

Proposed Elevated Camping Platforms

Everglades National Park

DRAFT Floodplain Statement of Findings

PEPC 66765



Recommended:

Pedro Ramos
Superintendent, Everglades National Park
National Park Service

Date

Certified for Technical Adequacy and Servicewide Consistency:

Terry Fisk
Acting Chief, Water Resources Division
National Park Service

Date

Approved:

Darrell L. Echols
Acting Regional Director, Interior Region 2, South Atlantic - Gulf
National Park Service

Date

This page intentionally blank.

TABLE OF CONTENTS

Introduction.....	1
Preparer.....	1
Location	2
Proposed Action.....	3
Determination of Action Class and Regulatory Floodplain	8
Justification for Use of the Floodplain.....	10
Detailed Flood Hazard and Flood Risk Analysis	11
Description of Site-specific Flood Hazard	11
Description of Site-specific Flood Risk.....	12
Human Health and Safety.....	12
Property.....	13
Floodplain Values.....	13
Floodplain Impact Mitigation Measures	13
Summary	14
References.....	15

FIGURES

Figure 1. Map of Everglades National Park (NPS 2017)	3
Figure 2. Example of an elevated camping platform.....	4
Figure 3. Map of proposed elevated camping platforms	5
Figure 4. Map of existing wilderness campsites in Everglades National Park	7
Figure 5. Map of proposed camping sites in relation to FEMA 1% flood hazard areas (FEMA National Flood Hazard Layer)	9
Figure 6. Screenshot of NOAA Sea Level Rise Viewer for southern Florida indicating anticipated flood areas (blue shaded portion) based on 3-foot rise in average water levels....	10

TABLES

Table 1. Locations of Proposed New Elevated Camping Platforms	5
---	---

This page intentionally blank.

INTRODUCTION

Executive Order (EO) 11988, “Floodplain Management” requires the National Park Service (NPS) and other federal agencies to evaluate the likely impacts of actions in floodplains. The objective of EO 11988 is to avoid, to the extent possible, the long-term and short-term adverse impacts associated with occupancy, modification, or destruction of floodplains and to avoid indirect support of development and new construction in such areas wherever there is a practicable alternative. The National Park Service administers floodplain policy through Director’s Order 77-2: *Floodplain Management* (DO 77-2) and Procedural Manual 77-2 *Floodplain Management* (PM 77-2). The National Park Service also complies with departmental guidance outlined in 520 DM 1, *Floodplain Management and Wetlands Protection Policy and Responsibilities*, and 520 DM 2, *Floodplain Management and Wetlands Protection Program Requirements*.

It is NPS policy to preserve floodplain functions and values and to minimize potentially hazardous conditions associated with flooding, including threats to human health and safety, risk to NPS capital investment, and impacts on natural and beneficial floodplain values. If a proposed action is found to be in, or possibly affecting, a floodplain; and if relocating the action to a non-floodplain site is considered not to be a viable alternative; then a formal Floodplain Statement of Findings (FSOF) must be prepared unless the action is considered excepted. The FSOF must (a) describe the rationale for selection of a floodplain site, (b) disclose the degree of risk associated with the chosen site (with respect to human life, health and safety, resource protection, and capital investment), and (c) explain strategies for mitigation of flood risk. The FSOF will be available for public review in coordination with the National Environmental Policy Act (NEPA) and other compliance procedures, as applicable. If public review is not provided through the NEPA process (e.g., environmental assessment), another opportunity for public review is required.

This FSOF provides:

1. A detailed justification for selecting a proposed action that would adversely impact the Federal Flood Risk Management Standard (FFRMS) floodplain (Section 2).
2. A detailed and comprehensive description of the flood hazard and risk associated with implementation of the proposed action (Section 3).
3. A thorough description of mitigation measures chosen to minimize or eliminate adverse floodplain impacts associated with the proposed action(s) (Section 4).

PREPARER

In accordance with DO 77-2 and PM 77-2, Byron Tsang, a co-author of this FSOF, is an NPS aquatic resource professional, who is technically qualified to prepare this document. Additional co-authors include Danielle Lehle and Jackson Letchworth. Byron is a Professional Wetland Scientist (PWS #3832) with 16 years of experience in wetland and floodplain resource management. As the NPS Regional Wetland Ecologist for the Southeast Region, he is a technical authority and subject matter expert for issues pertaining to NPS wetland and floodplain

management in national park units. His specific areas of expertise include wetland hydrology and natural resource values, river and floodplain natural processes, coastal wetland environments, plant community ecology, natural species and invasive management, and ecological restoration in natural landscapes. He serves as the southeast region technical advisor for park projects and operations with regulatory obligations under Section 404 of the Clean Water Act and NPS Wetland and Floodplain policies, DO 77-1 and 77-2.

