete block, and widening of the outside shoulders (asphalt aprons). Hardened protection measures would be installed at strategic locations only. (See Table 2.6 and figures 3A and 3B.) The sand berms are described in detail in Alternative C. All told, approximately 2.22 miles of protective armoring (or 32% of the 7 mile roadway) are contemplated under this alternative. The purpose of these hardened protection measures is to provide erosion control by reducing scour on the roadway slopes during storm events, thereby reducing the possibility of roadway damage.

Recent research has shown that the primary cause of road failure during major storm events is what has been referred to as the “weir-like flow damage mechanism” (Douglass et al. 2004). In effect, the road acts as a weir or spillway during overwash, with flowing waters rolling over and then under the back (north) side of the road surface, scouring supporting sands and causing the north side of the road to fail. The same mechanism can sometimes cause failure on the south side of the road as waters recede back to the ocean. In some cases a sacrificial sand berm adjacent to the road would be sufficient to cover the road surface with sand and prevent overwash from scouring the back side of the road. In other situations hardened armoring would be needed to prevent the weir flow damage mechanism from becoming activated.

The total width of the road corridor, including protective sand berms and armoring, would be approximately 250 feet. This is approximately 90 feet wider than the corridor approved in January 2005. Except for the buried armoring (i.e., sheet pile, geoweb mattresses, articulated concrete block, and asphalt aprons), this alternative is a replication of Alternative C.

Figure 3A

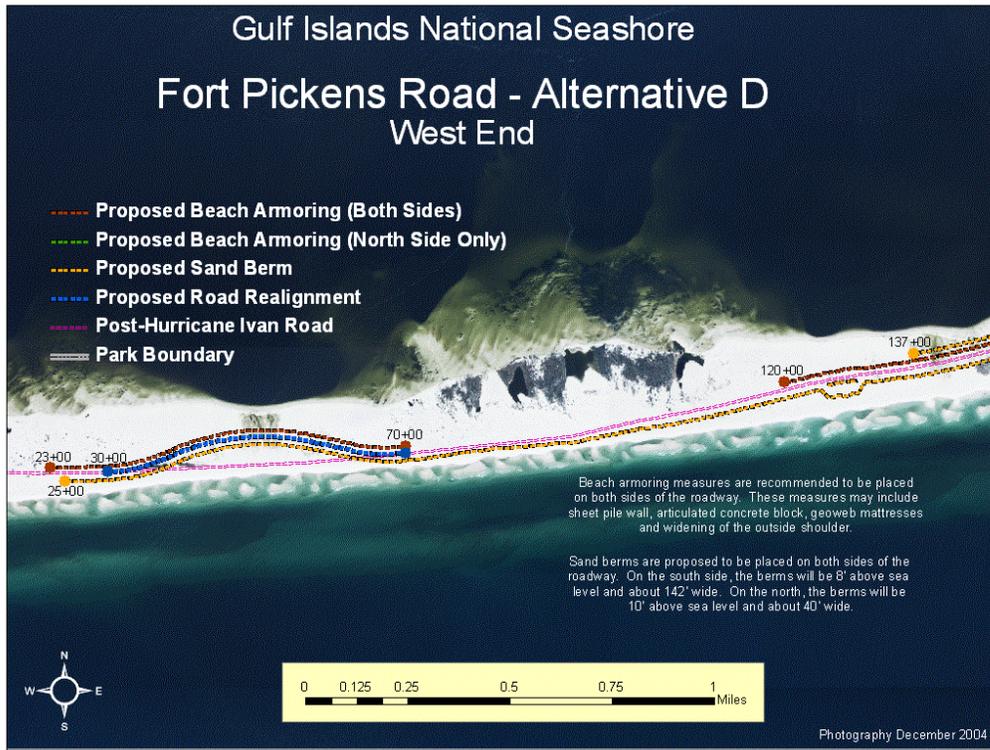


Figure 3B



Table 2.6

**Fort Pickens Road
Locations of Beach Armoring Measures**

Area	From	To	Distance (FT)	Description
1	23+00	70+00	4,700	Beach armoring measures are recommended to be placed on both sides of the roadway. These measures may include sheet pile wall, articulated concrete block, geoweb mattresses and widening of the outside shoulder. Beach armoring is intended to reduce scour on the roadway slopes during storm events, reducing the possibility of roadway damage.
2	120+00	180+00	6,000	Beach armoring measures are recommended to be placed on both sides of the roadway. These measures may include sheet pile wall, articulated concrete block, geoweb mattresses and widening of the outside shoulder. Beach armoring is intended to reduce scour on the roadway slopes during storm events, reducing the possibility of roadway damage.
3	240+00	250+00	500	Beach armoring measures are recommended to be placed on the north side of the roadway. These measures may include articulated concrete block, geoweb mattresses and widening of the outside shoulder. Beach armoring measures are intended to reduce scour on the roadway slopes during storm events, reducing the possibility of roadway damage.
Total			11,700	

* The numbers in this column are station numbers drawn from Figures 3A and 3B. See these figures for the locations of the armored sections.

The locations selected for armoring are those areas that have failed repeatedly in the past and are most likely to fail in future storms. In general, these are areas where geologic conditions such as the absence of foredunes or the presence of offshore reflective (steep) zones render the island subject to major overwash or breaching. On the whole, half or more of the existing roadway was damaged in these locations by the storms of 2004 – 2005. It bears emphasizing, however, that the use of armoring does not guarantee that the road will survive future storms. The armoring may fail, or the road may be damaged or destroyed in new locations. Dunes present prior to 2004 are largely gone now, so areas

previously less susceptible to damage could experience more intensive wave action in the future until new dunes are formed. Moreover, the geomorphology of barrier islands is dynamic and not entirely understood. It is possible that areas of high susceptibility have shifted as a result of the 2004-2005 storms. The “set-up” for future storms could be different now, with the result that the highest hazard areas have moved. Additional scientific research into these processes is identified, needed, and ongoing.

A point to be emphasized is that Alternative D represents a compromise between engineering considerations, fiscal constraints, and the mission of the National Park Service to protect the natural processes of this dynamic barrier island. Engineers for the project have recommended that the entire 4-mile section be armored in order to maximize the survivability of the road surface. In their opinion, nothing less will be effective, given the low elevation of the road and its exposure to damaging wave action. On the other hand, armoring the entire 4-mile section would be prohibitively expensive and might only have the effect of lengthening the time between road-destroying events. Full armoring would also impede overwash, restrict island migration, and have adverse effects on wildlife, including threatened and endangered species. To minimize interference with natural processes, Alternative D proposes the bare minimum of armoring, an amount that will protect the road in only the most vulnerable areas. Even with this armoring, however, there are no guarantees that the road will survive a major storm.

With respect to the protective measures themselves, sand will be the most pervasive element. As described in Alternative C, a total of approximately 5.2 miles of protective sacrificial sand berm, approximately 4 feet above existing grade and 142 feet wide at the base, would be constructed parallel to the roadway. In cross section the constructed sand berm would be a low triangular shaped mound with acute angles of about 3 degrees and an apex of around 174 degrees. (These details may change based upon final design.).

Sheet pile is a wall of interlinked steel, concrete, or composite material driven about 20 feet into the ground. This protection method would be used in probable areas of extreme overwash and scour. This sheet wall would be capped with a concrete bulkhead, buried and supported by a buried geoweb as an extra factor of protection. The sheet pile and geoweb would not be visible. Sheet pile is more disruptive of natural processes than the other methods under consideration because it extends further under the ground and hence can generate greater scour in the event it becomes exposed during major storms. It may also influence groundwater flows. Nevertheless, sheet pile is recommended as an option for the locations identified as Area 1 and Area 2 in Table 2.6. These areas were breached by the storms of 2004 – 2005 and are still subject to periodic overflow. Even though these areas would be partially filled to support the reconstructed roadbed, the road would remain vulnerable in many storms. Sheet pile (with sand berms) is recommended as an option in these areas because, given the overall vulnerability of these former breach areas and the narrowness of the island at these locations, sheet pile would likely be more effective at protecting the road than any other armoring method.

Geoweb is a reinforced geotechnical fabric, composite polymer material. It is installed as a celled mattress, with each cell being filled with 4 inch size rock. This mattress is about

18 inches thick and slopes away from the roadway to a depth of about 2 feet below sea level. This mattress would be installed in areas of probable serious erosion during a major storm event. This mattress would be buried and should not interfere with recruitment of native beach vegetation.

Articulated concrete block is a series of pre-formed concrete pieces interlocked with stainless steel wire cabling. It is commonly used for streambed protection and for shoreline protection against wave erosion. It is also used to protect against overtopping on the backside of levees or dams. Articulated concrete block would usually be installed on the north side of the road, below the surface of the surrounding sand.

An asphalt apron is essentially a widened shoulder that protects the road surface by moving the point of failure farther away from the travel lanes. These aprons do not so much attempt to impede the weir flow damage mechanism as set it in motion at a point where damage would occur to the apron, not the road itself. These aprons are thus intended to be sacrificial in nature. Under this alternative, the aprons would be buried under sand.

Alternative D is the NPS preferred alternative because it meets the purposes of the park, restores maximum public access to the Fort Pickens Area, and better protects the government's investment in infrastructure than does Alternative C.

2.7 Alternative E – Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Dune Enhancement

This alternative would involve reconstructing and/or repairing Fort Pickens Road along the same alignment called for in alternatives C and D (see figures 4A and 4B). However, unlike those alternatives, this alternative would protect the roadway primarily via a combination of beach renourishment and enhanced foredunes along the 4-mile reach from the Ranger Station at Langdon to the Fort Pickens entrance gate. Alternative E would take advantage of a planned maintenance dredging project at Pensacola Pass to be undertaken by the U.S. Army Corps of Engineers (the "Corps") on behalf of the Department of the Navy. Working in cooperation with the Corps, the park would accept approximately 1.75 million cubic yards of sand from the Pensacola Pass dredging project to be used for renourishment along the entire 4-mile segment of beach face from the Langdon Ranger Station to the Fort Pickens entrance gate. Specific prescription parameters for sand covering grain size, color, and absence of contamination would have to be adhered to before NPS would accept sand from the Corps. In addition, sand from an existing sand spoil site located in the Northwest quadrant of the Fort Pickens Area would be used to increase island elevation (approximately 8 feet above sea level) along the same 4-mile reach. (NPS estimates that approximately 1 million cubic yards of sand exists from this source.) The objective would be to regain elevation for purposes of road reconstruction while also providing adequate sand to enhance the natural restoration of the foredune areas lost to the 2004 – 2005 storm events. The replenished sand would be revegetated with native species to promote stability and continued foredune development.

The foredune areas would be staggered, or designed in such a way to mirror the near natural landform that otherwise would occur through natural processes.

The road prism, particularly across the overwash areas, would be reconstructed to an elevation of approximately 4 feet above sea level using sand from the spoil site. Sand would be placed at a very shallow grade on the south side, and a slightly elevated protective sand berm (approximately 2 to 3 feet above road surface) would be constructed in appropriate areas on the north side of the roadway. Native vegetation would be transplanted on the berm and along the south side of the road. No hardened structures would be used so as to provide for the continuation of barrier island natural geomorphic processes to the greatest extent possible.

Sand replenishment in the foredune area would promote additional, natural dune building, and in so doing would provide road protection without jeopardizing infauna recruitment. Renourishment would meet project objectives while facilitating recovery of the unit's flora and fauna in a manner that mirrors natural conditions.

Prescription measures would be incorporated into the restoration design of the foredunes to minimize to the greatest extent possible any impacts to adjacent resources, such as intact vegetated dunes or other dune structures in the process of forming. The intent of the restoration approach would be to rebuild the foredunes only in those areas currently devoid of dune formations where natural sand deposition is significantly curtailed due to current conditions.

It is understood that the Environmental Assessment for the Pensacola Pass maintenance dredging project will address a recommendation that the U.S. Navy convert to a biennial (or similar) maintenance dredging operation once the initial dredging operation is completed. Doing so would avoid the large pulses of sand that otherwise must be deposited when this activity is conducted once per decade. Under this revised dredging operation, the Seashore would be the recipient of beach quality sand in more manageable volumes. The result would be that the Seashore would have a reliable source of sand to refortify foredunes lost to past storm events. The park could continue renourishment until further island recovery/stabilization from the 2004-2005 hurricane events is reached. The achievement of full recovery and restoration would be determined through monitoring protocols to be established in cooperation with subject matter experts, government agencies, and cooperating universities enlisted to study project results.

Once the sand spoil site was depleted, NPS would restore the area to what it may otherwise have looked like today had it not been altered. NPS understands that the spoil site was originally established sometime in the late 1950s or early 1960s during a previous Pensacola Pass maintenance dredging project. This activity occurred before Gulf Islands National Seashore was established as a unit of the National Park System in 1971.

Figure 4A

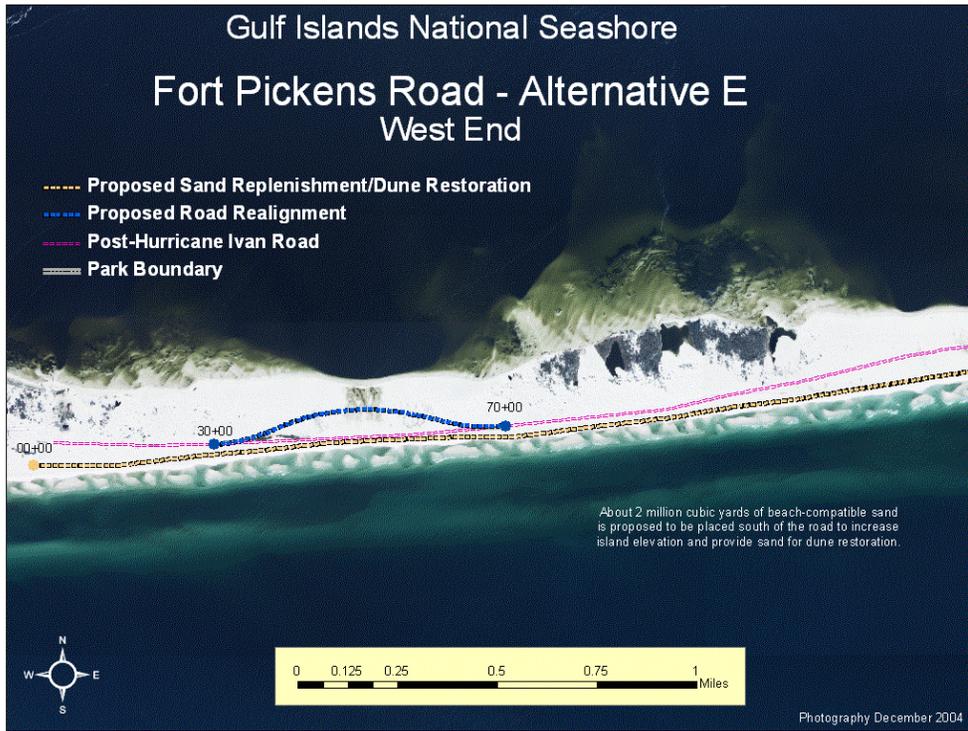


Figure 4B



2.8 Alternatives Considered but Dismissed

The following alternative was considered by the project team but was dismissed from further analysis as being unfeasible:

- *Land bridge, with some realignment and protection measures.* This alternative would involve reconstructing the Fort Pickens Road on pilings for the length of the island. It was dismissed due to being cost prohibitive, as well as physical dynamics and the impacts that individual pilings would have on natural erosive processes.
- *Reconstruct the Fort Pickens Road using a combination of alternative materials.* Such an approach has been pursued in places at Assateague Island National Seashore. Alternative materials could include coral (no clay base), geoweb with no surface, and articulated concrete block with no surface. A possible configuration would involve approximately 2 miles of coral road (no clay base), 1 mile of geoweb with no surface, and 1 mile of articulated concrete block. This alternative was dismissed because it would not allow the traffic speeds and traffic volumes of alternatives C, D, or E. In addition, this alternative would have high life cycle costs and high maintenance costs.

2.9 Mitigating Actions for the Preferred Alternative

The route of the reconstructed Fort Pickens Road was selected to avoid critical sea turtle and shore bird nesting habitat, archaeological sites, remnant dunes, wetlands, and dune and swale structures. By reconstructing the road on this alignment, two major mitigations occur: (a) the road is taken out of the primary dunes and sea turtle nesting habitat; and (b) the route of the preferred alternative is configured to avoid any new dunes and potential vegetation areas. Its vertical alignment would place it at a lower elevation, 4 feet above sea level, which is more protective from the erosive effects of overwash. Sections of sand berm would be established on either side of the road as an effort to provide additional protection from the erosive effects of over wash. In addition, various types of beach armoring, including geoweb, articulated concrete block, and asphalt apron, would be used in strategic locations to provide additional protection from the erosive effects of overwash. Best management practices for road construction would be used. All travel areas would be delineated to avoid construction traffic paths through potentially sensitive areas.

Care has been taken to assure as little damage to the natural setting as possible; for example, any needed fill would not be taken from available sands adjacent to the proposed 250-foot road prism, the island's sand budget would be maintained, and fill would be from compatible sources. The shallow transient breach described in Section 1.2 would not be filled entirely; only enough natural material (sand) necessary to accommodate the needed roadway elevation and fill would be introduced. The remainder of the breach and overwash area would be allowed to accrete and fill in by natural means. Apart from the strategically placed armoring measures described above, no permanent structural devices would be utilized or installed, such as head walls, culverts, bridges, or

other devices common to road construction. Due to the addition of bike lanes, there would be a slight net gain in road surface on this reach of park road on Santa Rosa Island.

