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FLOODPLAINS STATEMENT OF FINDINGS

INTRODUCTION

Gulf Islands National Seashore was established by the U.S. Congress on January 8, 1971. As part of the national park system, the national seashore encompasses barrier islands and coastal mainland in Mississippi and Florida and is comprises 12 separate areas stretching along 160 miles from Cat Island in Mississippi to the eastern end of Santa Rosa Island in the northwest section of Florida's panhandle.

This statement of findings has been prepared in accordance with Executive Order 11988 (Floodplain Management), NPS Director's Order #77-2, and Floodplain Management and Procedural Manual #77-2. The statement of findings summarizes the floodplain development associated with actions to improve visitor access and safety along Johnson Beach Road and improve barrier island habitat. The statement of findings also describes the reasons why encroachment into the floodplain is required to implement the project, the site-specific flood risks involved, and the measures that would be taken to mitigate floodplain impacts.

BRIEF DESCRIPTION OF THE PROPOSED ACTION

Under alternative 3 (the alternative preferred by the National Park Service), the main visitor facility parking lot would be expanded to include three additional parking lots. Combined with the parking lot at the end of the drivable surface, there would be a total new disturbance of approximately 58,915 square feet (1.35 acres).

Stormwater management measures at the expanded portion of the main visitor facility parking lot and the new proposed parking lot would be implemented pending coordination with the Florida Department of Environmental Protection and identification of appropriate measures. Stormwater would be treated by sheetflow and directed off the paved surface. An alternative paving surface would be considered for all, or portions of, the proposed lot. If constructed with asphalt, surface materials would continue to convey sheetflow into surrounding areas during precipitation events. If constructed with an alternative paving surface, though it may not be considered permeable, it would likely increase the surface roughness of the parking lot. Roughness is an important variable in measuring a surface's ability to convey water across the surface. A smoother surface, such as asphalt, would convey water faster than a rough surface. Therefore, an alternative paving surface would continue to convey sheetflow into surrounding areas during precipitation events, but at a much slower rate than a paved asphalt surface. In addition, reduced sheetflow rates would reduce the risk of sedimentation and erosion. The addition of impervious surface area would result in adverse impacts to the floodplain but, given their inland location away from immediately adjacent waterways, these impacts would be slight. Additionally, the easternmost half mile of road would be closed to motor vehicles (with the exception of emergency/administrative use) and converted to a 10-12 foot wide multiuse path. A 10-foot wide swath of asphalt would be removed along this stretch. Resurfacing of Johnson Beach Road would only occur on a 10-12 foot wide stretch of this last half mile. As a result, this would reduce the amount of asphalt within the Perdido Key Area. Returning this area to natural conditions would restore floodplain functions as this area reverts from an impervious surface to a permeable one. Precipitation and overwash during storms would have the opportunity to penetrate back into the ground along this half mile stretch. Decommissioning and removing the asphalt at the final stretch of the road, and returning this area to a more natural condition, would allow for the return of natural processes of dune formation and migration to occur, with beneficial floodplain impacts (Hollis 1975, Maxted and Shaver 1998, Switalski et al. 2004, Doyle et al. 2008, Blanton and Marcus 2009).

Public access to the beaches would be directed to nine elevated dune crossovers and roadside parking along Johnson Beach Road would be eliminated and concentrated in specific areas, thereby reducing the number of visitors cutting through the sensitive dune habitat along the road corridor. Removal of motor vehicle access at the end of Johnson Beach Road would also further protect dune habitat along this stretch of road by reducing the number of visitors to this area of the park. Foot traffic on the dunes damages vegetation by trampling and routine foot traffic destroys it permanently. Once the vegetation is gone, the chances of dune erosion are greatly enhanced as the stabilization benefits provided by their roots systems are lost. Focusing foot traffic to the proposed crossovers through the use of split rail fences and the removal of parking along Johnson Beach Road would reduce visitor traffic through sensitive habitats and lead to long-term beneficial impacts to floodplain values as a result of the protection afforded to these dune ecosystems.