LOCATION

The project location is within Everglades National Park in Collier County and Monroe County, Florida (see figure 1, below). The National Park Service is the fee simple landowner for all project lands. The National Park Service is proposing to construct new elevated camping platforms at ten locations in the Flamingo, Florida Bay, and Gulf Coast districts of the park (see figures 2 and 3 and table 1, below). All proposed elevated camping platforms are located within marine or estuarine areas above the water surface but below the regulatory flood elevation. Therefore, these sites (platforms and support posts) are located within the regulatory floodplain, which occurs at a base flood elevation (BFE) ranging between 10–17 feet (per the North American Vertical Datum of 1988 or NAVD88; see the next section, “Determination of Action Class and Regulatory Floodplain”). The regulatory floodplain is associated with a coastal flooding hazard due to ocean (storm surge and waves) and riverine (precipitation) influences (Flood Zones AE and VE).

Typical flood events at the project are associated with tropical storms and hurricanes, with 100-year precipitation events resulting in over 12 inches of rain in a 24-hour period (NOAA Atlas 14). All proposed camping platform sites are located in estuarine and marine open water that is subject to tidal cycles. The hydrology of Florida Bay and the Ten Thousand Islands is driven primarily by tidal influence and precipitation, as compared to inland marsh areas with more complex groundwater and sheet flow hydrologic systems driven largely by rainfall. The park receives an average of 45–50 inches of rainfall per year as reported by the National Oceanic and Atmospheric Administration (NOAA) AgACIS, averaged over the last 25 years (2000–2025), with most of the year’s average annual rainfall occurring during the wet season from about mid-May to November.

While the Everglades can experience frequent heavy rain during the wet season, park management staff have observed that most flooding events are the result of tropical storms and wind-driven storm surge. In the last 25 years, 12 named storms fell within 50 miles of the Everglades, including 8 hurricanes and 4 tropical storms. 2020 Hurricane Eta was a recent typical flood event which passed over the Florida Keys as a tropical storm with wind speeds at 55 knots. During Eta, a USGS tide gauge in Florida Bay measured a peak water level of 3.7 feet above Mean Higher High Water (MHHW). A more extreme example is 2017 Hurricane Irma, which passed just west of the Everglades as a Category 4 hurricane with 114 knot winds. During Irma, a USGS tide gauge in Everglades City measured flooding at 7.5 feet above MHHW. A recent study (Keim, Muller, and Stone 2007) of tropical storm and hurricane occurrence in the Everglades suggests that tropical storms and hurricanes can be expected to make landfall every 3 or 4 years, with more severe hurricanes (Category 3+) every 13–15 years. NOAA’s Miami-South Florida National Weather Service Forecast Office estimates that, on average, the center of a

hurricane will pass within 50 miles of any point in South Florida every 6 to 8 years. Furthermore, climate-driven increases in storm frequency and intensity are anticipated. As a result, it is assumed that storm surge flooding events may occur regularly at any of the proposed camping platforms.