To facilitate dune recovery, judicious use of sand fencing would occur, as would the planting of native vegetation along sand berms and other areas. To deal with the problem of lag, the road contractor would be required to remove all surficial asphalt (brick-size and above) in non-vegetated areas along the road corridor, as well as those road sections now located in the surf. The NPS would subsequently filter non-vegetated sand to remove smaller (brick size and below) pieces of asphalt.

In order to mitigate and minimize potential impacts to natural and cultural resources during construction, contractor employees would be instructed on the sensitivity of the general environment and their activities monitored by NPS staff. Corridors for construction vehicle movement would be established and defined on the ground. No work would be done during night time hours. Work outside the 250-foot road prism would be completed before shore bird nesting season in early April.

2.10 Required Waiver of NPS Management Policy

Section 4.8.1.1 of the NPS Management Policies (2006) states that NPS is to allow natural coastal processes to proceed without interference except to protect cultural resources, mitigate for other human-caused interference, or protect present developments in the short run to achieve park management objectives. Protection measures for present developments must be the most effective and natural-appearing methods feasible, and must minimize impacts outside the target area. The policy is even more stringent with respect to new developments. New developments are not to be placed in areas subject to wave erosion or active shoreline processes unless (1) the development is required by law; or (2) the development is essential to meet the park's purposes, as defined by its establishing act or proclamation, and

- No practicable alternative locations are available,
- The development will be reasonably assured of surviving during its planned life span, *without the need for shoreline control measures*, and
- Steps will be taken to minimize safety hazards and harm to property and natural resources

(NPS Management Policy § 4.8.1.1 (emphasis supplied).)

In light of the foregoing policy, Alternative B would require a waiver from NPS Management Policies because it involves new construction of piers, abutments, buoys, and pilings that would interfere with natural barrier island processes. Similarly, NPS is generally prohibited from constructing permanent, artificial road armoring at Santa Rosa Island, regardless of whether the reconstructed the Fort Pickens Road is considered to be “present development” or “new development.” If the reconstructed road is considered “present development,” the armoring structures are contrary to policy because they are permanent, not short term. On the other hand, if the road is considered “new

development,” the armoring structures are contrary to policy because the policy does not allow any armoring at all. Either way, NPS would need to obtain a policy waiver to allow the preferred alternative to proceed, should it be selected for implementation.

Section 9.1.1.6 of the NPS Management Policies provides additional direction to the NPS. This section directs the agency to avoid replacing damaged or destroyed park facilities, such as the Fort Pickens Road, in coastal high-hazard areas. When such facilities must be relocated in such areas, the NPS policy is to avoid or mitigate the effects of the facility on natural physical processes and the ecosystem. Compliance with this policy requires the NPS to mitigate the effects of the berms on the natural process of overwash, and on the park’s ecosystem. If the effects of the preferred alternative cannot be adequately mitigated, the NPS will seek a policy waiver from this section as well.

The renourishment and enhancement called for in Alternative E is permissible under NPS Management Policies because the natural processes of sand deposition on the island have been altered by human-caused disturbances generally, and the effects of Pensacola Pass in particular.

2.11 Environmentally Preferred Alternative

The NPS Handbook for implementing Director’s Order #12 (*Conservation Planning, Environmental Impact Analysis, and Decision Making*) requires that EAs identify the environmentally preferred alternative. Simply put, “this means the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources.” (Q6a) (516 DM 6 4.10(A)(5)). For this project, the Environmentally Preferred Alternative is Alternative A (No Action). By removing areas of damaged asphalt and not reconstructing the Fort Pickens Road, the island would be returned to a more natural state, with barrier island processes allowed to function more naturally. This alternative would also generate no footprint, would have the lowest maintenance needs, and result in the most habitat improvement for about 17 acres for natural communities of plants and animals on Santa Rosa Island.

2.12 Consistency with Sections 101 and 102(1) of NEPA

The Council on Environmental Quality (CEQ) regulations and National Park Service Policy state that Environmental Assessments prepared pursuant to NEPA must include a section stating how each alternative analyzed in detail would or would not achieve the requirements of NEPA sections 101 and 102(1) and other environmental laws and policies. 40 CFR 1502.2(d). This requirement is met within the National Park Service by (a) describing how each alternative meets the criteria set forth in NEPA section 101(b), and (b) identifying any conflicts between the alternatives analyzed in detail and other environmental laws and policies.

Section 101(b) of the National Environmental Policy Act identifies six criteria for assessing whether a proposed federal action complies with the national environmental policy as set forth in the act. Specifically, the act directs that a proposed federal action should:

- Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.
- Ensure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.
- Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.
- Preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.
- Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life's amenities
- Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

Alternative D is the alternative that best achieves consistency with the above 6 bulleted values of Sections 101 and 102(1) of NEPA. This alternative balances impacts to Seashore resources with public access and sustainability, thereby preserving diversity and variety of individual choice, a sharing of life's amenities, and healthful and pleasing surroundings. GUIS interprets its enabling statute, 16 U.S.C. § 459h et seq., as including an obligation to provide access to the Fort Pickens Area; in that regard, over 717,000 people use and enjoy this Area each year. Alternative B provides access to the Seashore, but provides less flexibility to individual visitors than alternatives C and D. Alternative D provides greater flexibility to visitors by restoring motorized access to the Fort Pickens Area. At the same time, Alternative D minimizes impacts to park resources by limiting armoring to strategic locations. While alternatives B, C, and E are equally consistent with Sections 101 and 102(1) of NEPA, Alternative D protects the government's investment better than do alternatives C and E. Accordingly, Alternative D is the NPS' preferred alternative.

2.13 Comparison of Alternatives

The environmental impacts associated with the four alternatives are summarized as follows.

Alternative A, No Action:

Geology: moderate to major, long term, beneficial

Vegetation: minor, long term, beneficial

Fish and Wildlife: minor to moderate, long term, beneficial

Threatened, Endangered, or Special Concern Species: minor to moderate, long term, beneficial

Wetlands and Floodplains: negligible, long term, beneficial

Archaeology: negligible, long term, neutral

Visitor Use and Experience: major, long term, adverse

Park Operations: major, long term, adverse

Socioeconomic Environment: major, long term, adverse

Alternative B, Provide access via Alternative Transportation

Geology: minor, long term, beneficial

Vegetation: minor, long term, neutral

Fish and Wildlife: minor to moderate, long term, beneficial and adverse

Threatened, Endangered, or Species of Special Concern: moderate, long term, adverse

Wetlands and Floodplains: negligible to minor, long term, beneficial

Archaeology: minor, long term, neutral

Visitor Use and Experience: moderate, long term, adverse

Park Operations: moderate, long term, adverse

Socioeconomic Environment: moderate, long term, adverse

Alternative C, Reconstruct Fort Pickens Road with Protective Sand Berms

Geology: minor to moderate, long term, adverse

Vegetation: minor, long term, neutral

Fish and Wildlife: moderate, long term, adverse

Threatened, Endangered, or of Species of Special Concern: minor to moderate, long term, adverse

Wetlands and Floodplains: minor, long term, adverse

Archaeology: negligible, long term, neutral

Visitor Use and Experience: major, long term, beneficial

Park Operations: major, long term, beneficial

Socioeconomic Environment: major, long term, beneficial

Alternative D, Reconstruct Fort Pickens Road with a Mix of Protective Elements

Geology: moderate, long term, adverse

Vegetation: minor, long term, neutral

Fish and Wildlife: moderate, long term, adverse

Threatened, Endangered, or of Special Concern Species: moderate, long term, adverse

Wetlands and Floodplains: moderate, long term, adverse

Archaeology: negligible, long term, neutral

Visitor Use and Experience: major, long term, beneficial

Park Operations: major, long term, beneficial

Socioeconomic Environment: major, long term, beneficial

Alternative E, Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration

Geology: moderate, long term, beneficial

Vegetation: minor to moderate, long term, beneficial and adverse

Fish and Wildlife: moderate, long term, beneficial

Threatened, Endangered, or of Special Concern Species: moderate, long term, beneficial

Wetlands and Floodplains: minor to moderate, long term, adverse

Archaeology: negligible, long term, neutral

Visitor Use and Experience: major, long term, beneficial

Park Operations: major, long term, beneficial

Socioeconomic Environment: major, long term, beneficial

3.0 AFFECTED ENVIRONMENT

3.1 General Setting

Gulf Islands National Seashore is located in the northeastern portion of the Gulf of Mexico and includes a widely spaced chain of barrier islands extending nearly 160 miles from Cat Island in Mississippi to the eastern end of Santa Rosa Island in Florida. Other islands in the national seashore include Horn, Petit Bois, East Ship, West Ship and a portion of Cat Island in Mississippi and a section of Perdido Key in Florida. The national seashore also includes mainland tracts at Pensacola Forts and Naval Live Oaks Reservation near Pensacola, Florida and Davis Bayou, adjacent to Ocean Springs, Mississippi. More than 80% of Gulf Islands National Seashore consists of submerged lands. The Fort Pickens Area is about 1740 acres in land area.

Santa Rosa Island is a long, narrow barrier island about 50 miles in length and one quarter to one half mile in width. It is composed of clean white quartz sand and contains a dune terrain supporting beach grasses and herbs with isolated copses of maritime forests. It separates the Gulf of Mexico from Santa Rosa Sound and Pensacola Bay. During the period 2004-2005, in Hurricanes Ivan, Dennis, and Katrina, sand was removed from the beach-dune system and deposited as a broad overwash fan across much of the island burying beach vegetation. The result is a flat bare expanse of sand in many areas.

Three small towns are present on the island: Pensacola Beach (population 2738) at the west end, Navarre Beach (population 20,967) in the middle, and Fort Walton Beach (population 19,973) at the east end. From Pensacola Beach a 7-mile-long road runs west to Fort Pickens.

Coastal barrier islands, such as those located in Gulf Islands National Seashore, are unique land forms that provide protection for diverse aquatic habitats and serve as the mainland's first line of defense against the impacts of severe coastal storms and erosion. Located at the interface of land and sea, the dominant physical factors responsible for shaping coastal landforms are tidal range, surge, wave energy, and sediment supply from rivers and older, pre-existing coastal sand bodies. Relative changes in local sea level also profoundly affect coastal barrier island diversity. Six characteristics define coastal barrier islands:

- They are subject to the impacts of coastal storms and sea level rise
- They buffer the mainland from the impact of storms
- They protect and maintain productive estuarine systems which support the nation's fishing and shellfishing industries
- They consist primarily of unconsolidated sediments

- They are subject to wind, wave, and tidal energies
- They include associated landward aquatic habitats which the non-wetland portion of the coastal barrier island protects from direct wave attack

Coastal barrier islands protect the aquatic habitats between the barrier island and the mainland. Together with the adjacent wetland, marsh, estuarine, and near shore water habitats, coastal barrier islands support a tremendous variety of organisms. Millions of fish, shellfish, birds and other wildlife depend on barrier islands and their associated wetlands for vital feeding, spawning, nesting, nursery, and resting habitat.

3.2 Physical Resources

Geology and Soils

The national seashore islands are significant in their east/west orientation, large supply of reworked sand, and susceptibility to hurricane forces. These elements combine to make them extremely dynamic, constantly changing environments that provide habitats and ecosystems, which, if properly cared for, can be natural laboratories for observing relatively rapid natural changes on populations of plants and animals. Their insular nature has also provided a degree of protection for a variety of rare, threatened, or endangered wildlife and plant species.

Santa Rosa Island is composed of approximately 99% quartz sand. This sand is medium grained, between 0.60 millimeters and 0.43 millimeters in diameter with very good sorting of grain size. An even grain size is shown with few fine particles, silt, and few course particles, pebbles or shell hash.

Santa Rosa Island, like all barrier islands, is a product of natural functions such as erosion/accretion and overwash. The island migrates to the west through the daily process of alongshore drift and to the north during extreme storm events through overwash. Barrier islands migrate relative to sea level and the energy dynamics of the system, through the redistribution of sand. Recent studies have shown that the volume of sand on the island remains relatively stable; it is just redistributed to the north. From a geological standpoint, it is critical to the long-term survival of the barrier island to allow these processes to continue. In a time of documented sea level rise and increased tropical storm activity, the island must be allowed to migrate landward into shallower water.

Following hurricane impact, these same natural functions serve to rebuild the structure of the island. The island is fronted by a low-elevation beach berm that develops following a hurricane and can be over-topped by elevated water levels during strong frontal storms. Overwash during these storms is part of the post-hurricane recovery of the barrier island. The sediment deposited in these overwash fans is important to the recovery of the dunes and the vertical structure of the island. The dune system redevelops from and within the overwash sediments and through sediment delivery under fair-weather conditions. Overwash during both extreme and frontal storms is a strong control on the ecological

makeup and diversity of the island and any impedance to overwash will not only alter the post-hurricane topography but also the ecology (Houser and Oravetz 2006).

Vegetation

The terrestrial vegetation composition within the national seashore results from variations in salt spray, sand deposition, wind flow, erosion, and human and meteorological disturbances. Vegetative communities within the national seashore include dunes, forests, salt marshes, and bayous.

The dune-strand environment in the Florida district includes a series of primary sand dunes 10 to 20 feet in height and adjacent areas that are parallel to the Gulf of Mexico. The dune-swale environment consists of isolated or connected dunes interspersed with low, wetland areas called swales. Dunes are dry and sandy, though swales are occasionally flooded with fresh rainwater and their soil remains moist even during dry periods. Tree species in the dune-swale are shrub-like. Gulf beaches are located to the south of the primary dunes, while the north face of the primary dune joins the dune-swale.

The beach dune community is composed of two separate plant associations. Hardy pioneer plants, mainly sea oats, *Uniola paniculata*, are found in the harsher foredune area. The roots of sea oats serve as the anchoring system for the dunes. A more diverse plant community, including beach grass, *Uniola paniculata*, bunch grass (Family Poaceae), prickly-pear cactus, *Opuntia humifusa*, and golden aster, *Chrysopsis gossypina*, is found on the protected lee side of the dunes.

Fresh and salt marsh communities constitute the majority of wetland areas in the national seashore. Marsh wetlands form in low spots or inlets throughout the national seashore. Fresh water marsh areas are often isolated or associated with ponds, swales, or abandoned mosquito control ditches. True freshwater marshes are fed by rainwater, as opposed to tidal activity that supports salt marshes.

The salt marsh environment consists of salt-tolerant wetland plants growing along the sound and bay shores. It is divided into three general zones: high marsh, brackish marsh, and tidal marsh. High marsh areas are only inundated during the highest tides, but stay moist due to the salt-marsh grass ability to provide shade and reduce the rate of evaporation. The brackish marsh environment contains a combination of salt and fresh waters, and water levels fluctuate with the tides. The most productive of the marsh zones, tidal marshes are inundated twice daily. Dominant salt marsh vegetation within the national seashore is composed of black rush, marsh spike grass, and saltwort. Salt marsh areas can be scattered and small, but some are more extensive, such as Big Sabine at Santa Rosa Island, the Fort Pickens ponds, and marshes on the east and west ends of Perdido Key.

Shoreline vegetation is limited on the majority of shorelines due to continual wave induced erosion and visitor activity. Vegetation that is present along shorelines is often

dominated by sea oats due to its ability to withstand the high salt environment. Soil and sand disturbances can cause intense wash-over disturbance.

Submerged aquatic vegetation is a diverse assembly of rooted macrophytes that grow in shallow water, under the surface, but not above it. Under federal regulations, submerged aquatic vegetation beds are considered special aquatic sites (40 CFR 230 Section 404 (b)(1) Guidelines — Protection of Wetlands and other Waters of the United States). At Gulf Islands National Seashore, submerged aquatic vegetation beds consist of several species of seagrasses. Seagrasses are very important in stabilizing bottom sediments and improving water clarity by trapping the fine particles that would otherwise remain suspended by wave and current action. Seagrasses bind shallow water sediments with their roots and rhizomes and baffle wave and current energy with their leafy canopy.

Seagrasses form the basis of the food web in clear water systems and provide important nursery habitat for many species. Larval and juvenile forms of fishes and invertebrates find protection in seagrass beds and many species of fish, mammals, turtles, and birds use these areas as feeding habitat. Further, the seagrass beds occurring within Gulf Islands National Seashore and surrounding waters are vital nursery areas for Gulf of Mexico fisheries.

Gulf Islands National Seashore Florida District waters contain approximately 1,930 acres of potential seagrass habitat in the Perdido Key area and waters north of Santa Rosa Island. Potential seagrass habitat within the national seashore consists of shallow areas less than seven feet deep with stable sediments and slow currents. The primary seagrass species in park waters are turtle grass, *Thalassia testudinum*, manatee grass, *Syringodium filliforme*, shoal grass, *Halodule wrightii*, and widgeon grass, *Ruppia maritima*. In 1949, seagrass beds in the Pensacola Bay system were extensive, but by 1975, these beds were documented to have receded or disappeared. In Perdido Bay, seagrass decline within the whole system was nearly 50% from 1940 to 1987, with some specific areas experiencing seagrass coverage losses of greater than 80%. Seagrass decline in these areas was attributed to increased turbidity caused by harbor and intracoastal waterway dredge and fill activities, boat traffic, shoreline modification, reduced water quality from residential, commercial, and industrial development, and hurricane-related effects. Big Lagoon in the Perdido Key area and the area north of Santa Rosa Island are the only water bodies within the Pensacola Bay watershed that still contain moderately diverse seagrass beds. Because of the decline of these seagrass beds in recent years, the FDEP's Ecosystem Restoration Section has been conducting a seagrass restoration program in Pensacola Bay. Part of this program includes a seagrass monitoring program to establish baseline data for seagrass beds in Big Lagoon and the area north of Santa Rosa Island. The occurrence and distribution of seagrasses in the Florida District of Gulf Islands National Seashore are detailed in table 3.2.

