
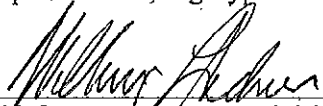
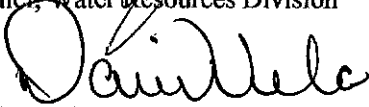


**Statement of Findings for
Executive Order 11988, "Floodplain Management"
Big Cypress National Preserve — Addition
General Management Plan**

Recommended:		<u>6/14/10</u>
	Superintendent, Big Cypress National Preserve	Date
Concurred:		<u>6/17/10</u>
	Chief, Water Resources Division	Date
Approved:		<u>6-22-10</u>
	Director, Southeast Region	Date

INTRODUCTION

In accordance with Executive Order 11988, "Floodplain Management" and National Park Service (NPS) guidelines for implementing the order, the National Park Service has reviewed the flood hazards in the Big Cypress National Preserve — Addition (Addition) and has prepared this "Statement of Findings" (SOF).

In examining the Addition lands, the structures at the following two sites were identified as being within a regulatory 100-year floodplain:

- 1) Carnestown site (southeast corner of S.R. 29 and U.S. 41/Tamiami Trail in Carnestown, FL)
Two structures: Collier County Sheriff District 7 substation and the Everglades Chamber of Commerce information center (known as "Everglades Welcome Center")
- 2) Copeland site (east side S.R. 29 in Copeland, FL)
One structure: NPS fire operations center

There are no other occupied structures within a regulatory floodplain at these sites that warrant inclusion in this flood hazard assessment. The 91-meter communication tower owned by Crown Castle adjacent to the other two structures at the Carnestown site is an example of a site facility that is not included in the hazard assessment.

This "Statement of Findings" focuses on evaluating the flood hazards for the three aforementioned structures in the 100-year floodplain. As a part of the effort to develop a general management plan (GMP) for the Addition, the "Statement of Findings" describes the flood hazard, alternatives, and possible mitigation measures for the continued use of this area. Additional detail regarding the Addition lands and resources, future actions to be taken in the area, and environmental impacts may be found in the *Draft General Management Plan / Wilderness Study / Off-Road Vehicle Management Plan / Environmental Impact Statement* (GMP/EIS).

DESCRIPTION OF THE SITES AND USES

Carnestown Site

The Everglades Area Chamber of Commerce, the Collier County Sheriff's Office, and Crown Castle International, Inc. lease land owned by the National Park Service in the southeast quadrant of the intersection of S.R. 29 and U.S. 41. The federal acquisition of this land was prompted by the Big Cypress National Preserve Addition Act of 1988 (Public Law 100-301). The National Park Service began administering these Addition lands in 1996.

Currently, there are two occupied, one-story, structures on the site: the Everglades Chamber of Commerce visitor information center (the first structure on the site in 1966) and the Collier County sheriff's substation. These structures existed on this site prior to National Park Service

management. The communication tower with a repeater building and an aboveground fuel tank for sheriff operations are nearby on the site. Much of the remaining land at this site has been developed with impervious paved surfaces for ingress and egress and parking, and some is mowed lawn groundcover. Both of the occupied structures, which are about 7 to 8 feet above mean sea level, are immediately west of the Barron River Canal. The surrounding plant communities beyond the manicured landscape portions of the site (and primarily south of the site and west of S.R. 29) consist mainly of mangrove forest. The site sits at the upper reach of a mangrove estuary off Chokoloskee Bay.

Although the onsite facilities are leased, managed, and operated by external entities, the land is owned by the federal government and is part of the planning area covered in the *General Management Plan* for the Addition. All of these facilities provide support services to the Preserve and its visitors, and they operate seven days per week. For example, the Everglades Chamber of Commerce facility provides orientation, visitor information, souvenirs, limited supplies, and a restroom facility. The District 7 sheriff substation (and the adjacent tower) provide emergency and communication services for the Preserve and its visitors.