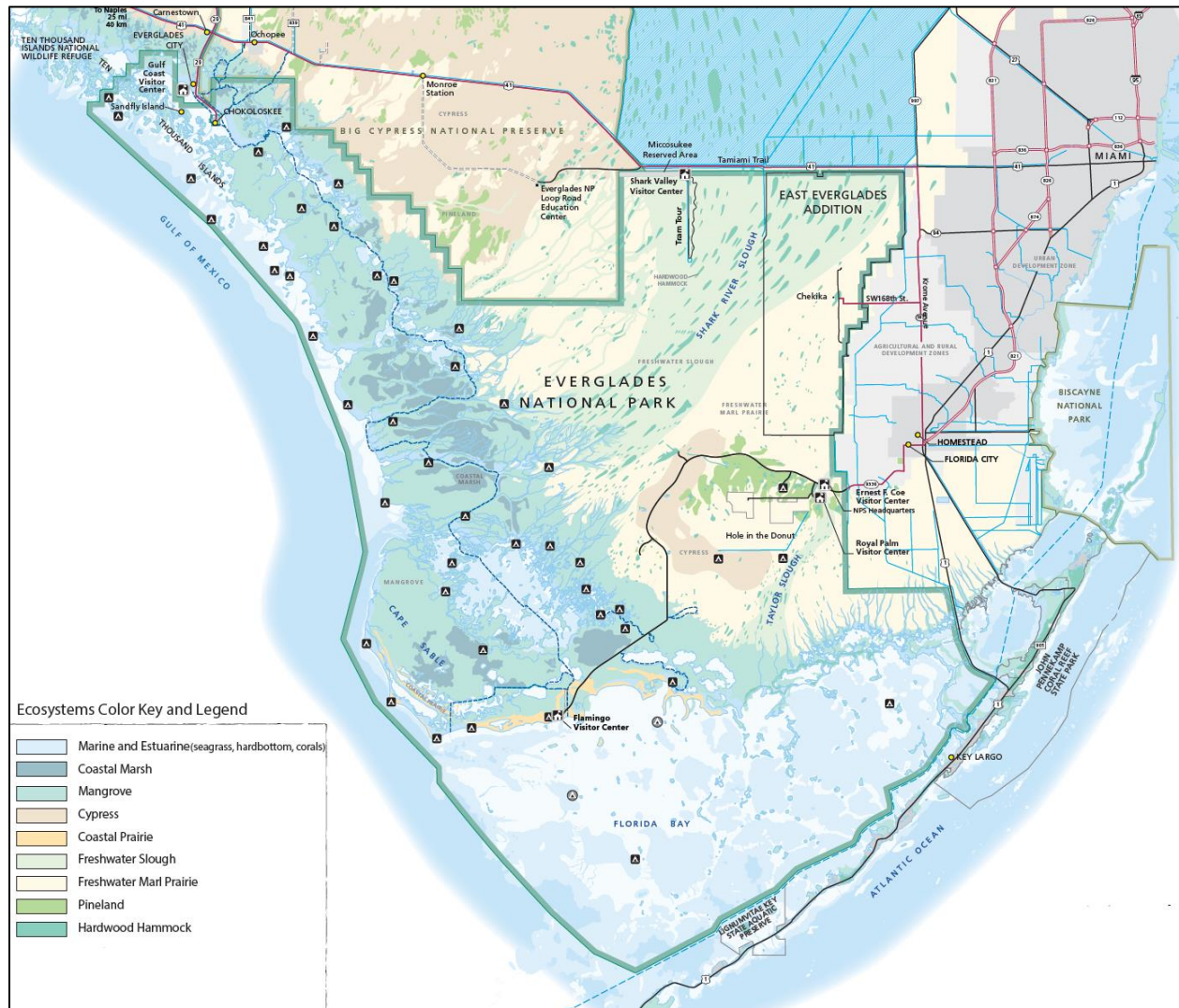


Figure 1. Map of Everglades National Park (NPS 2017).

PROPOSED ACTION

The National Park Service proposes to develop new elevated camping platforms in estuarine and marine areas in the Flamingo, Florida Bay, and Gulf Coast districts of Everglades National Park (refer to figure 3 and table 1). These elevated camping platforms would be located in designated wilderness. The proposed action would enhance wilderness recreational opportunities, address uneven wilderness campsite distribution (see figure 4), and respond to changes in visitor use patterns.

Two alternatives were considered: the no-action alternative, and one action alternative. Under the no-action alternative, no new elevated camping platforms would be constructed. Under the action alternative, ten new elevated camping platforms would be constructed (*see* figures 2 and 3, and table 1, below). Each new elevated camping platform would be a double platform with a footprint not to exceed 500 square feet and would accommodate up to 12 people per night. The double platforms provide two tent sites connected by a walkway with a portable toilet (refer to figure 2). A lower deck provides a location for visitors to tie up their paddle craft or boat; camping is not permitted on the lower deck. The new platforms would be constructed of hardened materials, including pilings (up to 14 inches in diameter), a support structure, and grated decking allowing a minimum open area of 43% to let light pass through. The design of the structure allows water to flow through during storm events and reduces wind forces. Platforms will be constructed of timber, concrete, aluminum, fiberglass, or similar typical building materials. The life cycle of each elevated camping platform is expected to be 25–30 years.

The upper deck would be constructed five feet above mean high tide. Everglades tidal fluctuations typically range from 0 to 4 feet. The MHHW level in the Everglades is seasonally variable but averages 3 feet NAVD88 at the highest (near Everglades City). Therefore, constructing the upper deck of the camping platforms 5 feet above mean high tide results in the upper deck being, on average, from 4 feet (high tide) to 8 feet (low tide) above the water surface. The lower deck would be fixed to the pilings and then constructed at the mean high tide level to facilitate access. The lower deck can be elevated, repaired, or replaced as needed at minimal cost.