TABLE 3.2: SEAGRASS HABITAT IN THE FLORIDA DISTRICT OF GULF ISLANDS NATIONAL SEASHORE

Area	Seagrass Habitat (acres)
Big Lagoon (Perdido Key area)	640
Fort Pickens	422
Santa Rosa Area	772
Naval Live Oaks	94
Total for Florida District of national seashore	1,928

Wildlife and Wildlife Habitat

Upland animal species are somewhat limited in number on barrier islands due to the lack of diversity in vegetation and difficulty of access from mainland areas. No large terrestrial animals are common on Santa Rosa Island.

Common smaller native mammal species found in the Florida and Mississippi districts include marsh rabbit, *Sylvilagus palustris*, eastern cottontail rabbit, *Sylvilagus floridanus*, opossum, *Didelphis virginiana*, squirrel, *Sciurus carolinensis*, skunks, *Mephitis mephitis*, gray fox, *Urocyon cinereoargenteus*, raccoon, *Procyon lotor*, eastern wood rats, *Neotoma floridana*, hispid cotton rats, *Sigmodon hispidus*, eastern moles, *Scalopus aquaticus*, southeastern pocket gophers, *Geomys pinetis*, short-tailed shrews, *Blarina carolinensis*, and a variety of bats, including southeastern myotis, *Myotis austroriparius*, Rafinesque’s big-eared bat, *Corynorhinus rafinesquii*. River otters, *Lutra canadensis*, can also be found in the canals near Fort Pickens.

Gulf Islands National Seashore has over 280 species of birds that use the islands for loafing, nesting, feeding, wintering, or migratory rest stops. These birds include songbirds, waterfowl, wading birds, birds of prey, marine birds, and shorebirds. Sandpipers, herons, egrets, ospreys, marsh wrens, terns, gulls, and several species of rails are just a few species that utilize the island habitats.

In the Florida District shorebird nesting, foraging, and loafing areas are located along the north and south shorelines of all Florida District islands as well as along both the north and south shores of the Naval Live Oaks area. In addition, great blue heron, *Ardea herodias* and night heron, *Nyctanassa sp.*, nesting and roosting areas are located on Perdido Key and Santa Rosa Island. Osprey, *Pandion haliaetus*, nest on Santa Rosa Island and in the Naval Live Oaks area.

The national seashore implements seasonal closures that are reviewed on an annual basis to protect valuable shorebird habitat from impacts resulting from public use. These areas are used each year by nesting shorebirds. These closures are necessary to protect shorebirds, eggs, and chicks from human disturbance. Any less restrictive measures would permit public access into areas where shorebirds build shallow, highly disguised

nests in sand and deposit small, off-white colored eggs, which are extremely difficult to see, resulting in a high probability of the loss of wildlife.

Common amphibians and reptiles found in the national seashore include the eastern glass lizard, *Ophisaurus ventralis*, anole, *Anolis sp.*, sand and ground lizard, *Sceloporus sp.* *Scincus lateralis*, five lined skink, *Eumeces inexpectatus*, American alligator, *Alligator mississippiensis*, and the alligator snapping turtle, *Macrochelys temminckii*. In addition, the national seashore provides habitat for four species of sea turtles, including Atlantic loggerhead, *Caretta caretta*, green, *Chelonia mydas*, Kemp's ridley, *Lepidochelys kempii*, and leatherback, *Dermochelys coriacea*. Since all of these species are on the endangered species list, they are discussed in the Threatened, Endangered, or Special Concern Species section.

Non-native wildlife species found in both districts include Norway rat, *Rattus norvegicus* armadillo, *Dasypus novemcinctus*, coyote, *Canis latrans*, red fox, *Vulpes vulpes* and black rat, *Rattus rattus*.

Fish and Fish Habitat

More than 200 species of fish occur within the waters of Gulf Islands National Seashore. Because the estuarine and marine habitats (e.g., seagrass beds and unvegetated soft bottoms) encompassed within the two districts of the national seashore are similar and in relatively close proximity, the following discussion applies to both districts, except where noted.

The most abundant fish are anchovies, *Anchoa sp.* Silversides, *Menidia sp.*, are abundant in the shallow nearshore waters. These small species, among others, provide food for larger predators. Killifish, *Fundulis sp.*, sailfin molly, *Poecilia latipinna* and mosquito fish, *Gambusia affinis*, live in ponds and lagoons, and along the beaches. Myriad larval and young fish occupy the shallow waters around the islands and find food and protection in the seagrass beds. These include most of the important sport and commercial species that spawn further offshore and spend the early parts of their lives in estuarine nursery areas.

Numerous commercially and recreationally important species occur within the waters of the national seashore. Speckled sea trout, *Cynoscion nebulosus*, spawn around the islands and are often the most sought after sport fish. The red drum, *Sciaenops ocellatus*, sand sea trout, *Cynoscion arenarius*, kingfish and mackerel, jack and pompano, flounder, bluefish, *Pomatomus saltatrix*, snapper and many other species provide excellent surf and troll fishing. Cobia, *Rachycentron canadum*, locally known as lemon fish, and tarpon, *Megalops atlanticus*, are among the large game fish.

Several species of sharks occur in seashore waters, including hammerhead, *Sphyrna sp.*, bonnethead, *Sphyrna tiburo*, Atlantic sharpnose, *Rhizoprionodon terraenovae*, bull, *Carcharhinus leucas*, and blacktip, *Carcharhinus limbatus*. Several species of rays, including Southern stingrays, *Dasyatis americana*, manta rays, *Manta birostris*, and

spotted eagle rays, *Aetobatus narinari*, occur as well. Southern stingrays are the most abundant and commonly feed and rest in shallow waters.

Several species of shellfish that are of commercial, recreational, and ecological importance occur in Gulf Islands National Seashore waters, including blue crabs, *Callinectes sapidus*, stone crabs, *Menippe mercenaria* and many species of shrimp. Water bottoms around the seashore in the Florida and Mississippi districts are important nursery areas for most species of shellfish. Blue crabs are caught recreationally. Three species of shrimp (brown shrimp, *Penaeus aztecus*, white shrimp, *Penaeus setiferus*, and pink shrimp, *Penaeus duorarum*) occur at various seasons and life stages in seashore waters. Commercial shrimping is not allowed within the national seashore boundaries. Stone crab juveniles are common in the Pensacola Bay system waters and Gulf stone crab adults and juveniles are common in Mississippi Sound waters. Bay scallops, *Aequipectin irradians*, whose range once extended to Pensacola, are now rare in areas west of St. Joseph Bay.

The 1996 Magnuson-Stevens Act requires cooperation among the National Marine Fisheries Service (NMFS), fishers, and federal and state agencies to protect, conserve, and enhance essential fish habitats. Essential fish habitat (EFH) is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 USC 1802(10)). EFH occurs for several species of fish in the Florida and Mississippi districts of Gulf Islands National Seashore. An EFH has not yet been designated for most species occurring in the Gulf of Mexico.

NOAA’s Estuarine Living Marine Resources (ELMR) Program developed a database on the distribution, relative abundance, and life history characteristics of ecologically and economically important fishes and invertebrates in the nation’s estuaries. Based on ELMR data, NOAA has designated EFH for more than 30 estuaries in the northern Gulf of Mexico for a number of species of finfish and shellfish. EFH occurs for several species of fish and shellfish in and around Gulf Islands National Seashore waters. Table 3.2.1 provides a summary of essential fish habitat for key species that occur in Pensacola Bay.

Table 3.2.1: Essential fish habitat for key species that occur in Pensacola Bay

Species	Pensacola Bay
Brown Shrimp <i>Penaeus aztecus</i>	X
Gray Snapper <i>Lutjanus griseus</i>	X
Gulf Stone Crab <i>Menippe adina</i>	X
Pink Shrimp <i>Penaeus duorarum</i>	X
Red Drum <i>Sciaenops ocellatus</i>	X
Spanish Mackerel	X

<i>Scomberomorus maculatus</i>	
Spiny Lobster <i>Panulirus argus</i>	
White shrimp <i>Penaeus setiferus</i>	X

Source: NOAA 2002

Additional invertebrates of ecological importance exist within the waters of Gulf Island National Seashore, although essential fish habitat has not been designated for these species. These species include horseshoe crab, *Limulus polyphemus*, mole crab, *Emerita talpoida*, fiddler crab, *Uca sp.*, several species of hermit crabs, coquina, *Donax sp.*, several species of conch, *Strombus sp.*, oyster drill, *Urosalpinx cinerea* and various copepods, isopods, and amphipods.

Threatened, Endangered, or Special Concern Species

The U.S. Fish and Wildlife Service lists species as threatened or endangered when they meet criteria detailed under the Endangered Species Act of 1973. Candidate species are also designated when there is adequate information regarding threats or vulnerability to warrant issuance of a proposed rule to list, but circumstances preclude rule issuance.

Table 3.2.2 sets forth wildlife species that may occur in or near Gulf Islands National Seashore that are listed by the U.S. Fish and Wildlife Service or the state of Florida as threatened (T), endangered (E), or as species of special concern (SSC):

Table 3.2.2. Endangered and Threatened Species in or near Gulf Islands National Seashore

Species	Federal in FL	State of FL
Manatee <i>Trichechus manatus latirostrus</i>	E	
Perdido Key Beach Mouse <i>Peromyscus polionotus trissyllepsis</i>	E	E
Santa Rosa Beach Mouse <i>Peromyscus polionotus leucocephalus</i>	--	SSC
American Alligator <i>Alligator mississippiensis</i>	T	SSC
Atlantic loggerhead sea turtle <i>Caretta caretta</i>	T	
Green sea turtle <i>Chelonia mydas</i>	E	
Kemp’s Ridley sea turtle <i>Lepidochelys kempii</i>	E	
Leatherback sea turtle <i>Dermochelys coriacea</i>	E	

Gopher Tortoises <i>Gopherus polyphemus</i>	--	SSC
Gulf sturgeon <i>Acipenser oxyrinchus</i>		SSC
Saltmarsh topminnow <i>Fundulus jekinsi</i>		SSC
Piping plover <i>Charadrius melodus</i>	T	T
Southeastern snowy plover <i>Charadrius alexandrinus</i>		T
Least tern <i>Sterna antillarum</i>		T
Black skimmer <i>Rhynchops niger</i>		SSC
Reddish egret <i>Egretta rufescens</i>		SSC
Little blue heron <i>Egretta caerulea</i>		SSC
Snowy Egret <i>Egretta thula</i>		SSC
Brown pelican <i>Pelecanus occidentalis</i>		SSC
Southeastern American kestrel <i>Falco sparverius</i>		SSC

Manatee

Florida District. The Florida manatee, *Trichechus manatus latirostrus*, a subspecies of the West Indian manatee, is a large gray or brown aquatic mammal native to the United States in Florida, Georgia, and Puerto Rico. Manatees are found in shallow rivers, estuaries, and inshore coastal areas where they feed on seagrasses and other aquatic vegetation. Adult manatees average 10 feet long, weigh 1,000 pounds, and can consume nearly 10% of their body weight in aquatic plants daily. During the winter months, manatees migrate to the warmer waters of south Florida or form large aggregations in natural springs and industrial outfalls where water temperatures are elevated.

Manatees, as air-breathers, spend much time at the water surface, and feeding and resting in shallow seagrass beds they cannot always dive quickly or deep enough to avoid being struck by boats. Over the past decade, more than 30% of manatee deaths were human-related, primarily from collisions with boats, but also including entanglement in commercial fishing gear, and being crushed in canal locks and floodgates. A major factor in the decline of the manatee population has been the loss of seagrass beds due to human development impacts to coastal waters of the northern Gulf of Mexico. Natural manatee mortalities have been attributed to strong cold weather fronts and toxic red tide blooms. Because of the decline in manatee populations, the U.S. Fish and Wildlife Service has

listed the manatee as an endangered species. During the 2003 annual manatee count in Florida, 1,299 manatees were counted along Florida's Gulf Coast.

In the Florida District, manatee sightings are rare but have been documented in the Gulf of Mexico and Pensacola Bay. Most manatee sightings are in the waters of the Gulf of Mexico, though some individuals have been documented in Pensacola Bay and likely some in the area north of Santa Rosa Island and the Perdido Key area. The national seashore does not monitor for the species. Manatee sightings occur in national seashore waters in late spring and summer when water temperatures range from the upper 70° to low 80°F.

Santa Rosa beach mouse

The Santa Rosa beach mouse, *Peromyscus polionotus leucocephalus*, is a state-listed species of concern in Florida and is found only on Santa Rosa island in Florida. It inhabits both beach and interior dunes that are vegetated with sea oats and other typical vegetation. Storm damage, human destruction of habitat and predation by introduced species are potential threats to populations. There are a total of three known populations at the extreme ends and middle of the island.

American alligator

The American alligator, *Alligator mississippiensis*, is a large reptile reaching lengths of 6 to 12 or more feet and is blackish in appearance with pale crossbands on the back and vertical markings on the sides. Alligators inhabit rivers, swamps, estuaries, lakes, and marshes in the southeastern United States from North Carolina to Texas. Both adults and young feed on a variety of animals, including fish, turtles, and other aquatic organisms.

Formerly on the federal endangered species list, the American alligator is now considered fully recovered and is listed as threatened due to similarity of appearance with other crocodylians. The state of Florida lists the alligator as a species of special concern. In the Florida District, American alligator is present in wetlands in the Fort Pickens and Naval Live Oaks areas. The national seashore occasionally receives reports of alligators sighted on the beach. The American alligator is capable of swimming in marine waters, as evidenced by its presence at the Mississippi barrier islands where it inhabits wetlands and brackish lagoons. The national seashore does not have any monitoring data documenting population (relative abundance and density) trends for this species.

Sea turtles

Four species of sea turtles occur in the waters of Gulf Islands National Seashore: the Atlantic loggerhead, green, Kemp's Ridley, and leatherback. Each of these species is listed as federally threatened or endangered (see table 11). Sea turtle populations have been adversely impacted due to loss and alteration of nesting habitat, increased mortality from boat strikes, and entanglement in commercial fishing gear. Each year numerous adult and sub-adult sea turtles are found dead in the national seashore and surrounding

waters. Causes of death include ingestion of commercial fishing longline hooks and line, boat strikes, drowning in commercial fishing gear, and natural causes.

In the Florida District, sea turtles are primarily present in Gulf of Mexico waters. Jellyfish are a common sea turtle prey item and may attract sea turtles into the Perdido Key area and the area north of Santa Rosa Island. Additionally, green turtles may be attracted to feed in the seagrass beds in the Perdido Key area and the area north of Santa Rosa Island.

On a seasonal basis, sea turtles are present in national seashore waters in the spring, summer and fall, until cold weather drives them to warmer southern waters. The national seashore does not have monitoring data on the abundance and distribution of sea turtles in national seashore waters. A loggerhead turtle satellite tagging program in the national seashore has revealed that the loggerhead population is most likely a distinct Gulf of Mexico population, separate from the Atlantic population. The program also revealed that some individual turtles remain in area waters year round.

Sea turtles also nest on the beaches within the Florida District of the national seashore during the spring and summer months. The Florida District includes 21 miles of beaches suitable for sea turtle nesting. Loggerhead turtles comprise the majority of sea turtle nesting in the Florida District, although green turtles occasionally nest as well, and five Kemp's ridley nests and one leatherback nest have been documented in recent years. An average of 40 to 50 sea turtles nest in the Florida District annually. Nests are marked, dated, and watched by staff biologists and volunteers. About 60 days after nesting, the turtle hatchlings emerge from the sand and crawl toward the brightest horizon. Hatchlings in the Florida District often crawl in the wrong direction at night due to light pollution from the surrounding developed areas, resulting in high rates of hatchling mortality through predation and desiccation, so national seashore staff and volunteers estimate when hatchlings are likely to emerge from nests in an attempt to steer the hatchlings to the sea. About one-fourth of sea turtle nests in the Florida District are relocated to higher ground by staff biologists, as some turtles nest in areas that are vulnerable to flooding from hurricanes, strong southerly winds or inundation from high tides.

Gopher tortoise

The gopher tortoise, *Gopherus polyphemus*, while not federally listed for Florida, is a species of special concern in the state. Gopher tortoises live in extensive burrow systems in dry upland habitats in longleaf pine sandhills, xeric oak hammocks, scrub, pine flatwoods, dry prairies, and coastal dunes. Habitat loss is the largest threat to the species. Gopher tortoises are known to occur in inland locations of mainland areas within the Florida district of the national seashore. They are rare in the Fort Pickens Area.

Fish species

The Gulf sturgeon, *Acipenser oxyrinchus*, inhabits coastal rivers, bays, and the northern Gulf of Mexico from Louisiana to Florida. Adults range from six to eight feet in length.

Adult fish are bottom feeders, eating primarily invertebrates, including brachiopods, insect larvae, mollusks, worms, and crustaceans. Over fishing throughout most of the 20th century resulted in a decline in Gulf sturgeon populations. This decline has been exacerbated by spawning habitat loss associated primarily with the construction of dams, as Gulf sturgeon are anadromous and travel to the upper river reaches where they were hatched to spawn. In 1991, the U.S. Fish and Wildlife Service listed the Gulf sturgeon as a threatened species.