Copeland Site

The National Park Service uses a former single-family residence at this site (on the east side of both S.R. 29 and the Barron River Canal) as a fire operations center. This structure was on the site prior to NPS management of this land, which began in 1996. The site development consists of a two-story house, an old swimming pool basin, a pump house, and a borrow pit. Material excavated from the borrow pit appears to have been used to raise the building pad prior to house construction. Although the house sits slightly higher than the elevation of the surrounding terrain, the entire structure is within the 100-year floodplain.

The remaining developed areas around the house, pump house, and pool consist of mowed lawn and a pervious driveway and parking area. The driveway crosses the Barron River Canal, connecting the site to S.R. 29. Beyond the developed area of the site, the generally flat terrain is vegetated with cleared prairie, scrub-shrub, seasonal wetlands, and hardwood hammock. Another private residence exists approximately 100 yards north of the site, and an NPS Preserve employee housing unit exists about 200 yards to the south. The NPS fire operations center at the Copeland site accommodates year-round use, involving unit fire management employees and prescribed fire employees.

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

Carnestown Site

The flooding that occurs in the vicinity of the Carnestown site is mainly characterized and driven by rising waters in the adjacent mangrove estuaries and canals during wet seasons, storms, or hurricanes. The rising waters in the canals and mangrove estuaries can result from long durations of heavy precipitation and from storm surges from the Gulf of Mexico associated with hurricanes

and tropical storms. Flooding at the site and its vicinity would occur when the rising water and/or storm surge overtops the banks of canals and natural waterways around the site. During the south Florida wet season, some ponding also occurs in low-lying areas and swales around the site due to the flat terrain and drainage constraints of the site. The only documented flooding of this site occurred after Hurricane Donna in 1960 when canal banks were overtopped in vicinity of the site. At that time, there were no structures on the site. Since 1960 (and since site development) the site has only flooded once — during Hurricane Andrew in 1992. However, the two structures on this site did not flood at that time. In fact, Everglades City (located closer to the Gulf to the south) staged its emergency management system equipment at this site to avoid higher water levels in the city. The National Park Service has not identified any records or physical indications that any other flooding has occurred at this site in the past.

Copeland Site

The flooding that occurs in the vicinity of the Copeland site is primarily characterized by areas of seasonal wetlands and other low-lying areas becoming inundated during the south Florida wet season. Ponding and soil saturation in these nearby wetland areas is typically only seasonal in nature. In a very severe flood, it is possible for flood water to overtop the banks of the Barron River Canal that parallels S.R. 29 along the west side of this site. However, the NPS has no records or physical proof that flooding has occurred at the structure site, even during notable storms or hurricanes. This may be because of local hydrology of the site and the fact that the structure sits on a raised foundation.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Description of Preferred Alternative and Why Facilities Would Be Retained in the Floodplain

Under the preferred alternative in the general management plan, the fire operations center at Copeland, and the Sheriff's substation and Everglades Chamber of Commerce visitor center at Carnestown would be retained in their existing locations. The reasoning behind retaining these three structures in their existing locations in the 100-year floodplain is based on the following reasons:

- The structures at both sites were stable and usable when the National Park Service took over management and ownership of these sites/land.
- The National Park Service has no records of past structural flooding at either of these sites.
- The Chamber of Commerce and Sheriff's Office facilities at the Carnestown site were fully operational before and after the NPS took over management of this land.
- The visitor services and emergency services provided at this site by the Everglades Chamber of Commerce visitor center and the Collier County Sheriff's Office substation continue to support the Preserve and its visitors and serve as an effective complement to NPS operations and services.