Figure 2. Example of an elevated camping platform.

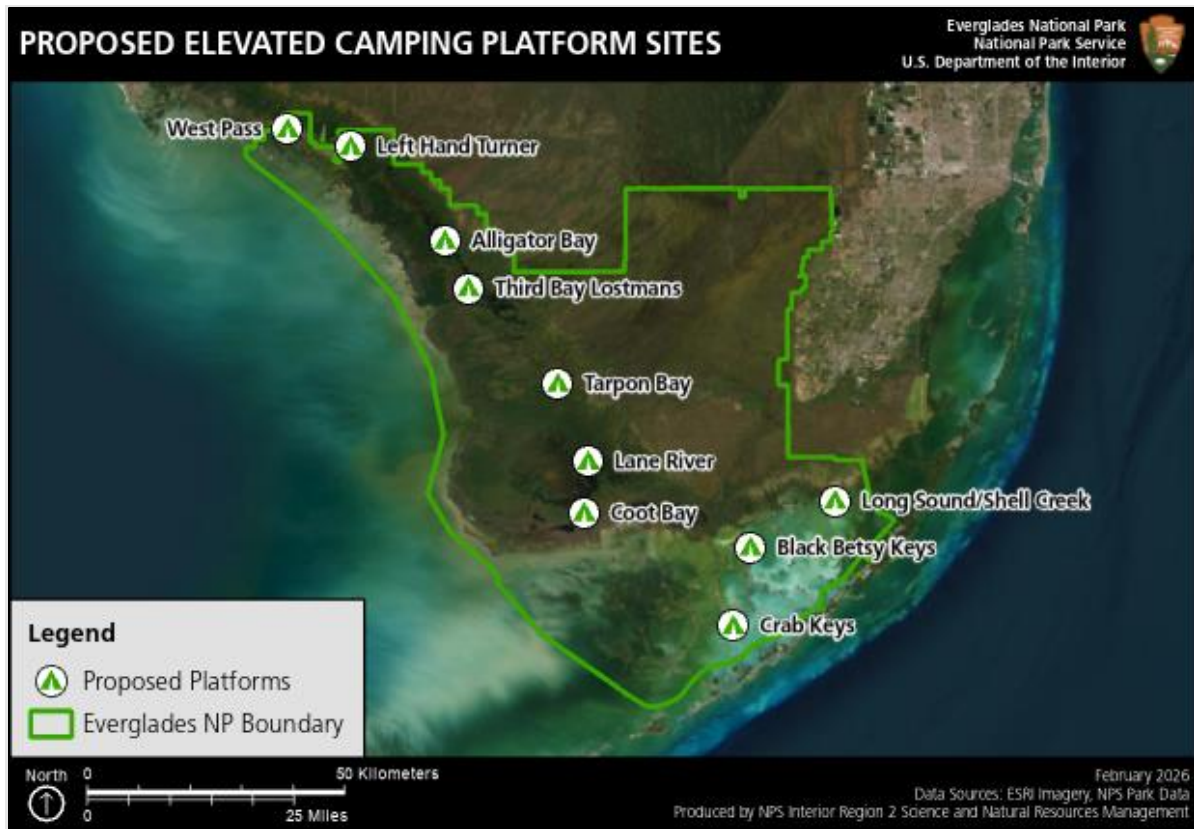


Figure 3. Map of proposed elevated camping platforms.

Table 1. Locations of Proposed New Elevated Camping Platforms

Location	District	Latitude	Longitude	Flood Zone	Static BFE ¹	Regulatory Floodplain Elevation ²	Water Depth Over Upper Platform at Regulatory Flood (Ft) ³
Coot Bay	Flamingo	25.194690	-80.929460	AE	9	12	4
Tarpon Bay	Flamingo	25.419858	-80.975110	AE	8	11	3
Lane River	Flamingo	25.284478	-80.922149	AE	9	12	4
Black Betsy Keys	Florida Bay	25.134260	-80.638720	AE	10	13	5
Long Sound/ Shell Creek	Florida Bay	25.215891	-80.491160	AE	11	14	6
Crab Keys	Florida Bay	24.997460	-80.668779	VE	12	15	7
West Pass	Gulf Coast	25.863891	-81.447118	VE	15	18	10
Alligator Bay	Gulf Coast	25.669312	-81.172456	VE	12	15	7

Location	District	Latitude	Longitude	Flood Zone	Static BFE ¹	Regulatory Floodplain Elevation ²	Water Depth Over Upper Platform at Regulatory Flood (Ft) ³
Third Bay Lostmans	Gulf Coast	25.586609	-81.131361	AE	14	17	9
Left Hand Turner	Gulf Coast	25.833435	-81.337178	AE	13	16	8

Notes: ¹BFE = Base Flood Elevation, in feet (NAVD88).