The U.S. Fish and Wildlife Service and National Marine Fisheries Service recently designated critical habitat essential to the conservation of the Gulf sturgeon. Nearshore waters within one nautical mile of the mainland from Pensacola Pass to Apalachicola Bay and the Perdido Key area and the area north of Santa Rosa Island were designated as critical habitat, as they are believed to be important migratory pathways between Pensacola Bay and the Gulf of Mexico for feeding and genetic exchange.

The saltmarsh topminnow, *Fundulus jenkinsi*, is a small fish native to the north-central coast of the Gulf of Mexico of the southern United States, from Galveston Bay, Texas, eastward through Louisiana, Mississippi, Alabama and parts of western Florida. Because the saltmarsh topminnow lives in salt marshes and brackish water, coastal erosion and conversion of marshes to deeper, open water eliminates the marsh surface that, when flooded, provides important feeding, shelter, and possible breeding areas for saltmarsh topminnows. The National Marine Fisheries Service designated the saltmarsh topminnow as a candidate species for protection under the Endangered Species Act in 1997. The state of Florida lists the saltmarsh topminnow as a species of special concern. The saltmarsh topminnow is believed to occur in the Pensacola Bay system.

Bird species

The majority of the area of Santa Rosa Island in GUIIS has been over washed and is now, temporarily, excellent habitat for nesting shore birds: plover, tern, skimmer, and gull. An abundance of open sand flats – preferred habitat – exists, and good nesting seasons are anticipated for the next few years. As beach grasses develop and dunes accrete, the available nesting habitat will shrink, but for the moment the habitat and associated site requirements for successful nesting are abundant.

The piping plover, *Charadrius melodus*, is a federally threatened species as well as a state-listed threatened species in Florida. Parts of the national seashore have been designated critical wintering habitat. Habitat is concentrated in open beaches and tidal flats, and piping plovers begin arriving in July and remain into the following May (NPS 200 la). Full surveys have not been conducted, but within the Florida District, piping plovers are known to winter in tidal flat areas on Perdido Key and on the north side of Santa Rosa Island. Piping plover have also been observed utilizing tidal flat areas created when Hurricane Ivan breached Santa Rosa Island in several places.

The southeastern snowy plover, *Charadrius alexandrinus*, is a year-round resident of the national seashore, and is a state-listed threatened species in Florida. Beaches, dry mud or

salt flats, and the sandy shores of rivers, lakes, and ponds are the normal habitat for this plover. It nests on the ground of broad open beaches where vegetation is sparse or absent. Nests are often subject to flooding, and the plover faces threats from loss of habitat due to beach development (Nature Serve Explorer 2002). In 2005, 37 southeastern snowy plover nests were monitored by staff biologists in the Florida district; in 2006, 31 nests were monitored. Feeding and loafing areas are also present on the western side of the Santa Rosa area.

The least tern, *Sterna antillarum*, is a state-listed threatened species in Florida. It nests near water, particularly on seacoasts, beaches, bays, estuaries, lagoons, lakes, and rivers. The least tern rests and loafs on sandy beaches, mudflats, and salt-pond dikes. The least tern is susceptible to human disturbances, predation, flooding, and loss of habitat. Colonies establish and reestablish along the length of the islands, as least terns will nest wherever suitable habitat exists and will relocate when habitat disturbances occur. In the early 1990s, Perdido Key supported a large colony of least terns near the eastern tip, but after Hurricane Opal, the populations at Fort Pickens and Santa Rosa increased dramatically.

The black skimmer, *Rhynchops niger*, is a state-listed species of concern in Florida. Primary habitat for the black skimmer is coastal waters, including beaches, bays, estuaries, and sandbars, as well as tidal creeks that are used for foraging. It primarily nests on sandy beaches, small coastal islands, and dredge spoil islands. Within the national seashore, black skimmers share colony sites with least terns. Like the least tern, the black skimmer locates and relocates colonies based on environmental changes and disturbances. In the year 2000 there were approximately 18 black skimmer nests in the Santa Rosa area, while in the year 2001 there were three. In the Fort Pickens area, 2 nests were documented in 2000, 47 nests in 2001, and 38 nests in 2002.

The reddish egret, *Egretta rufescens*, a state-listed species of concern in Florida, has been identified within the national seashore as an uncommon and occasional migratory species. The reddish egret is generally found in shallow water areas that are saline, hypersaline, or brackish within coastal habitats, including barren sand or mud tidal flats, salt ponds, lagoons, and open red mangrove and black mangrove communities. It occasionally feeds in other habitats including coastal beaches, sparsely vegetated freshwater marshes, and the shores of lakes and reservoirs. Habitat loss and human disturbance are the main factors in the decline of the species.

The little blue heron, *Egretta caerulea*, is a state-listed species of concern in Florida. It is found primarily in freshwater habitats in marshes, ponds, lakes, meadows, mudflats, lagoons, streams, mangrove lagoons, and other bodies of calm shallow water. It nests in trees and shrubs to about 4 meters above ground or water, often with other herons, egrets, and ibises. The primary threat to populations is disturbance and development of nesting areas, in addition to weather and shoreline variability. The little blue heron is rarely observed in the Naval Live Oaks area, and is likely only migratory in the area, as nesting activity has not been confirmed within the national seashore.

The snowy egret, *Egretta thula*, is a state-listed species of concern in Florida. It is found in marshes, lakes, ponds, lagoons, mangroves, and shallow coastal habitats. It often nests with other colonial water birds in trees or shrubs, and occasionally on the ground or in marsh vegetation. The main threat to the snowy egret is from loss and degradation of wetland habitats. The snowy egret is not known to nest within the national seashore, but it is found within park saltmarsh environments.

The brown pelican, *Pelecanus occidentalis*, though not federally protected in Florida, is a state species of special concern and is found throughout the district. The brown pelican feeds primarily in shallow waters within 20 miles of the shoreline, rests during the day and roosts at night on sand spits and offshore sand bars, and nests on small coastal islands that provide protection from mammal predators and have sufficient elevation to prevent flooding of nests. Pesticide residue (DDT) in prey species (fish) was a primary factor in the decline of the species. Other threats include oil or chemical spills, plant community changes, storms, heavy tick infestations, and inconsistent food availability. Human-caused disturbance of nesting colonies and mortalities related to fishing activities are also threats. Brown pelican do not nest in the Florida district of the seashore.

The southeastern American kestrel, *Falco sparverius*, is a state-listed threatened species in Florida. Habitat consists of open or partly open areas, though during winter in Florida males use less open habitats than do females. Kestrels nest in the cavities of tall dead trees or in telephone poles. Fluctuation in species numbers is attributed to habitat destruction and loss of nest sites, as well as predation and pesticide use.

The peregrine falcon, *Falco peregrinus*, was delisted in 1999 from a federally threatened species and is currently monitored to ensure continued recovery. Peregrines are routinely observed during the winter and fall perched on dead-fall, woody vegetation found along shoreline areas.

Plant species

Cruise's golden aster, *Chrysopsis cruiseana*, is a state-listed endangered species in Florida, but is sometimes locally abundant in dune communities with nutrient-poor, well-drained sandy soil. It faces threats due to development and consequent habitat loss. It is found throughout the Florida District, though not in large numbers. Within the national seashore, the plants may be affected by foot traffic. Habitat ranges from coastal grasslands, dunelets, dune ridges, tall dunes with rosemary, and scrub.

Large-leaved jointweed, *Polygonella macrophylla*, is a state-listed threatened species in Florida. It is found in the sands of the Florida Panhandle on sand pine-oak scrub ridges. The main threat to species survival stems from development and consequent loss of habitat. Within the national seashore, it is found mostly on the mainland in coastal bluffs and sand pine scrub environments, including portions of Naval Live Oaks.

Coastal plain honeycomb head, *Balduinia angustifolia*, is associated with large, mature dune ridges occurring behind the foredunes of barrier islands and sandy coastal margins,

and supports a solitary bee species (*Hesperapis oraria*) that is limited to the northern coastal margins of the Gulf of Mexico and is the only species of *Hesperapis* known to occur east of the Mississippi River. The bee is noteworthy in its association with a mesic biome and a coastal environment and its restriction to *B. angustifolia* as a single floral host. Located along the aprons of dunes and around the perimeters of dune swales, the plant represents a major component of this island community.

Marine Mammals

Twenty-nine marine mammals are native to the Gulf of Mexico: 28 pelagic species of whales and dolphins and one sirenian, the Florida manatee. Three species commonly occur at Gulf Islands National Seashore: the bottlenose dolphin, *Tursiops truncatus*, Atlantic spotted dolphin, *Stenella frontalis*, and the Florida manatee. Descriptions of the two dolphin species are provided below. The manatee is discussed in the Threatened and Endangered Species section. Whales are rare transients in the national seashore waters.

The bottlenose dolphin, *Tursiops truncatus*, and the Atlantic spotted dolphin, *Stenella frontalis*, are the two most common marine mammals found in the Gulf of Mexico. Both species feed primarily on fish, squid and crustaceans. While *S. frontalis* spends the majority of its life offshore, *T. truncatus* often travel into coastal bays and inlets for feeding and reproduction.

Wetlands

At present, a number of sand flats/mud flats can be found in those parts of the Fort Pickens Area breached by Hurricane Ivan and succeeding storms. Although most of these breach areas are beginning to fill in, existing sand flats in the unit continue to be overwashed during significant storm events. In particular, there are two areas totaling about 39 acres and about one half mile in length that received concentrated erosion during these storm events. For a few weeks after Hurricane Ivan water flowed through about 50 yards of these eroded areas. In a few months these areas started to fill with sand transported by surf, tidal and aeolian action. However, these two overwash areas are likely to remain sandflats/mudflats for some time to come. These flats stay wetter than surrounding areas for much of the year and recover more slowly from hurricane disturbance than more elevated areas. Still, storm surge is a familiar feature of barrier island processes. Several transient over wash channels have occurred in this portion of the Fort Pickens Area in the past, and all have healed through natural processes and are now only remembered.

The sand movement as the result of multiple storm surges carried sand across the island and covered previously existing wet lands. This is the process of barrier island movement. Storms carry sand inland covering existing wetlands and creating sand splays on the sound side. These sand splays may then serve as foundation for wetland development. This process is found in the geologic column of the island where layers of

sand and peat interlayer demonstrating the cyclic process of wetland creation and wetland destruction that is a part of barrier island processes.

Currently, the island is a low smooth narrow body of sand, fresh and ready for the movement and sculpting of sand to create dunes, swales, splays and the incipient structures that may lead to wet land formation in the fullness of time. Wetland formation will occur on the decadal scale, given the renewed nature of the island surface. Predicting the location of future wetlands may be feasible through modeling but not with high confidence.

Floodplains

The Fort Pickens Area of GUIS lies on a low barrier island. It is not a component of a riverine system that receives seasonal events of flow and flood that can be classified by magnitude. The island is overwashed in a random and capricious process of tropical storm occurrences. It receives the effects of moving water but at no predictable location. For the purposes of new construction and human safety Executive Order 11988 and NPS floodplain policies are applied.

Archeological Resources

Prehistoric archeological resources have yet to be encountered at the Fort Pickens Area. Evidence of colonial and recent occupation are present. Recent surveys in the area suggest that neither Alternative C or D is likely to adversely effect any documented archaeological sites (3) within or adjacent to the project area. Early project coordination with the NPS Southeast Archeological Center in June, 2006, has resulted in a findings report that identifies prescription measures to offset and mitigate any effect from road reconstruction to documented sites. Surveys required for infrastructure contemplated by Alternative B may reveal marine artifacts.

Solid waste and hazardous substances

Fragments of asphalt exist at the Fort Pickens Area due to the destruction of the Fort Pickens Road wrought by a succession of powerful storms. This asphalt is mixed in with beach sand along the former road alignment and detracts from the scenic qualities of the Seashore. It is proposed that the majority of this debris be collected and removed from the park

Three of the alternatives call for the importation of sand to construct artificial dunes for road protection. This sand could come from an existing spoil pile near Fort Pickens or from a suitable off-island site. While it is believed that this sand is clean, tests for hazardous substances would have to be made before the sand could be distributed elsewhere at the Seashore.

Visitor Use and Experience

An average of 717,000 visitors use and enjoy the resources of the Fort Pickens area each year. Fort Pickens was set aside in part as an historic site of national significance for the inspiration and benefit of the people of the United States (16 USC 461). Public use and enjoyment of the recreational values of this area are preserved in the Seashore's enabling legislation. The Fort Pickens Area contains about 5.5 miles of trails and about 8 miles of scenic drives. Pedestrian access to Gulf and Sound beaches is provided at 11 locations along the Fort Pickens road system. Beach access is a major expectation of seashore visitors. The access routes take the traveler through dunes of white sand along the shores of the Gulf of Mexico and Santa Rosa Sound, a terrain of striking beauty.

The Fort Pickens Area offer access to recreational fishing, beach recreation, bicycling, hiking, surfing, and 200 developed camping locations providing 131,600 camper nights of recreation. Accommodations for the handicapped, and elderly, are provided. The 200-site campground provides camping space for both tent campers and RV/trailer campers. Campsites are quipped with paved parking pads, water, and electricity. Central restrooms provide running water and showers. The fort is a destination to many visitors and guided fort tours are given daily during the summer months.

During the summer season, Langdon Beach serves as a life-guarded swimming beach. Other amenities include a picnic shelter, bathrooms, and outdoor showers. Two parking lots along Fort Pickens Road provided visitor access to the gulfside beach. Each lot provided parking for 25 cars. Picnic pavilions are also provided at Battery Worth and Little Langdon on the bay side of the island. Bay beach access is provided at Little Langdon. A snack bar and campground store are available on a seasonal basis.

The fishing pier and jetty in the fort area are popular destinations for fishers and SCUBA divers. The pier is officially licensed for fishing so individual fishing permits are not required, a popular feature for out-of-state visitors. There are a host of historic coastal defense structures throughout the historic district that offer visitors a glimpse of earlier occupation of Fort Pickens.

Park Operations

The superintendent at GUIS is responsible for managing the park, its staff, all of its programs, and its relations with persons, agencies, and organizations interested in park operations. GUIS staff provides the full scope of functions and activities to accomplish the park's objectives, including science and resources management, interpretation and education, resource protection, law enforcement, emergency services, public health and safety, and fee collection. Currently the staff consists of 73 permanent employees, 1 term employee, and 10 seasonal employees. The maintenance of facilities at Fort Pickens and adjacent lands is a major component of park operations. Also, an active program of visitor services, including campground services, fee collection and visitor protection, operates year round at Fort Pickens. All personnel and materials to support park

operations in the Fort Pickens Area travel on the Fort Pickens Road. As a result, the road has been a critical component of park operations.

Since the hurricanes, operations have been carried out by water access or over-sand vehicles. Electrical power has been provided by generators, with fuel being delivered by boat or over-sand vehicle. Restoration crews have been housed in the Fort Pickens quarters once those structures were repaired. Daily work crews access the area by over-sand vehicles.

Socioeconomic Environment

The Fort Pickens Area of the GUIIS receives about 717,000 visitors per year. Of this total about 32,000 gain access through a Golden Age Passport, about 4%. The park provides a “Beach Wheel Chair” for the physically disabled; about 150 people utilize this service each summer season. The Area generates about \$1.2 million a year. Collecting this money employs 10 permanent and 5 seasonal staff. The Fort Pickens Area contains two food retail sites, generating in excess of \$250,000 gross revenue, \$10,500 income to the park, and employing 6 people. Much of the Seashore’s visitation has traditionally come from people wishing to visit the Fort Pickens Area. The existence of the Fort Pickens Area has a significant economic impact to nearby communities because the road leading to the Fort Pickens Area pass through three communities, Gulf Breeze, Pensacola Beach, and Navarre Beach. Each of these communities derives important economic benefits from persons who stop to shop or seek lodging while visiting. Of the \$ 1.2 million the Fort Pickens Area generates, about \$450,000 goes to the collection of fees and about \$500,000 for use in repair and maintenance of park infrastructure, improvements to visitor use areas and programs. This money is returned to the local economy through wages, contracts, and purchases.

The Fort Pickens Area generates an average of \$1.2 million dollars a years in entry and campground fees which is a good index of the economic strength of GUIIS in the local economy.

4.0 ENVIRONMENTAL EFFECTS

4.1 Introduction

The National Environmental Policy Act requires that federal agencies, before taking an action, discuss the environmental impacts of that action, feasible alternatives to that action, and any adverse environmental impacts that cannot be avoided if the proposed action is implemented. This section of the EA describes the potential environmental consequences associated with the three action alternatives. It is organized by impact topics, which allows a standardized comparison among alternatives based on issues. For each impact topic, the effects of the three action alternatives are compared to those of the no action alternative, as required by NEPA. Consistent with NEPA, the analysis also considers the context, intensity and duration of impacts, indirect impacts, cumulative effects, and measures to mitigate impacts. National Park Service policy also requires that “impairment” of resources be evaluated in all environmental documents.

4.2 General Evaluation Methodology

Generally, the methodology for resource impact assessments follows direction provided in the Council on Environmental Quality (CEQ) Regulations for Implementing the National Environmental Policy Act, Parts 1502 and 1508. The standard and baseline for assessing and measuring impacts is change relative to the conditions that existed prior to Hurricane Ivan in October 2004. This pre-Ivan setting was the conditions that existed for 30 years. Conditions that were in place prior to the establishment of NEPA in 1969 and the establishment of GUIIS in 1971.