- The structure (house) at the Copeland site has become fully operational and has been an effective location for the NPS fire operations center.
- Relocating the facilities and services at both sites may be infeasible and very costly, from both a financial cost perspective and from a level/quality of service perspective.
- Both of the sites are already on disturbed ground. Moving the facilities would likely result in adverse impacts and the loss of other natural resource values in the area.
- The Carnestown site is served by sewer and water from the Everglades City utility system, which avoids the need for individual septic and well systems and the resource impacts they would bring.
- Both sites have direct access to major highways in the area that provide quick evacuation routes to higher, inland areas (S.R. 29 to the north and U.S. 41 and Interstate 75 to the east and west).

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

Carnestown Site

The potential for storm surges associated with hurricanes and tropical storms is the primary flood risk for the structures at the Carnestown site. Strong storm surges from the southwest have the potential to raise water levels in the canals and mangrove estuary branches near the site. High seasonal rainfall could also contribute to the rising waters in the adjacent canals and estuary. If the canal banks are overtopped, the structures at the site might be flooded from several directions because canals more or less surround the area around the intersection of S.R. 29 and U.S. 41. However, once again, although some ponding occurs in low-lying areas around the site during the wet season and some probable overtopped canal banks near the site may have occurred during storms in 1960 and in the 1990s, the National Park Service has not identified any records or physical indications that structural flooding has occurred at this site in the past.

The timing and duration of potential flooding at the Carnestown site structures may vary depending on the source of flooding (i.e., storm surge or high seasonal rainfall). At the Carnestown site, flooding caused by storm surges is the most likely scenario, and flooding could occur over a short period of time if a hurricane or tropical storm nears the area at the right trajectory. Since this type of flooding would result from rising water in the Barron River Canal, other adjacent canals, and the nearby estuary, the flooding could occur in a matter of hours. Thus, the available time for advanced warning and evacuation would be somewhat limited because of the rapid approach of storm surges. However, with effective hurricane forecasting and early evacuation orders, structure occupants should be provided with enough advanced notice to avoid the flood risk (many hours to several days). Typically, Collier County evacuation orders are issued for areas south of U.S. 41 in response to storm surge threats.

If the flooding is a result of high seasonal rainfall, it could take weeks or perhaps months to occur. This type of flooding at the Carnestown site would allow a substantial amount of time for advanced warning to structure occupants (days or weeks). The flood duration in this case would also have a long duration because of fully saturated soils, flat terrain, and slow rate of recession.

Because of the very subtle variations of landscape elevation in this area, there are very few issues related to erosion, sediment deposition, and channel changes that would result from flooding. Notable hydrologic changes from geomorphic and erosion processes in this area are primarily only measureable at the scale of geologic time. There could be some sediment and debris deposition at this site as a result of storm surge, but the typical seasonal inundation at the Carnestown site would lack the energy to produce detectable erosion or channelization.

Copeland Site

Only during periods of extreme high water could the elevated building foundation and structure be flooded. Floodwater in an extreme event could originate from rising water in surrounding lowlands from high seasonal rainfall or from overtopped banks in the adjacent Barron River Canal from extreme storm surges from the southwest. If rising water from very high seasonal rainfall occurs, the flow direction at the Copeland site would generally be towards the south-southwest and into the adjacent canal. If the flooding results from overtopped banks, the direction may be reversed. However, once again, although ponding in nearby wetlands and low areas during the wet season is not uncommon, the National Park Service has identified no records or physical indication that the structure has been flooded in the past.

The timing and duration of potential flooding at the Copeland site structure would vary depending on the source/type of flooding. If the flooding is a result of high seasonal rainfall, it could take weeks or perhaps months to occur. This type of flooding at the Copeland site would allow a substantial amount of time for advanced warning to structure occupants (days or weeks). The flood duration in this case would also have a long duration due to fully saturated soils, flat terrain, and slow rate of recession.

If the flooding at the Copeland site structure results from a strong hurricane or tropical storm, the timing would be shortened considerably. Because this type of flooding would result from a storm surge and rising water in the Barron River Canal, the flooding could occur in a matter of hours. Thus, the available time for advanced warning and evacuation would be more limited because of the rapid approach of storm surges. However, forecasted hurricane warnings and early evacuation notices/orders should provide structure occupants with flood awareness hours to days in advance of the risk.