²The elevation of the upper deck of the elevated camping platforms is approximately five feet above mean high tide. Static BFE is reported by FEMA. Regulatory Floodplain is calculated as Static BFE +3 feet, per Climate-informed Science Approach (see section on “Determination of Action Class and Regulatory Floodplain” below). In coastal areas, BFEs are calculated to incorporate: 1) storm surge stillwater elevation, 2) wave setup, 3) wave height above the storm surge stillwater elevation, and 4) wave runup above the storm surge stillwater elevation (where present).

³The designed elevation of the upper deck of the elevated camping platforms is approximately five feet above mean high tide. Mean high tide elevation in the everglades varies seasonally, but at the highest (around Everglades City) it is 3 feet NAVD88 on average. Therefore, camping platform upper decks are generally at an elevation of 8 feet above sea level (NAVD88). Inundation depth values reported here are based on assumed platform elevation of 8 feet NAVD88 and calculated by subtracting 8 feet from the Regulatory Floodplain elevation (e.g., 12 feet – 8 feet for Coot Bay, indicating the upper deck would be 4 feet underwater).

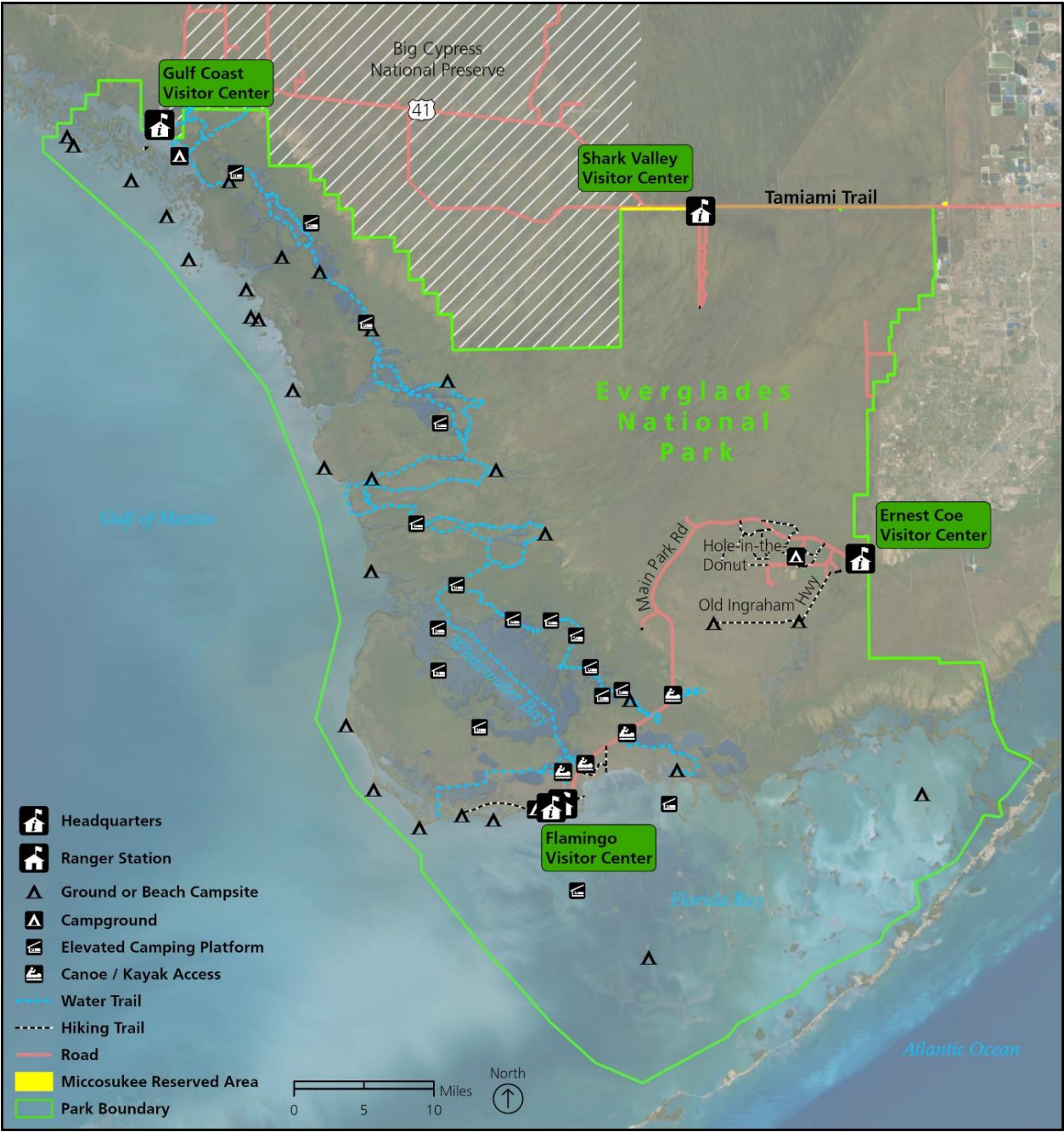


Figure 4. Map of existing wilderness campsites in Everglades National Park.

DETERMINATION OF ACTION CLASS AND REGULATORY FLOODPLAIN

Following PM 77-2, three action classes were considered when establishing the regulatory floodplain:

1. Class I Actions (i.e., non-critical actions) include location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking lots; or other human-created 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.
2. Class II Actions (i.e., critical actions) include any activity for which even a slight chance of flooding is too great, such as construction of schools, medical facilities, emergency services, hazardous material storage, and records/collections storage.
3. Class III Actions include any action that involves human occupation or substantial human exposure in high hazard areas, such as drainages subject to flash flooding.