The impact analysis and the conclusions in this part are based largely on the review of existing literature and park studies, information provided by experts within the National Park Service, the US Fish and Wildlife Service, the Florida State Historic Preservation Office, other agencies and the observations and professional judgments of park staff. For each impact topic, the analysis includes an evaluation of potential effects using the following approach:

- Identify the area that could be affected.
- Compare the area of potential effect with the resources that are present.
- Identify the intensity (negligible, minor, moderate, or major), context (local, park wide, regional), duration (short- or long-term), and type of effect (direct, indirect, or cumulative effects).
- Identify whether effects would be beneficial or neutral.
- Propose mitigation measures to be taken to protect natural and man-made resources.

4.3 General Definitions

The following definitions were used to evaluate the context, intensity, and duration of effects in this environmental assessment:

Context. Context is the setting in which an impact is analyzed, such as local, park wide, or region. The Council on Environmental Quality (CEQ 1978) requires that resource analyses include discussions of context.

Intensity of Effect. Intensity of effect refers to the relative degree of impact that an action will have on the environment. Specific definitions of intensity are provided in this document for each impact topic. The definition of intensity begins the discussion of each impact topic later in this document.

Duration. Duration of impacts is defined as follows:

Short-term Impacts -- Those that would occur within the next 2 years.

Long-term Impacts -- Those that would occur or continue to exist for 2 years or more.

4.4 Direct versus Indirect Effects

The following definitions of direct and indirect effects were used in this evaluation:

Direct. This is an effect that is caused by an action and occurs at the same time and place.

Indirect. This is an effect that is caused by an action, but is later in time, or farther removed in distance, but still reasonably foreseeable. These would be caused, for example, by growth that is induced by the project.

4.5 Impact Type

Both beneficial and adverse impacts are discussed. CEQ regulations and the National Park Service's *Conservation Planning, Environmental Impact Analysis and Decision-making* (Director's Order #12) call for a discussion of the appropriateness of mitigation, as well as an analysis of how effective the mitigation would be in reducing the intensity of a potential impact, e.g. reducing the intensity of an impact from major to moderate or minor. The alternatives assume that Seashore managers would apply mitigation measures to minimize or avoid impacts. Without appropriate mitigation measures, the potential for resource impacts would increase and the magnitude of those impacts would rise.

4.6 Cumulative Effects Analysis Method

The Council on Environmental Quality (CEQ 1978) regulations for implementing the National Environmental Policy Act requires assessment of cumulative effects in the decision making process for federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR

1508.7). Cumulative effects are considered for both the no action and the three action alternatives, and are presented at the end of each impact topic discussion analysis. Cumulative effects were determined by combining the predicted effects of an alternative with other past, present, and reasonably foreseeable future actions. Therefore, it was necessary to identify other past, ongoing, or reasonably foreseeable future actions at the park. Since the level of 717,000 visitors to the Fort Pickens Area of GUIS is expected to remain at or slightly above existing levels, cumulative effects of all of the alternatives for the project at GUIS were considered similar to existing conditions.

4.7 Impairment Analysis Method

In addition to determining the environmental consequences of the Preferred and other alternatives, the 2006 National Park Service Management Policies and Director's Order #12 (NPS 2001b) require analysis of potential effects to determine if actions would impair park resources.

The fundamental purpose of the National Park Service, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to promote and regulate so to conserve park resources and values. National Park Service managers must always seek ways to avoid or minimize to the greatest degree practicable adverse effects on park resources and values. However, the laws do give National Park Service management discretion to allow effects to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given National Park Service management discretion to allow certain effects within parks, that discretion is limited by statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an effect that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including opportunities that otherwise would be present for the enjoyment of those resources or values. An impact would more likely constitute impairment to the extent it affects a resource or value whose conservation is:

Necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;

Key to the natural or cultural integrity of the park or to opportunities for enjoyment of the park; or

Identified as a goal in the park's Master Plan or General Management Plan or other relevant National Park Service planning documents.

Impairment may result from National Park Service activities in managing the park, from visitor activities, or from activities undertaken by concessionaires, contractors, and others operating in the park. A determination of impairment is made for each resource topic within each "Conclusion" section of this environmental assessment under "Environmental

Consequences." As required by National Park Service guidelines, an assessment of the potential for impairment is provided in situations where moderate or greater intensity of effects on natural or cultural resources are predicted.

NPS has determined that none of the alternatives analyzed in this EA would impair park resources or values. This determination is based on a finding that for each of the alternatives there would be no major, adverse impacts to a resource or value the conservation of which is (1) necessary to fulfill specific purposes identified in the enabling legislation of GUIIS; (2) key to the natural or cultural integrity of the park; or (3) identified as a goal in the park's General Management Plan or other relevant National Park Service planning documents

4.8 Effects on Physical Resources

4.8.1 GEOLOGY

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to geologic processes were derived from the professional judgment of NPS staff and a review of the literature. Impacts can be beneficial, adverse or neutral. The thresholds of change for the intensity of impacts to geologic processes are defined as follows:

- Negligible: Impacts to park geologic processes are not detectable based on standard scientific methodologies. Impacts result in frequency, magnitude, and duration measurements that are well within the natural range of variability (NRV).
- Minor: Impacts are detectable. Frequency, magnitude, and duration measurements are expected to remain within the NRV, possibly showing small, short-term disruptions. Disruptions to key geologic processes are expected to be short-term and within the NRV.
- Moderate: Impacts are detectable. Frequency, magnitude, and duration measurements are expected to be outside the NRV for short periods of time, but return to the NRV. Disruptions to key geologic processes or ecosystems are expected to be short-term and temporarily outside the NRV.
- Major: Impacts are detectable. Frequency, magnitude, and duration measurements are expected to be outside the NRV for short to long periods of time, or even be permanent. Disruptions within the NRV may be long-term. Disruptions to key geologic processes or ecosystems may be long-term or permanent.

Impact Topic Analysis.

Alternative A (No Action)

Analysis. Under this alternative there would be moderate to major, long term, beneficial impacts to geological processes. In the absence of the Fort Pickens Road an addition of about 17 acres would be returned to the natural state, natural processes on the barrier island such as overwash, and natural dune formation would operate with little or no human interference. The island would be able to move naturally in the face of the forces of the sea. In so doing, the island would continue to protect the mainland and to support sea grass and other coastal ecosystems on the sound side.

There are no mitigating measures needed for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for visitor use and experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to geologic processes is negligible to non-existent. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence geologic processes. Other than possible beach renourishment actions By NPS or other entities, no other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have minor, long term, and beneficial impacts on geological processes. Piers, pilings, sea walls and buoys, along with propeller wash from frequent docking and departures of a ship, and the potential need for periodic dredging would affect the littoral drift and modify sediment transport. The affect of the Ship Island pier on geologic processes is an in-park example of the problems caused by ferry boat accommodations on geologic processes. Although shoreline processes at the dock site would be affected, the elimination of a seven-mile segment of the Fort Pickens Road would allow overwash, vegetation colonization, and dune formation to operate elsewhere relatively naturally with minimized human interference. The impacts to geologic processes would be greater than under Alternative A, but still minor in intensity. In mitigation, no reasonable mitigations can be determined to address the effects of impediments to long shore sediment transport and the turbulence caused by ship propellers.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative to geologic processes would be negligible. An additional shoreline normal structure would be added to an area already containing three other shoreline structures: a rock jetty, a fishing pier, and a bent from a previous pier. The shoreline structures anticipated in this alternative would have an added incremental affect to the geologic processes at a site currently affected by past actions.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. The anticipated impacts to geologic resources under this alternative would be minor to moderate, long term, and adverse. Under this alternative, approximately four miles of road would be constructed in a coastal high hazard zone that is subject to periodic overwash, shoreline recession, and island migration (Stone, G. W., 1995). In order to protect the road from washout during storm surge, and in the absence of a natural, developed dune field, the roadway would be moved as far as is practicable from the Gulf of Mexico shoreline, and a total of 5.2 miles of protective berms would be constructed on the north and south sides of the roadway. These berms are temporary and their protective function would be replaced by natural dune fields, as the normal geologic processes proceed.

The natural process of overwash carries sand to the interior and back side of the barrier island, building the elevation and providing a mechanism for migration of the entire island system in response to changing sea level. Sand deposited on the back side of the island produces a platform that provides the base for vegetation growth such as beach grass or salt marsh (Bush et al., 1996). Overwash represents a source of sediment supply for interior and sound-side elevations; the inhibition of overwash sediments naturally nourishing the interior and sound-side of barrier islands alters the natural integrity of the barrier island.

The fundamental issue is that barrier islands are areas of shifting sand which must move in the face of a rising sea in order to continue their existence. Efforts to fix the location of an island, or such major infrastructure as a road, may degrade geological processes and associated biological systems. The roadway itself has not affected these processes to a major degree (Stone, G.W.1995).

For most of their length, and for as long as they lasted, the size and dimension of the artificial dunes would exceed the size and dimension of natural dunes in the area. They would form a continuous dune ridge rather than a system of intermittent dunes of various heights and spacings, thereby impeding most of the natural process of overwash where it would otherwise occur. Sediment deposited in the overwash fans and in the breach corridors is important to the recovery of the dunes and the vertical geometry of the island. To the extent they prevent overwash, the artificial dunes on the road's ocean side may preclude potential new marsh growth and increase the sound-side erosion rate. However, the berms are sacrificial in nature and would not survive a major storm, so their effects on overwash could be relatively short-lived. The resulting impacts to geologic processes would be minor to moderate, long term and adverse.

In mitigation, to accommodate overwash and cross island sand migration, it is contemplated that the proposed sand berm system be both flexible and temporary. By keeping the berm system low and capable of eroding during significant overwash events, this alternative would achieve protection of the roadway and nourishment to the sound side littoral system.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative on geologic processes would be negligible. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. The anticipated impacts to geologic processes under this alternative would be moderate, long term and adverse. Impacts would be generally similar to those of Alternative C, except that, in contrast to Alternative C, this alternative utilizes subsurface beach armoring as a supplement to sand berms for roadway protection. In major storms, the geofabric mattresses and articulated concrete block could be damaged and scatter their composite and natural components. Moreover, in the event that beach armoring structures were to become exposed during a storm, wave energy could be deflected in ways that promoted beach scouring. As a result, erosion rates could increase over what would otherwise occur and the beach could be narrowed in width in front of the structures.

In mitigation, those protective devices described in Section 2.6 would be placed at road grade or lower. This would establish an erosional elevation at about 4 feet above sea level. This elevation is low enough to allow mass transport of sand across the island; and this elevation is equal or lower than the pre-Hurricane Ivan road elevations. Burying the armoring devices should mean that they do not impede natural processes in all but major storms.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Cumulative impacts would be greater than those for Alternative C due to the use of protective armoring, or hardened materials. The use of underground armoring to protect coastal roadways from waves and hydrodynamic forces is a new but growing trend in Florida as a result of the recent hurricanes (USFWS 2006b). The use of these structures along the Fort Pickens Road may contribute to the cumulative effect of interfering with natural barrier island processes at a larger scale. Processes such as overwash and natural dune formation would operate with greater human interference and islands would be less able to move naturally in the face of the forces of the sea.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to geologic resources under this alternative would be moderate, long term, and beneficial. Under this alternative, the Fort Pickens Road would be rebuilt in the same modified alignment as Alternative C, but only limited sand berming would occur and no hardened structures would be used. The road would be protected primarily by renourishing the beach front and enhancing foredunes using sand from the Pensacola Pass dredging project. As a result, a man-made beach front and enhanced interior dune system would be established, with eventual beneficial impacts to geologic processes. Natural processes such as overwash and scour would be less impeded, with the result that sand movement and island migration would take place in a more natural manner.

Cumulative Impacts. The predicted cumulative impacts of this alternative on geologic processes would be minor to moderate. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would accelerate a process that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Conclusion. With respect to geologic processes:

- Impacts from Alternative A would be moderate to major, long term, and beneficial.
- Impacts from Alternative B would be minor, long term, and adverse.
- Impacts from Alternative C would be minor to moderate, long term and adverse.
- Impacts from Alternative D would be moderate, long term and adverse.
- Impacts from Alternative E would be moderate, long term and beneficial.

Impairment. None

4.8.2 VEGETATION

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to vegetation were derived from the professional judgment of NPS staff and a review of the literature. The thresholds of change for the intensity of impacts to vegetation are defined as follows. Impacts can be beneficial, or neutral:

- Negligible: Effects on individual plants, plant populations, or functional processes are not observable. Disturbance does not result in changes to plant community structure or composition, beyond what would occur through natural processes.

- Minor: Impacts are detectable, but not apparent. Damage or enhancement to individual plants is restricted to herbs and small shrubs and does not affect below-ground plant structures. Changes in community structure and composition are restricted to the herbaceous and low-shrub layer. Post-disturbance plant communities quickly return to pre-disturbance conditions.
- Moderate: Impacts are apparent. Damage or enhancement to above-ground structures is extensive for herbs, shrubs, and saplings. Significant changes in plant community structure and composition occur in the understory and midstory. Post-disturbance plant communities retain many characteristics of pre-disturbance communities, but differences persist for several years.
- Major: Impacts are obvious without close inspection. Plant damage or enhancement extends to below-ground structures (e.g., roots). Changes in community structure include all vegetation strata. Changes in species composition are dramatic because of species loss/recruitment or invasion of new species. Post-disturbance plant communities may not resemble pre-disturbance communities even after several years or decades.

Impact Topic Analysis

Alternative A (No Action)

Analysis. The no action alternative would have a long term, minor, beneficial impact on vegetation. Since no new road construction would take place, vegetation would be able to colonize those portions of the former roadbed where pavement has been lost, an area of about 17 acres or 1% of the area of the Fort Pickens Area. Geologic processes would be allowed to function relatively naturally, resulting in natural dune formation and migration, with corresponding beneficial impacts on terrestrial vegetation.

There are no mitigating measures needed for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to vegetation are minor. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre-Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence vegetation. Other than possible beach renourishment actions by NPS or other entities, no other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have a long term, minor, adverse impacts to vegetation. As with Alternative A, natural vegetation communities would be able to reclaim those areas where pavement for the Fort Pickens Road has been lost. Similarly, natural vegetative communities would be able to form on a naturally recovering dune system. Minor adverse impacts to marine and terrestrial vegetation could be associated with the construction of infrastructure to support the ferry system, and the prop wash of regular ship traffic would disturb and dislodge marine vegetation. The situation at the Ship Island pier where ship and boat traffic regularly disturb marine vegetation may be used as an example.

In mitigation, no reasonable measures can be determined to avoid the erosion of bottom sediments and dislodgement of marine vegetation from ferry propeller wash. Possibly replanting at an unaffected site or a marine vegetation bank could be established.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Similar to Alternative A except the affect of regular ship traffic may lead to an accumulated loss of marine vegetation.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. The impacts to vegetation of this alternative would be long term, minor, and adverse. Under this alternative, the Fort Pickens Road would be reconstructed on a slightly modified alignment and would be protected by artificial sand berms. Although the road alignment has been chosen to avoid existing island vegetation to the maximum extent possible, some vegetation as in Alternative B would be destroyed during construction. Obviously, recruitment of vegetation would be impossible in the 28-foot paved road way, a situation similar to the pre-existing conditions this alternative would restore. More importantly, the artificial protective berms and apron areas would cover approximately 250 lateral feet of natural substrate for a distance of approximately 4 miles, thereby requiring the planting of natural vegetative communities. A suite of native beach vegetation would be planted on the new berms for stabilization and restoration purposes.

In mitigation of this alternative the proposed berms would be planted with a suite of native beach species. Experimental plots established by Gulf Breeze High School showed a suite of native species established themselves sooner, were more robust, and accreted more dune sand than monotypic plantings.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to vegetation are minor. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated

future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Ivan, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Impacts would be generally similar to those of Alternative C, as this alternative adds sections of subsurface armoring to the sand berms called for in that alternative. Adverse impacts to vegetation would be equal to or somewhat greater than under Alternative C.

In mitigation, all disturbed and plantable areas adjacent to the road way would be planted with a suite of native beach species similar to Alternative C.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to vegetation under this alternative would be minor to moderate, long term, and both beneficial and adverse. Although the road alignment has been chosen to avoid existing island vegetation to the maximum extent possible, some vegetation would be destroyed during construction, as with the other action alternatives. Moreover, the process of renourishing the beach front and enhancing interior dunes could bury some vegetated areas. On balance, however, the renourishment and enhancement projects would accelerate recovery of the island's natural topography and in so doing promote more rapid recovery of natural island vegetation. In addition, more natural recruitment of island vegetation would be possible under this alternative than under alternatives C or D because in this alternative natural substrate would not be covered by artificial berms.

In mitigation of this alternative, all disturbed and plantable areas adjacent to the road way would be planted with a suite of native beach species similar to Alternative C.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative on vegetation would be minor to moderate. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would accelerate a process that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Conclusion. With respect to island vegetation:

- Impacts from Alternative A would be minor, long term, and beneficial.
- Impacts from Alternative B would be minor, long term, and adverse.
- Impacts from Alternative C would be minor, long term and neutral.
- Impacts from Alternative D would be minor, long term and neutral.
- Impacts from Alternative E would be minor to moderate, long term and both beneficial and adverse.

Impairment. None.