Construction of the new parking areas would require the use of mechanized equipment and could require the need for minor recontouring. Construction activities impact soils by disrupting compaction and impervious surfacing. This alters how much water runs through the soil versus running over the soil (runoff). An undisturbed site has approximately 40% - 55% pore space in the soils and 15% surface water runoff (State of Oregon Department of Environmental Quality 2001). After construction, the same site may end up with 55% - 70% surface water runoff (State of Oregon Department of Environmental Quality 2001) depending on the type of soils. The Perdido Key barrier island system is composed predominately of well sorted medium grained quartz sand with a low fraction of fine silt and coarser pebbles and shell hash. The pore spaces are responsible for water infiltration and when lost can take decades to replenish (state of Oregon Department of Environmental Quality 2001). Since this site was previously disturbed, it is difficult to determine how long the soils would take to recover. Increases in runoff rates would lead to higher erosion rates with adverse impacts to soils and sediments. Best management practices would be in place during construction to control erosion and runoff impacts to protect adjacent habitats during construction. Construction activities would be localized to the parking area which has already been disturbed and a smaller footprint for a staging area which would also be a previously disturbed area. Any vegetation disturbed during construction is expected to recover once construction activities cease. Once vegetation is re-established, root systems stabilize soils by anchoring them vertically and laterally. These efforts would make soils less vulnerable to erosion and storm impacts because they have been bound and retained within the roots of the vegetation. Due to the nature of the construction activities and the recoverability after disturbance, long-term adverse consequences to floodplains would not expected to result from construction activities associated with minor recontouring of the new parking areas. Therefore, impacts from construction on floodplains would be considered temporary and minimally adverse.

BRIEF SITE DESCRIPTION

Gulf Islands National Seashore was established by the U.S. Congress on January 8, 1971. As part of the national park system, the national seashore encompasses barrier islands and coastal mainland in Mississippi and Florida and comprises 12 separate areas stretching along 160 miles from Cat Island in Mississippi to the eastern end of Santa Rosa Island in the northwest section of Florida's panhandle. The national seashore was set aside for the purpose of preserving areas possessing outstanding natural, historic, and recreational values for public use and enjoyment. The current authorized acreage of the national seashore is 139,175 acres. The Florida District of the national seashore includes areas on Santa Rosa Island, Perdido Key, and mainland areas in Pensacola and Gulf Breeze (see figure 1). The Perdido Key Area of the park is located southwest of Pensacola, Florida and offers recreational opportunities like swimming, boating, fishing, hiking, and primitive camping. The geographic study area for the assessment of floodplain impacts is broadly defined as the width of the Perdido Key barrier island between the Gulf of Mexico and the Big Lagoon along the Johnson Beach Road corridor and within the boundary of Gulf Islands National Seashore.

GENERAL CHARACTERIZATION OF FLOODPLAIN VALUES AND OF THE NATURE OF FLOODING AND ASSOCIATED FLOODPLAIN PROCESSES IN THE AREA

Floodplains at the national seashore perform important natural functions, including temporary storage of floodwaters, dissipation of stormwater runoff, moderation of peak flows, groundwater recharge, prevention of erosion, and maintenance of water quality. In general, natural buffers, such as the sandy beach, dunes, and vegetation in the vicinity of the study area help maintain the natural functions of the floodplain. In the study area, the beach and sand dunes act as natural barriers to dissipate wave energy and protect the back dune area from flooding and erosion. These land forms begin with the accumulation of marine sand transported from the Gulf of Mexico to the coast by waves and currents. Dunes form when sand is moved by strong onshore winds, deposited behind the beach, stabilized by vegetation and other obstructions, and eventually becoming higher and wider. Primary dunes act as a reservoir of sand that buffer inland areas from the effects of storm waves and, in the process, act as natural levees against coastal flooding (FEMA 2008). Vegetation in this area traps and anchors sand, helping to stabilize the dunes that protect the shoreline against storms and hurricanes. Farther back from the ocean, the dunes flatten, ending at a saltwater lagoon. The island supports a number of natural features that reduce flooding severity. For example, dunes along the seashore impede storm surge, and lagoons and other depressions also function to store water during overwash or large precipitation events.

Flooding on the island can range from minor overwash events during high tides to major flooding from hurricanes and other coastal storms. Excessive precipitation can also flood low elevation areas across the island. Major storms can drive ocean storm surges completely across the island, dramatically changing habitats and the entire landscape. As storm winds and waves scour sand away from the ocean beaches, sediments are deposited along the lagoon side. Many of the highest points on the islands are within the relict dune fields. Soils are sandy and the vegetation cover is often incomplete. During the 2004-2005 hurricane seasons, many of the relict dune areas were heavily impacted, greatly reducing the size of these features and eliminating much of the vegetation communities occurring there (NPS 2014).