This project meets the definition of a **Class III Action**, as most elevated camping platforms are within a Federal Emergency Management Agency (FEMA)-mapped high-hazard flood area (Flood Zone VE) and are intended for human overnight occupation. While some proposed locations (Left Hand Turner, Tarpon Bay, and Coot Bay) would be Class I actions given their location in non-high-hazard flood areas, this statement of findings will consider all the proposed actions collectively as a single Class III action.

Proposed actions on NPS lands must comply with FFRMS for new construction, substantial improvement, or repairing substantial damage. Per departmental guidance, agencies may select one of three approaches to implement flood resiliency measures:

- **Climate-Informed Science Approach (CISA)** – The elevation and flood hazard area that result from using the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding, including climate change and other physical processes (e.g. land-use change).
- **Freeboard Value Approach (FVA)** – The elevation and flood hazard area that result from adding an additional 2 feet to the base flood elevation (BFE) for non-critical actions and by adding an additional 3 feet to the BFE for critical actions.
- **0.2-Percent Annual-Chance Flood Approach (0.2PFA)** – The area subject to flooding by the 0.2% (500-year) annual-chance flood.

A climate-informed science approach (CISA) establishing the NPS regulatory flood elevation is employed for this proposed action. For each proposed camping platform location, the BFE and adjusted NPS regulatory floodplain elevation are reported in table 1, above. Static BFE were derived from FEMA Flood Insurance Rate Map (FIRM) data (see figure 5, below). Coastal sea level rise data from the NOAA Office for Coastal Management Coastal Flooding Impacts Viewer (updated June 2023 for Florida) indicate that 2.3 feet of sea level rise is expected in the Everglades (see figure 6, below) based on the “high” scenario for the anticipated 30-year platform service life, as required for CISA calculations for Class III actions. The regulatory

floodplain elevation for the proposed action is therefore calculated as the base flood elevation plus 3 feet NAVD88 (rounding up from 2.3 feet).