4.8.3 FISH AND WILDLIFE

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to fish and wildlife were derived from the professional judgment of NPS staff and a review of the literature. The thresholds of change for the intensity of impacts to fish and wildlife are defined as follows. Impacts can be beneficial, adverse, or neutral:

- Negligible:** Impacts occur, but are so minute that they have no observable effect on individuals, populations, or the ecosystems supporting them. Impacts result in parameter measurements that are well within the natural range of variability.
- Minor:** Impacts are detectable, but parameter measurements are not expected to be outside the natural range of variability and are not expected to have long-term effects on populations or the ecosystems that support them. Long-term effects could occur to individuals. Population numbers for common species may have small, short-term changes. Rare species remain stable even in the short-term.
- Moderate:** Impacts are detectable and parameter measurements are expected to be outside the natural range of variability for short periods of time. Changes within the natural range of variability may be long-term. Population numbers for common species may experience small to medium, short-term changes. Rare species may experience short-term changes.
- Major:** Impacts are detectable and parameter measurements are expected to be outside the natural range of variability for short to long periods of time, or even be permanent.

Population numbers for common species may experience large, short-term changes with long-term population numbers substantially altered. Rare species may also experience long-term changes. In extreme cases, species may be extirpated from the park and key ecosystem processes may be disrupted.

Impact Topic Analysis

Alternative A (No Action)

Analysis. Impacts to fish and wildlife under the no action alternative would be minor to moderate, long term, and beneficial. Because the Fort Pickens Road would not be reconstructed, road mortality for small mammals, birds, and other terrestrial wildlife would decline. Dune accretion and migration processes would proceed in a more natural manner, unimpeded by the road or protective berms, creating more and better wildlife habitat than would be available in Alternatives C and D. Natural overwash would proceed more or less unimpeded, with beneficial results for sound-side sea grass beds and other essential fish habitats. Natural overwash would also create sand fans and other important habitat for certain shore birds.

There are no mitigating measures needed for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to fish and wildlife are minor. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre-Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence vegetation. Other than possible beach renourishment actions by NPS or other entities, no other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have impacts to fish and wildlife that were long term, minor to moderate, and both beneficial and adverse. As with Alternative A, the Fort Pickens Road would not be reconstructed, with corresponding beneficial impacts on fish and wildlife and their habitats. Road mortality would be reduced and habitat recovery from the hurricanes would progress more naturally and perhaps more rapidly in the vicinity of the former road footprint. However, minor to moderate adverse impacts to fish and wildlife associated with the construction of infrastructure and operation of the ferry system are to be expected. The regular, daily passage of a large ferry boat to and from Fort Pickens would increase the probability of fish, dolphin, and manatee strikes.

Also, noise, water surge, turbidity, and material spills generated by ferry transport could be expected to impact fish and other marine species.

In mitigation, best management practices for avoiding any discharge of any materials from the ferry would be enforced. Lookout and avoidance procedures would be in place to avoid marine mammal strikes. Noise and surge affects cannot be mitigated.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Similar to Alternative A except the affect of regular ship traffic may lead to an accumulated loss of marine fish and wildlife.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. Impacts to fish and wildlife and their habitats would be long term, moderate and adverse. The road alignment has been chosen to avoid to the maximum extent possible consumption of known past shore bird nesting areas. However, the extensive artificial berm system called for by this alternative would fragment habitat for approximately 3 miles in the eastern part of the Fort Pickens Area. Having berms on both sides of the road could lead to greater wildlife mortality from road traffic. Animals that managed to cross one berm would find their way blocked both by the road and another berm. The berms would also provide lower quality habitat than naturally-forming dunes, since the topography of the berms, and the resulting vegetation, would differ from that of naturally forming dunes. The reduction in overwash would likewise have adverse effects on fish and wildlife habitat. Sand fans on the sound side would be reduced, with adverse consequences for shore birds that prefer this habitat. The reduction in sand overwash could increase erosion rates, with consequent losses in fish and wildlife habitat. Storm overwash that did occur could, in places, transport the berm materials into the bay system, potentially burying seagrass habitat or other essential fish habitat.

The road itself is a hazard to wildlife. In the past this hazard was reduced by speed limits, 35 mph in general and 15 mph in bird colonies during nesting periods (April-September) where nesting aggregates of colonial shorebirds are observed by park biologists. This management practice would be continued and the impacts of this alternative should not exceed pre-Hurricane Ivan conditions. Naturally forming dunes would build on these berms through aeolian action and the assistance of reintroduced native plants. Vegetated and open areas would develop into a mosaic of productive habitats.

To mitigate the affects of this alternative berm angles would be kept below 10°, the natural angle of upwind sand accumulation. Speed limits would be controlled to protect wildlife near the roadway.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to fish and wildlife are minor. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Impacts would be generally similar to those of Alternative C, as this alternative adds sections of subsurface beach armoring to the berms called for in that alternative. However, exposure and destruction of the armoring structures during a major storm could result in damage to wildlife habitat. In addition, exposure of these structures during a minor to major storm could result in increased erosion of sand and a narrowing of the beach width in front of the structures. The loss of this sand could affect shorebird and turtle habitat and create a need for sand replenishment. Over time, if the structures were repeatedly exposed, the loss of sand could lead to a substantial cumulative loss of beach and island width in these areas.

On balance, impacts to fish and wildlife would be moderate, long term and adverse due to the greatly increased erosion which could occur on parts of the island after the installation of sheet piling and other hard structures.

Mitigations for this alternative would include keeping berm angles below 10 degrees, controlling speed limits, and limiting the use of protective elements to critical areas.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to fish and wildlife under this alternative would be moderate long term, and beneficial. Under this alternative, the Fort Pickens Road would be reconstructed on a slightly modified alignment and would be protected by the renourished beach and enhanced foredunes. Because no or fewer protective berms would be used, habitat fragmentation and impediments to wildlife movements would be less under this alternative than under alternatives C or D. Also, habitat for many species would recover more quickly under this alternative than under the other alternatives, meaning that some species would be able to find food, shelter and breeding habitat more quickly than would otherwise be possible. On the other hand, the renourishment and reconstruction processes would bypass some successional stages that would otherwise occur during

natural recovery. As a result, these processes would displace some species and prevent other species from finding suitable habitat.

Impacts of this alternative would be mitigated by sequencing the renourishment and reconstruction process so that it does not occur all at once along the entire 4 mile stretch of the park affected by this alternative.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative on fish and wildlife would be minor to moderate. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would accelerate a process that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Conclusion. With respect to island fish and wildlife:

- Impacts from Alternative A would be minor to moderate, long term, and beneficial.
- Impacts from Alternative B would be minor to moderate, long term, and both beneficial and adverse.
- Impacts from Alternative C would be moderate, long term and adverse.
- Impacts from Alternative D would be moderate, long term and adverse.
- Impacts from Alternative E would be moderate, long term and beneficial.

Impairment. None

4.8.4 THREATENED, ENDANGERED, OR SPECIAL CONCERN SPECIES

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to special status species were derived from the professional judgment of NPS staff, informal consultation with the U.S. Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission, and a review of the literature. The thresholds of change for the intensity of impacts to threatened and endangered species are defined as follows. Impacts can be beneficial, adverse, or neutral:

Negligible: An action that could result in a change to a population or individuals of a species or a resource, but the change would be so small that it would not be of any measurable or perceptible consequence.

- Minor: An action that could result in a change to a population or individuals of a species or its habitat. The change would be small and localized and of little consequence.
- Moderate: An action that would result in some change to a population or individuals of a species or its habitat. The change would be measurable and of consequence to the species or its habitat, but more localized.
- Major: An action that would have a noticeable change to a population or individuals of a species or its habitat. The change would be measurable and result in a severely adverse or exceptionally beneficial impact, and possible permanent consequence, upon the species or its habitat.

Impact Topic Analysis

Alternative A (No Action)

Analysis. The no action alternative would have impacts to threatened, endangered, or special concern species that are long term, minor to moderate, and beneficial. Because the Fort Pickens Road would not be reconstructed, dune accretion and migration processes would proceed in a more natural manner, unimpeded by the road. About 17 acres would be created for sea turtle and shorebird habitat. Habitat recovery from the hurricanes would progress more naturally and perhaps more rapidly in the vicinity of the former road footprint; however this improvement is small and highly localized relative to the nesting range of these species. Overwash would proceed more or less unimpeded, with beneficial results for sound-side sea grass beds and possible associated essential fish habitats. Natural overwash would also create sand fans and other important habitat for piping plovers and other shore birds of special concern.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to threatened, endangered or special concern species are minor. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre-Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence threatened and endangered species. Other than possible beach renourishment actions by NPS or other entities, no other past, present, or future reasonable actions are foreseen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative may have long term, moderate, and adverse impacts on threatened, endangered, or special concern species. Given the small populations of manatee and Gulf Sturgeon known to occur within the jurisdictional waters in proximity to the Fort Pickens Area, moderate adverse impacts to these populations would be associated with the construction and operation of a ferry system.

Average annual visitation to Fort Pickens is 717,000. Using the largest Ship Island ferry service ship, 110 feet overall with a capacity of 374 passengers, as a measure it would take 3,834 trips (1,917 round trips, or 5+ round trips per day) to move this many people. With this many trips the probability of a manatee strike is increased. Also, the affect of 3,834 dockings and departures may adversely affect the Gulf Sturgeon. The National Park Service would be required to engage in formal consultation per Section 7 of the Endangered Species Act with the U.S. Fish and Wildlife Service (USFWS) and/or the National Marine Fisheries Service (NMFS).

As with Alternative A, the Fort Pickens Road would not be reconstructed, with corresponding beneficial impacts on threatened, endangered, or species of special concern and their habitats. Habitat recovery from the hurricanes would progress more naturally creating more nesting habitat for sea turtles than would be available in Alternatives C and D. Natural overwash would proceed more or less unimpeded, with beneficial results for sound-side sea grass beds and other essential fish habitats. Natural overwash would also create sand fans and other important habitat for piping plovers and other shore birds of special concern.

In mitigation, lookout and avoidance procedures would be placed and utilized on the ferry to avoid marine mammal strikes. Compliance would be fulfilled with the terms and conditions required by any regulatory agency.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts on threatened, endangered and special concern species would be moderate and long term. The probability for adverse affect on manatee and Gulf Sturgeon accumulating is high. The return of 17 acres to a natural state would be a small attenuation in the steady return of Santa Rosa Island, with its attendant constructions and developments, to pre-hurricane conditions.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. Under this alternative, impacts to threatened or endangered, and species of special concern would be minor to moderate, long term, and adverse. The large footprint of this alternative, with its protective berms, could alter important habitat for a number of species, especially sea turtles and shore birds. In some areas (estimated to be <5% of the proposed road reconstruction prism) the berms may extend close to the waterline and serve as a barrier to nesting sea turtles. The berms could also entice shorebirds to nest

close to the road, thereby putting the adults and chicks in danger of being struck by passing vehicles. Some sandflat/mudflat habitat created by the hurricanes and used extensively by wading and shore birds, including the threatened piping plover, would be partially filled in as a result of road fill and berm construction. Future overwash may transport the berm materials onto the mud flats and degrade or destroy plover habitat. Storm overwash may also transport the berm materials into the bay system, potentially burying seagrass beds or other essential fish habitat.

In sum, this alternative, with its approximately 5.2 miles of low berms (in cross section low triangles approximately 4 feet in altitude and 142 feet at base, acute angles of 3° and an apex of 174°), could have adverse impacts on species of concern, including, most particularly, the following:

- Areas of berm south of the roadway will be located in sea turtle habitat and could affect nesting activity.
- The berms could prevent or impede overwash, thereby reducing or degrading roosting and foraging habitat for piping plover and other birds of concern.
- Some fill will take place in sand flats in order to provide a base for the reconstructed road, with resulting impacts to plovers and other birds. (See section 4.8.5 below.)
- Unvegetated berms could attract shorebirds of concern to nest in proximity to the roadway, resulting in increased roadkill mortality for chicks and adults.

(USFWS 2006a). (See also the impacts for this alternative described in section 4.8.3.)

On the other hand, the protective sand berms called for in this alternative are intended to be temporary until natural dunes re-establish themselves. Over time, the conditions that existed on Santa Rosa Island prior to Hurricane Ivan would be reestablished.

To mitigate the affects of this alternative, berm angles would be kept below 10°, the natural angle of upwind sand accumulation. The berms would be planted with native vegetation in order to discourage nesting by species of concern. In addition, consideration would be given to notching the dunes where appropriate in order to allow overwash. Speed limits along the road would be controlled during nesting season to offer protection to wildlife near the roadway. Additional mitigation measures specific to construction crews and construction timing would be implemented during the road reconstruction phase.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have on threatened, endangered and special concern species are minor to moderate. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact

level similar to that which existed prior to Opal, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Under this alternative, impacts to threatened or endangered or species of special concern would be moderate, long term, and adverse. Impacts would be generally similar to those of Alternative C, except that the installation of sheet piling and other hardening measures could result in further adverse impacts to some threatened and endangered species and their habitat. In particular, the greater beach scour occasioned by beach armoring could have adverse impacts on sea turtles and other species of concern that use areas in front of the hardened structures.

In sum, the restoration of this road, with its sections of armoring and low berms (in cross section low triangles approximately 4 feet above road elevation and 142 feet wide at base, acute angles of 3° and an apex of 174°), could have adverse impacts on species of concern, including, most particularly, the following:

- Areas of berm south of the roadway will be located in sea turtle habitat and could affect nesting activity.
- The berms and armoring could prevent or impede overwash, thereby reducing or degrading roosting and foraging habitat for piping plover and other birds of concern.
- Some fill will take place in sand flats in order to provide a base for the reconstructed road, with resulting impacts to plovers and other birds. (See section 4.8.5 below.)
- Unvegetated berms could attract shorebirds of concern to nest in proximity to the roadway, resulting in increased roadkill mortality for chicks and adults.

(USFWS 2006a). (See also the impacts for this alternative described in section 4.8.3.)

To mitigate the affects of this alternative, berm angles would be kept below 10°, the natural angle of upwind sand accumulation. The berms would be planted with native vegetation in order to discourage nesting by species of concern. In addition, consideration would be given to notching the dunes where appropriate in order to allow overwash. Speed limits along the road would be controlled during nesting season to offer protection to wildlife near the roadway. Additional mitigation measures specific to construction crews and construction timing would be implemented during the road reconstruction phase.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C, except that the use of beach armoring could result in greater erosion and correspondingly greater impacts to threatened and

endangered species, especially if hardened structures are also used in the reconstruction of J. Earle Bowden Way.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to threatened and endangered species under this alternative would be minor to moderate, long term, and, in the aggregate, beneficial. Under this alternative sand would be restored to the island's sand budget and recovery of a number of natural habitats would be accelerated. Beach renourishment would augment sea turtle nesting habitat. Dune enhancement away from the road corridor would provide additional, safer nesting sites for threatened and endangered bird species. Natural overwash processes would be allowed to work unimpeded, with corresponding benefits for plovers in particular. Some adverse impacts would occur in and behind those sandflats/mudflats that would have to be filled in to create a base for the reconstructed roadway.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative on threatened and endangered species would be minor to moderate. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would accelerate a process that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Conclusion. With respect to species that are threatened, endangered, or of special concern:

- Impacts from Alternative A would be minor to moderate, long term, and beneficial.
- Impacts from Alternative B would be moderate, long term, and adverse.
- Impacts from Alternative C would be minor to moderate, long term and adverse.
- Impacts from Alternative D would be moderate, long term and adverse.
- Impacts from Alternative E would be minor to moderate, long term and beneficial.

Impairment. None.

Section 7 Statement on Preferred Alternative: After applying the criteria of adverse effect contained in Section 7 of the federal Endangered Species Act (16 U.S.C. 1536; 50 CFR 402), the National Park Service concludes that reconstruction of the Fort Pickens Road with a mix of protective elements would *not* have an adverse effect on any federally listed threatened or endangered species. This conclusion is based on a site inspection of the road/protective element footprint and professional knowledge of threatened and

endangered species at the Seashore. As broached with the USFWS Panama City Field Office in June 2006, it is the intent of the National Park Service for this environmental assessment to fulfill the requirements of a biological assessment. The National Park Service will continue informal consultation with the USFWS, the National Marine Fisheries Service (NMFS), and Florida Fish and Wildlife Conservation Commission prior to making a final decision regarding the proposed action. Any additional comments on the project from the USFWS, NMFS, Florida Fish and Wildlife Conservation Commission, and other interested parties will be addressed in the final compliance documents. Should the need arise, additional mitigation measures will be developed in consultation with the USFWS, NMFS, and Florida Fish and Wildlife Conservation Commission.

4.8.5 WETLANDS AND FLOODPLAINS

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to wetlands were derived from the professional judgment of NPS staff and a review of the literature.

- Negligible: Wetlands or floodplains would not be affected, or effects to the resource would be at or below the lower levels of detection. No U.S. Army Corps of Engineers 404 permit would be necessary.
- Minor: The effects to wetlands or floodplains would be detectable and relatively small in terms of area and the nature of the change. A U.S. Army Corps of Engineers 404 permit would not be required.
- Moderate: The alternative would result in effects to wetlands or floodplains that would be readily apparent, such that a U.S. Army Corps of Engineers 404 permit could be required.
- Major: Effects to wetlands or floodplains would be observable over a relatively large area, and would require a U.S. Army Corps of Engineers 404 permit. The character of the wetland or floodplain would be substantially changed.