These dunes are interfaces between the open water and land, and serve many essential ecological functions such as wave and storm surge protection, wildlife habitat, nutrient cycling, and sediment trapping. The project area is located within the Coastal Barrier Resources System. As defined by the Coastal Barrier Resources Act, an "undeveloped coastal barrier" is a "depositional geologic feature that is subject to wave, tidal and wind energies; and protects landward aquatic habitats from direct wave attack".

Dune systems experience a high level of natural disturbance and recovery every year, associated with the natural coastal dynamics of the area (Talora et al 2007). This very resilient ecosystem endures consistent stresses including high tidal variations, storm surges, and hurricanes. To maintain the floodplain value of this ecosystem, it is important the dune line is able to withstand and recover from natural and human-caused erosion. Erosion includes, but is not limited to, horizontal recession and scour and can be induced or intensified by human activities. Erosion appears in the form of wearing away of land, removal of beach/dune sediments by wave action, tidal currents, wave currents, drainage, or wind.

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Figure 1: Gulf Islands National Seashore Perdido Key Area

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JUSTIFICATION FOR USE OF THE FLOODPLAIN

A. DESCRIPTION OF WHY THE PROPOSED ACTION MUST BE LOCATED IN THE FLOODPLAIN

This project would improve and protect sensitive habitat along the road corridor in order to protect sensitive species and preserve the natural functions of the barrier island, including important floodplain function and values. Additionally, this project would improve access and safety along Johnson Beach Road for visitors, including motorists, pedestrians, and bicyclists.

The majority of the project activities proposed under alternative 3 fall within Federal Emergency Management Agency mapping zone VE (Coastal Flood Zone), which extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area and is subject to high velocity wave action from storms. The remaining portions of the project area fall within the mapped coastal zone and 100-year floodplain. This proposed study area is the only practicable location for the proposed action.

The purpose of the project is to improve barrier island habitat and improve visitor access and safety along Johnson Beach Road.

The proposed project is needed for the following reasons:

- Currently, visitors are parking along the narrow shoulder of Johnson Beach Road creating safety concerns by partially blocking the travel corridor. This safety concern is heightened by the limited space for motorists, pedestrians, and bicyclists to maneuver around each other.
- While dune crossovers provide visitor access from the road to the beach, the crossovers have been impacted by naturally occurring dune migration and shifting sands rendering some of them unusable.
- Because visitors have been walking through the adjacent dunes, valuable dune habitat along the road corridor has been threatened.
- Wait times at the entrance station have grown and there is a need to reduce wait times to enter the Perdido Key portion of the national seashore.
- Protection of the dune ecosystem is necessary to preserve the natural functions of the barrier island, particularly its function as habitat for numerous wildlife species including the Perdido Key beach mouse and other special status species.

B. INVESTIGATION OF ALTERNATIVE SITES

Because the purpose of the project is to improve barrier island habitat and improve visitor access and safety along Johnson Beach Road, there is no practicable alternative to undertaking this particular action outside the floodplain in an alternative location. The efforts undertaken under the proposed action would benefit the floodplain once restoration efforts were completed, focusing foot traffic to the proposed dune crossovers. In addition, the removal of parking along Johnson Beach Road would reduce visitor traffic through sensitive habitats and lead to long-term beneficial impacts to floodplain values as a result of the protection afforded to these dune ecosystems.

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

A. RECURRENCE INTERVAL OF FLOODING AT THE SITE

Portions of the project area are within the mapped coastal zone and 100-year floodplain, as shown on Federal Emergency Management Agency Flood Insurance Rate Map (FIRM) Panels: 12033C0516G and 12033C0517G (FEMA 2006). The Federal Emergency Management Agency defines geographic areas as flood zones according to varying levels of flood risk. Each zone reflects the severity or type of flooding in the area, as depicted on figure 2. The first zone, labeled “AE” on the Federal Emergency Management Agency map, is within the 100-year floodplain and ranges in elevation from 8-10 ft. National Geodetic Vertical Datum of 1988 (NAV88). This zone encompasses mostly the western portion of the study area. The major source of flooding in this area would be flooding from overwash in the lagoon. The second zone on the Federal Emergency Management Agency map is labeled “VE” (Coastal Flood Zone), which extends from offshore to the inland limit of a primary frontal dune along an open coast and any other area and is subject to high velocity wave action from storms. The majority of the project activities are proposed in zone VE.