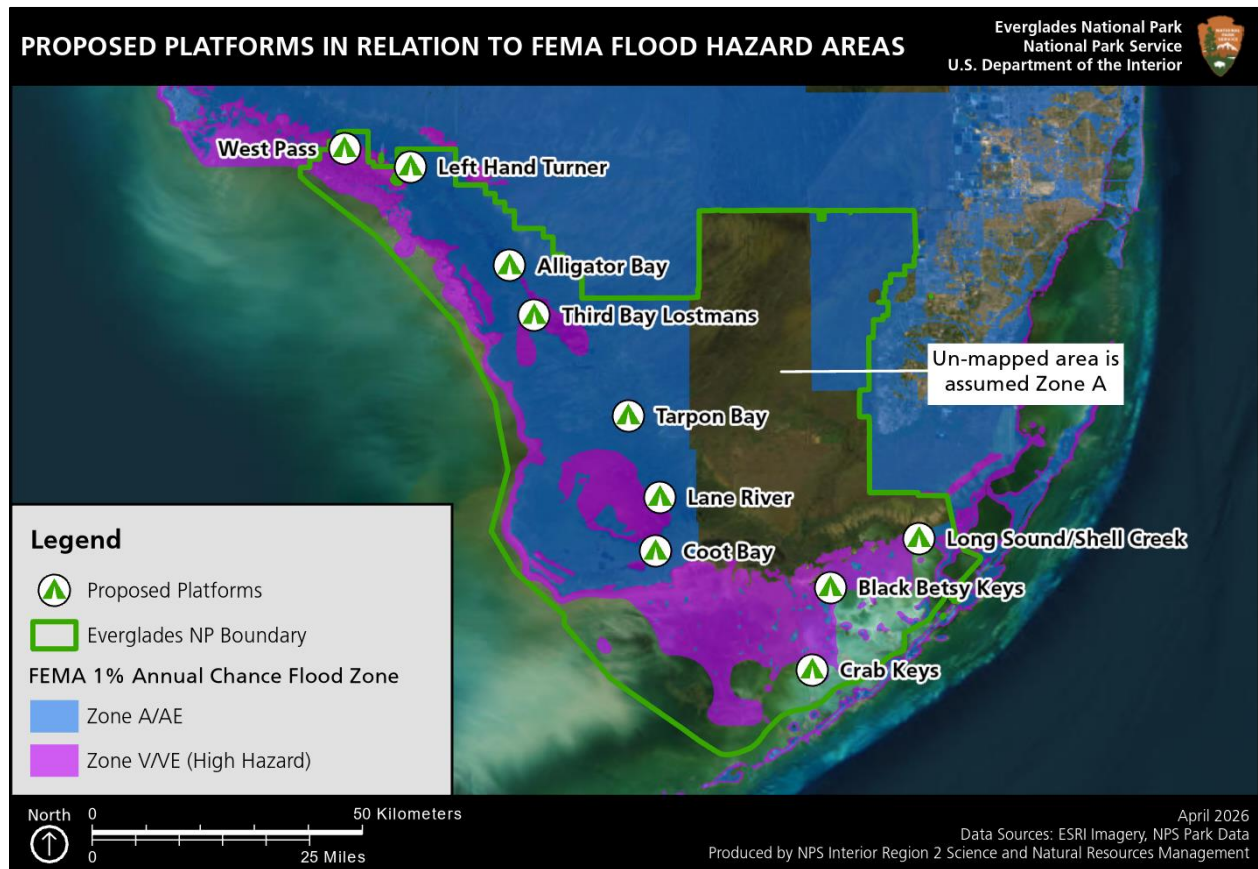


Figure 5. Map of proposed camping sites in relation to FEMA 1% flood hazard areas (FEMA National Flood Hazard Layer). Note that the entirety of Everglades National Park falls within the climate-informed NPS jurisdictional floodplain (not displayed in map for simplicity).