Impact Topic Analysis

Alternative A (No Action)

Analysis. Under this alternative there would be negligible, long term, beneficial impacts to wetlands and floodplains. In the absence of the Fort Pickens Road and associated hardening measures, natural processes on the barrier island would operate with decreased human interference. Wetlands would be allowed to form naturally. No fill would take

place in wetlands and no structures would be constructed in the floodplain. Natural processes would thus be able to function unimpeded and no structures would be at risk from flooding.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to wetlands and floodplains are minor. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre-Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence threatened and endangered species. Other than possible beach renourishment actions by NPS or other entities, no other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have negligible to minor, long term, and beneficial impacts on wetlands and floodplains. New construction on the island would be limited to new or expanded docking facilities, as well as relatively minor repairs and modifications to existing infrastructure to serve a ferry/touring service. Wetland and floodplain processes would be allowed to function more or less naturally. Wetlands would not be affected by construction and facilities constructed in the floodplain would be water-dependant (e.g. dock, pilings, and abutments). Beneficial impacts to floodplains would be somewhat less than under Alternative A, but negligible to minor in intensity.

There is no mitigation needed for this alternative.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative A.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. This alternative would have minor, long term, and adverse impacts on wetlands and floodplains. Construction of the road and berm in a coastal high hazard zone may interfere with the development of wetlands and other biologic and geologic processes necessary to perpetuate the island system. The established road alignment and road construction prism would avoid existing wetlands to the greatest extent possible in order to minimize any wetland impacts.

In at least two locations along the proposed route the island has been overwashed by hurricanes and the breaches that formed as a result have not completely filled in. While

standing water is periodically observed in these areas, the salinity levels are high due to tidal influences resulting in site conditions non-conducive to wetland vegetation. These same areas are also gradually filling in with sand due to reoccurring wind swept conditions. These sand flats are regulated as “special aquatic sites” by the U.S. Army Corps of Engineers. In these locations the reconstructed Fort Pickens Road would have to be built on fill. The elevation of these areas is about 3 feet above sea level; accordingly, about one foot of fill would be needed to raise the road way to desired engineering levels.

Given that the road corridor in this alternative is approximately 250 feet wide, and that the road would cross approximately 4,400 linear feet of sand flats, it is estimated that about 23.4 acres of sand flat would need to be filled under this alternative in order to reconstruct the road. This fill activity would indirectly affect a total of about 45.9 acres of sand flat along the road corridor. It is anticipated that this project may require a dredge and fill permit from the U.S. Army Corps of Engineers pursuant to section 404 of the Clean Water Act.

In mitigation for this alternative, it is noted that this road way is essential to meet the park’s purposes as stated in its enabling legislation. No other practicable alternative locations are available. This replacement road has a reasonable expectation of survival for minor storms (Category 2 hurricanes or lower) but not for major storms (Category 3 storms or higher).

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to wetlands and floodplains are minor. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. This alternative would have moderate, long term, and adverse impacts on wetlands and floodplains. Impacts to wetlands and floodplains would be somewhat similar to those under Alternative C, except that subsurface beach armoring would be installed that is intended to be semi-permanent. As with Alternative C, in some breach areas the reconstructed Fort Pickens Road would have to be built on fill through sand flats. Given that the road corridor in this alternative is approximately 250 feet wide, and that the road would cross approximately 4,400 linear feet of sand flats, it is estimated that about 23.4 acres of sand flat would need to be filled under this alternative in order to reconstruct the road. This fill activity would indirectly affect a total of about 45.9 acres of sand flat along the road corridor. It is anticipated that this project may require a

dredge and fill permit from the U.S. Army Corps of Engineers pursuant to section 404 of the Clean Water Act.

Cumulative Impacts. Same as Alternative C, except additional roadway protective measures would be taken to maximize protection of the roadway investment.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to wetlands and floodplains under this alternative would be similar to Alternative C. Some sandflats would have to be filled in the breach (overwash) areas in order to create the roadbed. However, less fill may be necessary in these areas than under Alternatives C and D. Specifically, the need for sand berms in these locations may be diminished or eliminated due to the protection afforded by the renourished beach and enhanced foredunes. Overall, impacts would be minor to moderate, long term, and adverse.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts of this alternative on wetlands and floodplains would be minor to moderate. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would accelerate a process that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years.

Conclusion. With respect to wetlands and floodplains:

- Impacts from Alternative A would be negligible, long term, and beneficial.
- Impacts from Alternative B would be negligible to minor, long term, and beneficial.
- Impacts from Alternative C would be minor, long term and adverse.
- Impacts from Alternative D would be moderate, long term and adverse.
- Impacts from Alternative E would be minor to moderate, long term and adverse.

Impairment. None.

Statement of Findings: To the extent required by sections 4.6.4 and 4.6.5 of the NPS Management Policies (2006), the NPS will prepare a Statement of Findings for Wetlands and a Statement of Findings for Floodplains for the selected alternative. These documents will be supplemental to this EA and will be placed in the administrative record.

4.8.6 ARCHEOLOGY

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to known archeological resources were derived from the professional judgment of NPS staff, consultation with the Florida State Historic Preservation Officer, and a review of the literature.

- Negligible:** Effect at the lowest level of detection, barely measurable with perceptible consequences, either adverse or beneficial, to archeological resources. For purposes of Section 106, the determination would be no historic properties affected.
- Minor:** Activities would affect one or more archeological sites with modest data potential and no significant ties to a living community's cultural identity. The site disturbance would be confined to a small area with little, if any, loss of important information potential. For purposes of Section 106, the determination would be no historic properties affected.
- Moderate:** Activity would affect one or more archeological sites with good data potential and possible ties to a living community's cultural identity. The site disturbance would be noticeable. For purposes of Section 106, the determination would be adverse effect.
- Major:** Action would affect one or more archeological sites or districts listed in, or eligible for the national Register and/or having possible ties to a living community's cultural identity, resulting in loss of site or district integrity. Site disturbance or resource degradation would be highly visible. For purposes of Section 106, the determination would be adverse effect.

Impact Topic Analysis

Alternative A (No Action)

Analysis. The no action alternative would have a negligible neutral effect on archeological resources. Some ground disturbance would take place in areas where NPS would remove asphalt debris. An archeological surface survey conducted by the Southeast Archeological Center (SEAC) archaeologists in June, 2006, indicated these

areas to be free of archeological resources. Moreover, the ground surface in these areas has been previously disturbed by road construction activities.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience and Socioeconomic.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to archaeological resources is negligible. The site would be returned to conditions that existed prior to 1940, conditions similar to those of pre-human contact and natural conditions better than the desired pre-Hurricane Opal baseline. This alternative does not imply, lead, or require any additional or other actions that may influence threatened and endangered species. Other than possible beach renourishment actions by NPS or other entities, no other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have a minor, long term neutral impact on archeological resources. Surveys for marine archaeological values on the Pensacola Bay side of Fort Pickens revealed a rich terrain of marine archaeological information. Little ground disturbance would take place except in certain areas where NPS would remove asphalt debris or construct infrastructure drive piles or set anchors in the bay bottom to support the ferry system.

In mitigation of this alternative, full archaeological surveys would be done on any areas of potential impact and necessary levels of treatment fulfilled.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative A.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. It is anticipated that impacts to archeological resources from this alternative would be negligible, long term, and neutral. Much of the proposed alignment is in a corridor that has been previously disturbed by road construction activity. Some portions of the road would need to be realigned. These areas were surveyed in June, 2006, for archeological resources by SEAC and subsequently cleared. NPS would consult with the Florida State Historic Preservation Officer to confirm that the proposed action is not likely to have an adverse effect on archeological resources and that no further archeological surveys are necessary.

In mitigation of this alternative, full archaeological surveys have been done on all areas of potential impact and necessary levels of treatment have been fulfilled.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to archaeological resources are negligible. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Ivan, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Impacts would be generally similar to those of Alternative C, except that the installation of sheet piling and other hardening measures could impact any archeological resources located in deeper soil strata. Impacts could conceivably be somewhat greater than under Alternative C. Available information, however, indicates that few or no archeological resources are likely to be found in lower soil layers. Thus, it is anticipated that impacts to archeological resources would be negligible, long term and neutral.

In mitigation of this alternative, full archaeological surveys have been completed on all areas of potential impact and any necessary levels of treatment have been fulfilled.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

The anticipated impacts to archeological resources under this alternative would be the same as under Alternative C.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C.

Conclusion. With respect to archeological resources:

- Impacts from Alternative A would be negligible and neutral.
- Impacts from Alternative B would be negligible, long term, and neutral.
- Impacts from Alternative C would be negligible, long term and neutral.
- Impacts from Alternative D would be negligible, long term and neutral.
- Impacts from Alternative E would be negligible, long term and neutral.

Impairment. None

Section 106 Statement on the Preferred Alternative: After applying the Advisory Council on Historic Preservation’s criteria of adverse effects (36 CFR Part 800.5, *Assessment of Adverse Effects*), the National Park Service concludes that reconstruction of the Fort Pickens Road in Alternative D would *not* have an adverse effect on archeological resources potentially eligible for listing in the National Register of Historic Places.

As required by Section 106 of the NHPA, the National Park Service has initiated informal consultation with the Florida State Historic Preservation Officer regarding this project. The National Park Service would also consult with other interested parties, as appropriate. Comments on the project from the State Historic Preservation Officer and other interested parties will be addressed in the final compliance documents. Should the need arise, additional mitigation measures will be developed in consultation with the State Historic Preservation Officer.

4.8.7 VISITOR USE AND EXPERIENCE

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to visitor use and experience were derived from the professional judgment of NPS staff. Analyses of the potential intensity of impacts to visitor use were derived from park staff’s observations of the likely effects of a particular alternative on visitor use. The thresholds of change for the intensity of impacts are defined as follows:

- Negligible: The impact is barely detectable, and/or will affect few visitors.
- Minor: The impact is slight but detectable, and/or will affect some visitors.
- Moderate: The impact is readily apparent and/or will affect many visitors.
- Major: The impact is severely adverse or exceptionally beneficial and/or will affect the majority of visitors.

Impact Topic Analysis

Alternative A (No Action)

Analysis. The No Action alternative would have a major, long term, and adverse effect on visitor use and recreation. The 717,000 traditional users/visitors to the Fort Pickens Area would be drastically reduced. Particularly affected would be: the physically handicapped, the elderly, the poor and the very young. These persons would be compromised in their ability to use and experience this area. Fort Pickens was set aside in part as an historic site of national significance for the inspiration and benefit of the

people of the United States (16 USC 461). Access to the natural, historic, and recreational values provided in the park's purpose statement would only be open to the healthy and vigorous. Those able to walk the 8 miles on sand and trail, or swim the mile from the Naval Air Station, or own and pilot a boat would be those fortunate few to visit Fort Pickens. Even those healthy and vigorous enough to set out from Pensacola Beach would be at risk from heat, dehydration, difficult footing, all in a remote setting. The closure of a nationally popular campground receiving 131,600 visitor nights of occupancy would occur.

There is no reasonable mitigation for this impact to the public.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have on visitor use and experience would be major. The majority of the 717,000 displaced visitors would fill and congest the other available public beaches. A general decline in the quality of recreation could accumulate due to crowding. This alternative may lead to or require additional construction to serve those denied the camp ground, or to an increases in rental rates because of increased demand, a burden on the poor.

Alternative B (Provide Access via Alternative Transportation)

Analysis. This alternative would have a moderate long term adverse impact on visitor use and experience. A ferry and shuttle system would provide access to the island but would reduce the number of visitors. Compared to a similar situation in the Mississippi District, the Ship Island ferry, this alternative would likely provide transportation to less than one-tenth of the average pre-hurricane visitors to Fort Pickens. The Ship Island ferry runs eight months per year with three trips a day during the summer season and two or less per day during the shoulder seasons. This service provides transportation for about 65,000 passengers per year, about 90% less than the number that now visits Fort Pickens via automobile. This would affect many visitors. The poor would be affected as access fees would probably rise 150% percent or more, a ferry toll of \$20 similar to the Ship Island ferry is expected. For many visitors the experience would be beneficial, especially those seeking a more "natural" experience. Other visitors, however, would dislike having their movements on the island governed in large part by ferry and shuttle schedules.

An additional concern under this alternative is the consequences of business failure, should the ferry service operate as a concession; or the consequences of allocation overrun, should the ferry service become a park operation. In either case the alternative would default to the no-action alternative. Should this happen, the public and the park would be left with extremely limited access to Fort Pickens.

There is no reasonable mitigation for this reduction in visitor access or the risk of business or operational failure. Increasing the number of ferry trips may be possible but may be economically unfeasible.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have on visitor use and experience would be major. The majority of the 717,000 displaced visitors would fill and congest the other available public beaches. A general decline in the quality of recreation could accumulate due to crowding. This alternative may lead to or require additional construction to serve those denied the camp ground; or to an increase in rental rates because of increased demand, a burden on the poor.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. Under this alternative, impacts to visitor use and experience would be long term, major, and beneficial. Reconstruction of the road would provide full access to the natural, historic and recreational values of the Fort Pickens Area. Parking areas and boardwalks to the shoreline would be replaced, providing visitors a short walk to beach areas. The 200 camping sites would remain open. The inspiration and benefit of Fort Pickens to the people of the United States would be preserved. These impacts would be beneficial to most park visitors. On the other hand, the height of the protective berms could mean that views of the open gulf and various areas of the bay may be at least partially blocked.

There is no reasonable mitigation for this alternative.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to visitor use and experience are moderate. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Opal, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Same as Alternative C

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

Impacts to visitor use and experience would generally be the same as for Alternate C. The beach re-nourishment and dune enhancement called for by this alternative would mean that fewer protective berms would likely be needed along the roadway. The result would be better views of the Seashore environment and a better visitor experience. Addit

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Same as Alternative C.

Conclusion. With respect to visitor use and experience:

- Impacts from Alternative A would be major, long term, and adverse.
- Impacts from Alternative B would be moderate, long term, and adverse.
- Impacts from Alternative C would be major, long term, and beneficial.
- Impacts from Alternative D would be major, long term, and beneficial.
- Impacts from Alternative E would be major, long term, and beneficial.

4.8.8 PARK OPERATIONS

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to park operations were derived from the professional judgment of NPS staff. The thresholds of change for the intensity of impacts are defined as follows:

- Negligible: The impact is barely detectable, and/or will affect few staff members.
- Minor: The impact is slight but detectable, and/or will affect some staff members and the operations of more than one park division.
- Moderate: The impact is readily apparent and/or will affect many staff members and multiple park divisions.
- Major: The impact is severely adverse or exceptionally beneficial and/or will affect the majority of park staff and park divisions.

Impact Topic Analysis

Alternative A (No Action)

Analysis. Under this alternative impacts to park operations would be major, long term and adverse. Park staff would have limited access to the Fort Pickens area to conduct

patrols, complete natural and cultural resources inventory, monitoring and research, perform maintenance activities, provide interpretive programs, or assist visitors. Access would principally be by foot, four-wheel drive vehicle, or boat. Transporting park staff and supplies would be more difficult and time-consuming than before the hurricanes. There likely would be an increase in illegal beach driving and public complaints. The park would need to establish a robust boating operation to include boats, marinas, ability to transport equipment, supplies and personnel and to support operations, similar to the Mississippi District of the Seashore. A permanent office facility to accommodate the approximately 40 employees formerly housed in the Fort Pickens Area would have to be designed and constructed in another park area.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to park operations are major. In recent years, the park's annual budget has not kept pace with inflation and increased operational costs. The strains that these shortfalls have imposed would be compounded by the increased costs associated with Alternative A. On the other hand, the substantial savings in road maintenance and upkeep would be a beneficial impact.

Alternative B (Provide Access via Alternative Transportation)

Analysis. Under this alternative impacts would be moderate, long term and adverse. With the implementation of a ferry, park staff would have access to the island better than under Alternative A. Costs and operational efficiency could improve as compared to Alternative A, but would be higher than under alternatives C, D, and E. The park would need to establish a robust boating operation to include boats, marinas, ability to transport equipment, supplies and personnel and to support operations, similar to Mississippi District. A permanent office facility to accommodate the approximately 40 employees formerly housed in the Fort Pickens Area would have to be designed and constructed in another park area.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to park operations are major. Impacts would be greater under this alternative than under Alternative A because ferry access would result in increased operational costs, the ferry would not provide all the access needed by park operations. Ferry schedules would not likely coincide with employee schedules or for emergency operations. Again, the need to establish and operate a significant and expensive boating operation would exist.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. Under this alternative impacts to park operations would be major, long term and beneficial. Park staff would have easy vehicular access to the Fort Pickens area to conduct patrols, perform maintenance activities, or assist visitors. The costs of performing maintenance duties and supplying the island would be less if road access were available. Utilities would be upgraded and a new sewer line would be constructed to Fort Pickens.

There are no mitigating measures for this alternative.

This alternative meets the specific objectives stated on page 6 of this document.

Cumulative Impacts. Under this alternative cumulative beneficial impacts would be greater than under alternative A and B because road access would result in lower operational costs and more efficient deployment of staff than would be possible if access were only available by ferry, boat, or four-wheel drive vehicle. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Ivan, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Same as Alternative C.

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

Analysis. Same as Alternative C.

Cumulative Impacts. Same as Alternative C.

Conclusion. With respect to park operations:

- Impacts from Alternative A would be major, long term, and adverse.
- Impacts from Alternative B would be moderate, long term, and adverse.
- Impacts from Alternative C would be major, long term and beneficial.
- Impacts from Alternative D would be major, long term and beneficial.
- Impacts from Alternative E would be major, long term and adverse.

4.8.9 SOCIOECONOMIC ENVIRONMENT

Methodology and Intensity Thresholds

Analyses of the potential intensity of impacts to the socioeconomic environment were derived from the professional judgment of NPS staff. The thresholds of change for the intensity of impacts are defined as follows:

- Negligible: The impact on the local and regional economy is barely detectable.
- Minor: The impact on the local and regional economy is slight but detectable.
- Moderate: The impact on the local and regional economy is readily apparent.
- Major: The impact on the local and regional economy is severely adverse or exceptionally beneficial.