Because of the very subtle variations of landscape elevation in this area, there are very few issues related to erosion, sediment deposition, and channel changes that would result from flooding. Notable hydrologic changes from geomorphic and erosion processes in this area are primarily only measureable at the scale of geologic time. There could be some sediment and debris deposition at this site as a result of storm surge, but the typical seasonal inundation at the Copeland site would lack the energy to produce detectable erosion or channelization.

FLOOD MITIGATION MEASURES

The highest level of flood mitigation for both the Carnestown site and the Copeland site would be to relocate the facilities and/or services out of the floodplain. This option is not currently

feasible and has several costs associated with it. Thus, this option has not been chosen by the National Park Service. If or when the structures reach their usable lifespan, or if a future flood results in severe damage, then the National Park Service should assess possibilities for relocating the facilities.

The continued use of the Carnestown and Copeland sites for the various facilities and services would necessitate the development (and future implementation) of evacuation plans for both sites. Given the proximity of these sites to flooding risks, the early, prompt, and safe evacuation of people from the sites is the primary flood mitigation measure available to the National Park Service. This plan would include strategies that ensure proper storm monitoring, emergency communication methods, effective evacuation routes, and timely emergency evacuation notification for staff and visitors at both sites.

Because both sites are located at or near the intersection of two major highways in the area (S.R. 29 and U.S. 41), multiple evacuation routes are available to staff or visitors at these sites. Depending on storm trajectory or flooding dynamics, evacuees could seek higher ground by driving north along S.R. 29, with the option of heading east or west on Interstate 75. Evacuees could also exit the area to the east or west via U.S. 41. The most ideal and safest evacuation route would be determined by local emergency management system authorities during the time of the storm.

The plan would be developed in concert with the protocol and strategy of the existing Collier County emergency management system and the National Weather Service. This Collier County emergency management system is already well developed and has proven to be very successful at providing people in the area with advanced warning of potential floods. During past floods, this emergency management system has given warning well in advance of storm activity, leaving ample time for evacuation. Also, since the Collier County Sheriff's Office substation is at the Carnestown site, the collaboration and communication between the National Park Service and the Collier County emergency management system should be rather seamless and efficient. This would also benefit the Copeland site, since the Collier County Sheriff's Office substation at Carnestown is only 3 miles south of the Copeland site.

Once the plan is developed, all Preserve staff, Everglades Chamber of Commerce staff, and Collier County Sheriff's Office staff would be informed of the plan's details and their respective implementation responsibilities. Staff at all facilities would also be informed on how to appropriately disseminate evacuation information to visitors who may be at any of the facilities when a flood occurs.

SUMMARY

The National Park Service has determined that there is no practicable alternative to maintaining the use of the fire operations center at the Copeland site and continuing to allow the use of the structures at the Carnestown site for Everglades Chamber of Commerce and Collier County Sheriff's Office services. This determination is primarily based on: (1) the low risk and minimal safety concerns related to potential flooding at these sites, and (2) the notable costs and impacts

that would be incurred by moving and/or constructing these facilities in new locations outside the floodplain.

The primary flood mitigation measure for both sites is to develop an evacuation plan for all facilities at these sites and keep all NPS staff, Chamber of Commerce staff, and Sheriff's Office staff informed of the plan. Although the sites are within or near areas subject to flooding, there would be ample time to warn staff and visitors using the facilities to evacuate the area. If a flood occurs, visitors and staff could evacuate to higher ground via S.R. 29, U.S. 41, and/or Interstate 75. The location of the Collier County Sheriff's Office substation on the Carnestown site, only 3 miles south of the Copeland site, would benefit the emergency communication for both sites and would help ensure early and safe evacuation.

Sources

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