In 2013, the U.S. Fish and Wildlife Service updated maps produced through the Coastal Barrier Resources System, originally produced in the 1980s. The comprehensive revision of maps along the Gulf coast is intended to assist federal agencies’ compliance with the Coastal Barriers Resources Act. This legislation, signed into law in 1982, designated relatively undeveloped coastal barriers as part of the Coastal Barrier Resources System, and made these areas ineligible for most new federal expenditures and assistance. Perdido Key was added to the Coastal Barrier Resources System in 1990 (USFWS 2015). While the projects being proposed in this environmental assessment would not qualify for federal flood insurance, they would be in compliance with the Coastal Barriers Resources Act.

B. HYDRAULICS OF FLOODING AT THE SITE (DEPTHS, VELOCITIES)

The sandy beach, dunes, and vegetation of the study area help maintain the natural functions of the floodplain and reduce flooding severity. The beach and sand dunes act as natural barriers to dissipate wave energy and protect the back dune area from flooding and erosion. Primary dunes act as a reservoir of sand that buffer inland areas from the effects of storm waves and, in the process, act as natural levees against coastal flooding (FEMA 2008). Coastal lagoons and dunes also provide various functions, such as storage and sediment retention and dissipation of energy during flooding events. These areas and other depressions also function to store water during overwash or heavy precipitation. Flooding in the Perdido Key area of Gulf Islands National Seashore can range from minor events from high tides to major flooding from hurricanes and other coastal storms. Heavy precipitation can also flood low elevation areas. As demonstrated by Hurricane Ivan in 2004, the area is extremely vulnerable to coastal flood events. During Hurricane Ivan, the storm surge in Santa Rose County, Florida was 10-15 feet above normal tide and the surge damage reached several miles inland (NHC 2004).

C. TIME REQUIRED FOR FLOODING TO OCCUR (AMOUNT OF WARNING TIME POSSIBLE)

The dunes in the area and lagoons provide valuable water storage. Flooding generally occurs in the project area as a result of storm surge, making storm and marine warnings a practical option for protection of human life. Flash flooding is not likely in this area.

D. OPPORTUNITY FOR EVACUATION OF SITE IN THE EVENT OF FLOODING

If weather and marine warnings were issued, evacuation of the Perdido Key / Johnson Beach Area of Gulf Islands National Seashore would occur. Retreat off the key would occur via Perdido Key Drive (FL-292) to the north or on AL-182 E/Perdido Beach Blvd to the west. These are the two hurricane evacuation routes for the residents of Perdido Key. The National Park Service would close the parking lots to visitors as necessary and appropriate.

E. GEOMORPHIC CONSIDERATIONS (EROSION, SEDIMENT DEPOSITION, CHANNEL ADJUSTMENTS)

The Perdido Key Island exhibits a net westward migration resulting from the continual longshore transport processes as a function of the approaching wave energy. Extreme storms act to cause a northern migration through overwash processes that transports the sand from the beaches on the Gulf side to the northern island shorelines. The island also responds and migrates relative to sea level and the energy dynamics through the redistribution of sand within the entire littoral system. Recent studies have shown that the volume of sand on the island remains relatively stable; it is just redistributed within the littoral system by waves, storms, and changes in water levels (USACE 2010).

Flooding in the area of Perdido Key / Johnson Beach can range from minor overwash events from high tides to major flooding from hurricanes and other coastal storms. Excessive precipitation can also flood low elevation areas across the floodplain. Major storms can drive ocean storm surges completely across the key in to Big Lagoon, dramatically changing habitats as well as the entire landscape. As storm winds and waves scour away sand and sediments from one location, they are deposited in new areas as and coastal dynamics can reform the area. Storm surge combined with a high tide can breach the islands and create new inlets. As demonstrated by Hurricane Ivan in 2004, the area is extremely vulnerable to storm surge and powerful winds.