Impact Topic Analysis

Alternative A (No Action)

Analysis. Under this alternative the impacts on the socioeconomic environment would be major, long term, and adverse. About \$1.2 million would be removed from the local economy, about \$600,000 in direct wages and services and \$450,000 in contracts, materials, and services. Ten full time park service jobs, five seasonal positions and six concessionaire jobs would be lost. These economic benefits are partially offset by the expense of repairing the damaged road in an area of assured eventual destruction.

In mitigation of the socioeconomic impacts of this alternative, the one-time beneficial effects of construction expenditures must be considered.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. When combined with residual impacts of the 2004-2005 storms throughout the local area, the probable cumulative impacts of this alternative would be reduced cash flow and loss of employment in the local economy.

Alternative B (Provide Access via Alternative Transportation)

Analysis. Under this alternative the impacts to the socioeconomic environment would be moderate, long term and adverse. Using the known operation of the Ship Island ferry as an index, this ferry arrangement could expect to produce a gross income of about \$1.4 million. Under current NPS concessionaire regulations GUIS could expect income from franchise fees totaling approximately \$46,000. In contrast, pre-hurricane park income

totaled approximately \$860,000 per year. Loss of this income would likely necessitate staff reductions by the Seashore. There could be some offset of job loss by local employment expansion created by the ferry service.

There are no reasonable mitigating measures to recoup the loss of fee income or the loss of quality federal civil service jobs.

This alternative meets the specific objectives stated on page 6 of this document except for Visitor Use and Experience.

Cumulative Impacts. The probable impacts of this alternative would be reduced cash flow and loss of employment in the local economy.

Alternative C (Reconstruct Fort Pickens Road with Protective Sand Berms)

Analysis. The impacts of this alternative to the socioeconomic environment are major, long term, and beneficial. More people would likely visit the Fort Pickens Area under this alternative and alternatives D and E than the other alternatives. Visitation and income could very well equal or exceed pre-hurricane levels. As in Alternative A, balance with the expense of road repair must be considered when working in an area of assured eventual destruction.

In mitigation this alternative would meet the use and demand of pre-hurricane visitation with its concomitant economic and employment advantages. This alternative would provide a road designed to withstand the affects of some, but not all, tropical storms.

Cumulative Impacts. The predicted cumulative impacts this alternative would have to the socioeconomic environment are moderate. The site would be returned to the desired pre-Hurricane Opal baseline. This prediction is based on a past baseline of in-place roads and the anticipated future actions related to island-wide hurricane repair including road repair between Pensacola Beach and Navarre Beach. This alternative would add an increment that would eventually accumulate to an impact level similar to that which existed prior to Hurricane Ivan, an impact level that existed for 50 years. No other past, present, or future reasonable actions are seen that could lead to impacts cumulative or otherwise.

Alternative D (Reconstruct Fort Pickens Road with a Mix of Protective Elements)

Analysis. Same as Alternative C.

Cumulative Impacts. Same as Alternative C.

Alternative E (Reconstruct Fort Pickens Road in Conjunction with Beach Renourishment and Restoration)

Analysis. Same as Alternative C.

Cumulative Impacts. Same as Alternative C.

Conclusion. With respect to the socioeconomic environment:

- Impacts from Alternative A would be moderate, long term and adverse.
- Impacts from Alternative B would be moderate, long term, and adverse.
- Impacts from Alternative C would be major, long term and beneficial.
- Impacts from Alternative D would be major, long term and beneficial.
- Impacts from Alternative E would be major, long term and beneficial.

4.9 Solid Waste and Hazardous Substances

All of the alternatives call for removing asphalt debris from portions of the island where the old road was destroyed. This material constitutes solid waste that would need to be disposed of in an off-island facility licensed to receive such material. Any sand to be deposited on the island in connection with construction of the road or berms would be tested for contaminants and other hazardous substances and confirmed to be free of such materials prior to use.

4.10 Natural and Depletable Resources

Depletable resources would not be affected by the proposed action or any alternative. Any fill material would be in conformance with Section 6 of the GUIIS enabling legislation.

Adoption of the No Action alternative, Alternative B, Alternative C, Alternative D, or Alternative E would not result in an impairment of physical park resources.

4.11 Energy Conservation

For the long term Alternative A would be the most energy conservative Alternative B would result in less energy consumption than the other action alternatives because visitors would reach the island and on-island destinations via a ferry/shuttle service rather than by individual vehicle, thereby losing the energy advantages of mass transportation.

4.12 Irreversible or Irrecoverable Commitments of Resources

The changes described in the No Action Alternative, and Alternative B are fully reversible and do not commit resources to irretrievable consumption. Construction of the road system in alternatives C and E is reversible, although the process of reversing this action could have temporary adverse impacts to soils, wildlife, and other resources. The hardening measures called for in Alternative D are reversible, though not as easily reversible as the berm system in Alternative C.

4.13 Unavoidable Adverse Environmental Effects

Restoring access to GUIs would have unavoidable adverse effects to certain resources at GUIs such as geologic processes, fish and wildlife, and vegetation. The extent of these adverse impacts would vary widely depending on the alternative ultimately chosen for implementation.

5.0 List of Preparers

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- 2006a. Letter from Lorna Patrick, Acting Deputy Project Leader, to Jerry Eubanks, Superintendent, Gulf Islands National Seashore, dated June 27, 2006.
- 2006b. Letter from Lorna Patrick, Acting Deputy Project Leader, to Melisa Ridenour, Eastern Federal Lands Highway Division, dated July 12, 2006.

APPENDIX A

The National Environmental Policy Act of 1969 (P.L. 91-190, 42 USC §4321 et seq.) directs agencies to develop procedures to ensure that the natural, physical, and cultural aspects of the environment are given due consideration in federal actions that may affect these resources. Documentation of existing resources, potential effects to these resources as a result of the proposed project, and public involvement are key elements of the NEPA process. NPS compliance procedures are described in Director's Order and Handbook #12, the NEPA Compliance Guideline, Conservation Planning, Environmental Impact Analysis, and Decision Making.

Clean Water Act (Federal Water Pollution Control Act of 1972, 1977 and 1987 Amendments, and E.O. 11752) is a national policy set forth to protect and enhance the quality of water resources and to prevent, control, and abate water pollution. This act requires a permit for a point source to discharge pollutants into navigable waters and a permit from the U.S. Army Corps of Engineers for any discharge of dredge or fill. This act prohibits discharge of oil or other substances defined as hazardous, in quantities defined as harmful.

The Endangered Species Act of 1973 (16 USC 1531-1543) requires federal agencies to ensure that management activities authorized, funded, or carried out by the agency do not jeopardize the continued existence of listed endangered or threatened species, or result in the destruction or adverse modification of habitat that is critical to the conservation of the species.

E.O. 11988 "Floodplain Management," May 24, 1977 (42 USC 4321 note) and E.O. 11990 "Protection of Wetlands," 1977 (42 USC 4321 note) instructs federal agencies to avoid, to the extent possible, the long and short term adverse impacts associated with the occupancy and modification of floodplains and wetlands, and to avoid direct or indirect support of development in floodplains and wetlands wherever there is a practicable alternative. Where floodplains or wetlands cannot be avoided, procedures focus on mitigation of the adverse effects of any action.

Clean Air Act of 1977 (42 USC 7401-7626) was established for the purpose of preserving, protecting, and enhancing air quality. Section 162 (42 USC 7472) of this Act designates national parks greater than 6,000 acres in existence as of August 7, 1977, as mandatory Class I areas with only minor degradation of air quality allowed. Managers of such lands have direct responsibility to protect the air quality and related values, including visibility. Executive Order 12088 (1978) requires federal agencies to comply with all provisions of the Act, including State Implementation Plans. The E.O. establishes procedures and responsibilities to ensure that all necessary actions are taken to prevent, control and abate environmental pollution with respect to federal facilities and activities.

The Antiquities Act of 1906 was enacted by the Senate and House of Representatives to prevent the excavation and destruction of historic or prehistoric ruins or monuments on government controlled and owned lands. Persons found on government land without

permission would be convicted and fined no more than five hundred dollars or would be imprisoned no more than ninety days, or could suffer both fine and imprisonment. The President of the United States is authorized to declare historic landmarks, historic and prehistoric structures, or other historic and scientific interests. Those situated on lands owned or controlled by the government can be made into national monuments or may be otherwise reserved. Permits for excavations, examinations, and gatherings may be issued by the Secretaries of the Interior, Agriculture, and War to those who are deemed properly qualified. The excavations, examinations, or gatherings must provide scientific or educational benefits and the gatherings must be made available for permanent preservation in public museums.

The Historic Sites Act of 1935 (16 USC 461-467) establishes programs to preserve and receive donations of historic sites, buildings, and objects of national significance for the benefit of the American people. This act authorizes the programs including the Historic American Buildings Survey, the Historic American Engineering Record, and the National Survey of Historic Sites and Buildings.

The National Trust Act of 1949 facilitates public participation in the preservation of sites, buildings, and objects of national significance or interest. It also creates the National Trust for Historic Preservation.

The National Historic Preservation Act of 1966, amended, 1976, 1980, 1992 (16 USC 470) directs the federal government to ““preserve the historical and cultural foundations of the nation as a living part of our community life and development in order to give a sense of orientation to the American people””. Elements of the act include the establishment of the National Register of Historic Places (NRHP); directives for federal agencies to not inadvertently demolish, substantially alter, or allow listed properties to significantly deteriorate; criteria for designating National Historic Landmarks; directives for the Secretary of Interior to nominate properties of international significance as World Heritage Sites; and the establishment of State Historic Preservation Programs and Preservation Officers (SHPO) to direct statewide inventories of historic properties, administer the NRHP, and advise government agencies regarding compliance with the act.

E.O. 11593 ““Protection and Enhancement of the Cultural Environment,”” May 31, 1971 instructs all federal agencies to provide national leadership in historic preservation and to assure the preservation of cultural properties in federal ownership. The order directs all federal agencies to locate, inventory, and nominate all sites, buildings, districts, and objects under their jurisdiction or control that appear to qualify for listing on the NRHP.

Archaeological and Historical Preservation Act of 1974 amends the 1960 Salvage Act, and provides for the preservation of significant scientific, prehistoric, historic, or archeological data that might be lost or destroyed as a result of any alteration of the terrain caused by a result of any federal project or program.

American Indian Religious Freedom Act of 1978 (AIRFA) (P.L. 95-341; 92 Stat. 469; 42 USC 1996) establishes that the policy of the United States is to “protect and preserve for American Indians their inherent right of freedom to believe, express and exercise the traditional religions of the American Indian, Eskimo, Aleut and Native Hawaiians, including but not limited to site access, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.”

The Archaeological Resources Protection Act of 1979 (16 USC 470aa-470ll) defines archeological resources as any material remains of past human life or activities that are of archeological interest and are at least 100 years old. This act provides for the protection of archeological resources located on public and Indian lands, and establishes criteria for issuing permits for any excavation or removal. Per this act, information concerning the nature and location of archeological resources may be exempt from the Freedom of Information Act.

E.O. 13007, “Indian Sacred Sites”, May 24, 1996, states that those with statutory or administrative responsibilities for the management of federal lands shall accommodate ceremonial use of and access to Indian sacred sites by Indian religious practitioners, as well as avoid affecting the physical integrity of the sacred site. Reasonable notice must be provided of any proposed actions or land management policies that could restrict ceremonial use of or access to, or affect the physical integrity of sacred sites. Those with statutory or administrative responsibilities for the management of federal lands will report the following to the President, through the Assistant to the President for Domestic Policy: 1. Any changes to accommodate ceremonial use of and access to sacred sites; 2. any changes to avoid affecting the physical integrity of Indian sacred sites; and 3. procedures proposed to facilitate consultation with Indian tribes and religious leaders as well as to resolve conflicts relating to agency action on federal lands.

The Architectural Barriers Act of 1968 (42 USC §4151 et seq.) requires that facilities constructed or renovated using federal funds be accessible to and usable by persons with disabilities.

Section 504 of the Rehabilitation Act of 1973, amended, 1978 states that any program or service provided to the general public must be made accessible to and usable by disabled individuals to the highest extent possible and feasible. It requires that “no otherwise qualified individual shall, solely by reason of his or her handicap, be denied the benefits of or participation in any program or activity funded or conducted by a federal agency.”

The Americans with Disabilities Act of 1990 (P.L. 101-336) provides comprehensive civil rights protection to individuals with disabilities in the areas of employment, public accommodations, state and local government services, and telecommunications.

1.6.2 National Park Service Provisions

The National Park Service Organic Act of 1916 (16 USC 1a-1) creates the NPS, and establishes its purpose being, “to conserve the scenery and the natural and historic

objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.” It directs the NPS to promote and regulate the use of the parks by such means and measures as conform to their fundamental purposes.

Redwood Act of 1978 (16 USC 1a-1) amends the Organic Act to reemphasize Congressional direction for all NPS lands and states, ““the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these areas have been established”.

Title 36, Code of Federal Regulations, contains codification of current regulations published in the Federal Register that apply to national parks, national forests, and public property. Chapter I lists general regulations for the NPS. Part 7.12 of Chapter I lists regulations specific to Gulf Islands National Seashore. A companion document, the *Gulf Islands National Seashore Superintendent’s Compendium* lists regulations, specific to Gulf Islands National Seashore, and is revised and updated annually.

The Vail Agenda, 1993 establishes a vision for the NPS into the twenty-first century. It establishes a set of six strategic objectives for improving NPS stewardship and management. The themes for the objectives are Resource Stewardship and Protection, Access and Enjoyment, Education and Interpretation, Proactive Leadership, and Science and Research and Professionalism.

National Park Service Management Policies, 2006 establishes Servicewide policies for preservation, management, and use of park resources and facilities, and guidelines and direction for their management.

Concessions Policy Act of 1965 (P. L. 89-249) provides guidelines for concession authorizations within the NPS. This act requires that public accommodations, facilities, and services within National Park system areas are only provided under carefully controlled safeguards against unregulated and indiscriminate use in order to preserve park values. It limits commercial use to those operations that are necessary and appropriate for public use and enjoyment of National Park areas and are consistent to the highest practicable degree with the preservation and conservation of the areas.

National Park Service Special Directive 83-3: Accessibility for Disabled Persons, 1983 states the official policy of the NPS with regard to accessibility for disabled persons, ““In the planning, construction, and renovation of buildings and facilities and in the provision of programs and services to the public and employees, it is the policy of the NPS to provide the highest level of accessibility possible and feasible for persons with visual, hearing, mobility, and mental impairments, consistent with the nature of the area and program and consistent with the obligation to conserve park resources and preserve the quality of the park experience for everyone”.

National Park Service Omnibus Management Act of 1998 (P.L. 105-391), Title IV – National Park Service Concessions Management states that the Congress finds that public accommodations, facilities, and services that must be provided in parks should be provided only under carefully controlled safeguards so that visitation will not impair park resources and values. It is the policy of the Congress that such public accommodations and facilities in NPS units shall be limited to those that are necessary and appropriate for public use and enjoyment of the park and that are consistent with preservation and conservation of park resources and values. Requirements are provided for concessions contracts, which must include measures for resource protection and preservation.

NPS-77, NPS Natural Resources Management Guideline is a comprehensive guideline on natural resource management, combining existing guidance with documentation of unwritten practices and procedures of NPS resource management. It guides the actions of park managers so that natural resource activities planned and initiated at field areas comply with federal laws and regulations and Department of the Interior and NPS policy. This document was created by the National Park Service and is designed to specifically outline the management of natural resources, their allowable uses, the planning pertaining to them, and the program administration of these natural resources within all parks.

Gulf Islands National Seashore Provisions:

Public Law 91-660: Gulf Islands National Seashore, Florida and Mississippi, was authorized by Act of Congress, Public Law 91-660, January 8, 1971, to provide for recognition of certain historic values such as coastal fortifications and other purposes such as the preservation and enjoyment of undeveloped barrier islands and beaches. The National Park Service assumed management of the area in May 1972. The most significant cultural resources include Forts Pickens and Barrancas, Advanced Redoubt of Fort Barrancas, Naval Live Oaks in Florida and Fort Massachusetts in Mississippi. The most significant natural resources are the barrier islands of Santa Rosa and Perdido Key in Florida and Petit Bois, Horn and Ship in Mississippi along with their surrounding waters. The boundaries contain 137,597 acres of which 16,759 acres are dry land areas.

The Seashore's enabling legislation (16 U.S.C. §459h) states the purposes of the Seashore are to preserve for public use and enjoyment areas possessing outstanding natural, historic and recreational values. Section 459h-4 authorizes the Seashore to conserve and manage its wildlife natural resources.

Gulf Islands National Seashore, General Management Plan, 1978, establishes the guidelines for the overall use, preservation, management, and development of the Seashore. This plan recognizes the existing pier on Ship Island and the need for a boat refuge.

Gulf Islands National Seashore, Resource Management Plan – The Resource Management Plan calls for planning, research and management

Gulf Islands National Seashore, Strategic Plan 2005 – 2008 – The Strategic Plan includes working with outside entities to promote activities and improve partnerships resulting in an increase to donations, grants, and services.

Gulf Islands National Seashore, Statement for Management – The Statement for Management describes the available recreational opportunities and infrastructure available.

Gulf Islands National Seashore, Superintendent’s Compendium – The Superintendent’s Compendium sets specific controls on recreational boating activity.