DESCRIPTION AND EXPLANATION OF FLOOD MITIGATION PLANS

Under the proposed action, this project would improve and protect sensitive habitat along the road corridor in order to protect sensitive species and preserve the natural functions of the barrier island, including important floodplain function and values. These actions would have beneficial impacts on floodplains because the number of visitors cutting through the sensitive dune habitat along the road

corridor would be reduced. Foot traffic would be directed to the proposed dune crossovers, which would reduce visitor traffic through sensitive habitats. In addition, the removal of a 10-foot wide swath of asphalt at the end of Johnson Beach Road would allow precipitation and overwash during storms to penetrate back into the ground in this location and returning this strip to a natural condition would restore floodplain functions as the area reverted from an impervious surface to a permeable one. As foot and vehicle disturbances were removed, vegetation would return to these areas. Vegetation would mitigate flood impacts because root systems would stabilize soils and sediments by anchoring sands vertically and laterally. These efforts would make the dune ecosystems less vulnerable to erosion and storm impacts because they have been bound and retained within the roots of the vegetation. This would slow the erosion of exposed areas, accelerate the process of soil and sediment recovery, and create a more stable configuration and improve floodplain function.

A. MEASURES TO REDUCE HAZARDS TO HUMAN LIFE AND PROPERTY TO THE REGULATORY FLOODPLAIN LEVEL, WHILE MINIMIZING THE IMPACT TO THE NATURAL RESOURCES OF THE FLOODPLAIN, INCLUDING THE USE OF NON-STRUCTURAL MEASURES AS MUCH AS PRACTICABLE

Conditions associated with flooding at this location are not considered particularly hazardous to people or property. Flooding generally occurs in the project area as a result of storm surge, making weather/marine warnings and evacuation a practical option for protection of human life.

B. ACKNOWLEDGEMENT THAT STRUCTURES AND FACILITIES ARE DESIGNED TO BE CONSISTENT WITH THE INTENT OF THE STANDARDS AND CRITERIA OF THE NATIONAL FLOOD INSURANCE PROGRAM (44 CFR PART 60).

The National Park Service would ensure that the final engineering designs were approved and the project would receive all necessary permits from those governmental agencies from which approval is required by federal or state law. These permits would ensure consistency with 44 CFR Part 60.

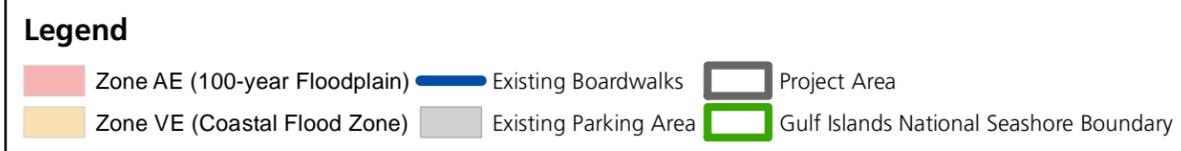


Figure 2: Floodplain Map
 Gulf Island National Seashore - Perdido Key Area
 United States Department of Interior / National Park Service

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SUMMARY

A statement of findings is prepared if the action falls within the defined regulatory floodplain:

- Class I includes the location or construction of administrative, residential, warehouse and maintenance buildings, non-excepted parking lots or other man-made features, which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values. Actions in this class are subject to the floodplain policies and procedures if they lie within the 100-year regulatory floodplain (the Base Floodplain).
- Class II includes “critical actions”—those activities for which even a slight chance of flooding would be too great. Examples of critical actions include schools, hospitals, fuel storage facilities, irreplaceable records, museums, and storage of archeological artifacts. Actions in this class are subject to the floodplain policies and procedures if they lie within the 500-year regulatory floodplain.
- Class III includes all Class I or Class II actions that are located in High Hazard Areas, including coastal high hazard areas and areas subject to flash flooding. Actions in this class are subject to the floodplain policies and procedures if they lie within the Extreme Flood regulatory floodplain.

In accordance with NPS Procedural Manual 77-2 (Floodplain Management), the repair and restoration activities proposed under alternative 3 is a “Class III” action. These actions include activities that require construction within flood prone areas, but exclude infrastructure that are permanently occupied. Class III actions allow for trails, viewing platforms, and picnic and rest areas, with appropriate signage to warn visitors of flood hazards.

The National Park Service finds that the efforts to improve visitor access and safety along Johnson Beach Road and improve barrier island habitat are essential for public use and safety, despite the fact that the actions would be located in flood-prone areas. The National Park Service also finds that in improving the barrier island habitat, there are no practicable alternatives to enhance resiliency outside of the floodplain since the entire study area is within the 100-year floodplain or Coastal Flood Zone. This project is consistent with the policies and procedures of NPS Director’s Order #77-2 (Floodplain Management) and Executive Order 11988.

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