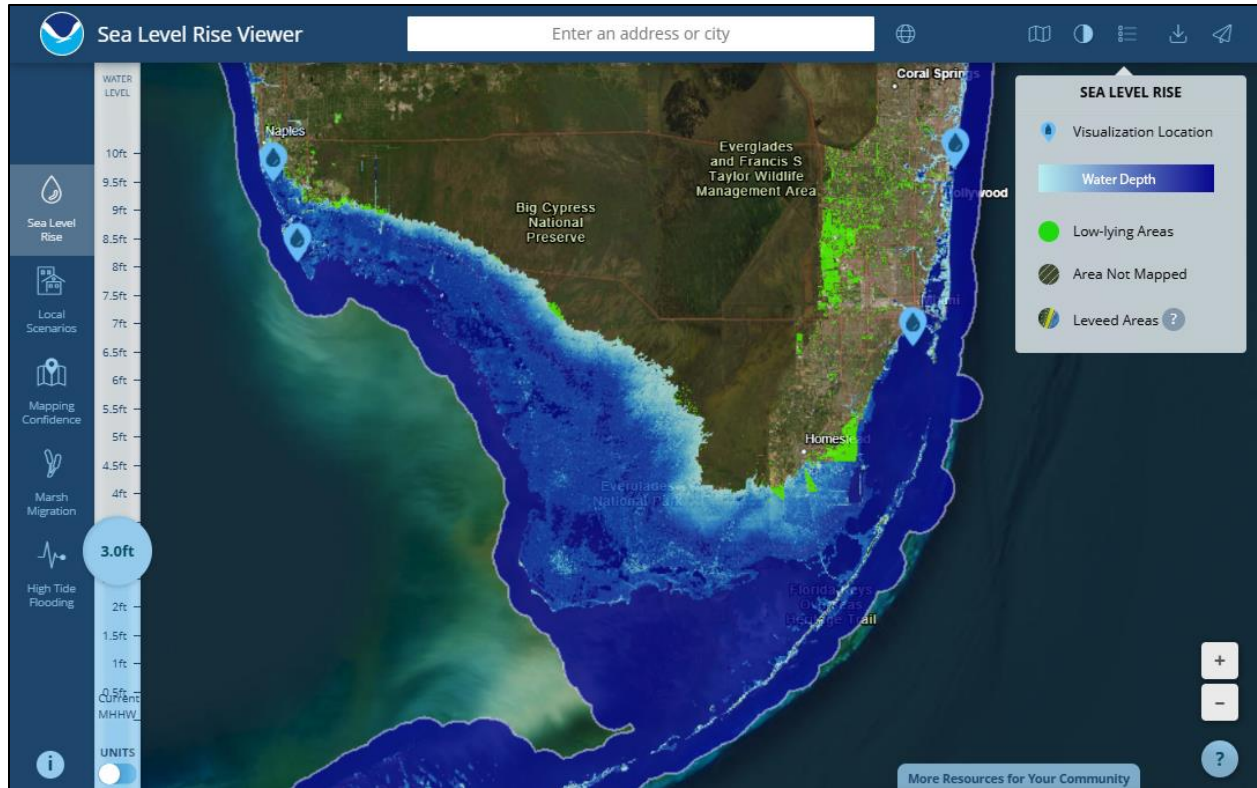


Figure 6. Screenshot of NOAA Sea Level Rise Viewer for southern Florida indicating anticipated flood areas (blue shaded portion) based on 3-foot rise in average water levels.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Access to the park's vast water wilderness using non-motorized vessels, such as kayaks and canoes, would be limited without high and dry waypoints at which to stop for the night. The National Park Service has determined that new elevated camping platforms are needed to address changing visitor use patterns and to respond to visitor preferences for shorter, more flexible trip itineraries. Furthermore, new elevated camping platforms are needed to shorten travel distances between existing sites. The addition of new elevated camping platforms in wilderness areas throughout the park would enhance overnight opportunities along key routes. These actions would reduce the travel distances required between campsites, distribute visitor use more evenly across the wilderness, and expand access for visitors who may be unable to complete longer or more physically demanding itineraries. These changes would be particularly beneficial in areas where popular campsites currently experience crowding or advance reservations are difficult to obtain.

No practicable alternatives exist for locating campsites outside of the regulatory floodplain because the campsites are water-based recreation sites and therefore must be located in flood-prone areas. Alternative campsite locations on the shoreline were considered and rejected because much of the coastline is dominated by mangroves. These areas are not suitable for

ground camping and clearing them for that purpose would adversely affect natural and cultural resources and floodplain values, as well as both the natural and untrammeled qualities of wilderness character.

Under the no-action alternative, the current network of designated wilderness campsites, including elevated camping platforms and beach or ground sites, would remain unchanged in location and capacity. These campsites would continue to support multiday paddling and boating trips but would remain unevenly distributed, requiring long travel distances between some sites. The rolling reservation system on Recreation.gov would continue to offer structured access to these sites, but popular locations would remain difficult to reserve during peak seasons. No new sites would be developed to address changing use patterns or respond to visitor needs for shorter, more flexible trip itineraries. The current system would continue to limit opportunities for visitors with time, mobility, or skill constraints to participate in wilderness camping.

DETAILED FLOOD HAZARD AND FLOOD RISK ANALYSIS

DESCRIPTION OF SITE-SPECIFIC FLOOD HAZARD

Based on available data from a FEMA Flood Insurance Study (FIS) of Collier County (FEMA 2024), flooding in the Everglades results from two major sources. Coastal areas are subject to inundation from ocean surges, whereas inland areas become flooded when rainfall accumulates in low, flat areas. Rainfall occurs primarily during thunderstorms in the summer months, with additional rainfall resulting from the passage of hurricanes. A transition region near the coast is vulnerable to both rainfall and ocean surge flooding. The proposed camping platforms are within this transition region. Coastal lands typically lie below an elevation of 9 feet (NAVD88) and are subject to flooding from hurricanes and tropical storms. Surges of over 12.7 feet NAVD88 were reported just north of Collier County when the most severe historic storm hit in 1873. Floodwaters progressed as far as 10 miles inland in 1960 (FIS 1986; FIS 2012).

For the areas that would be impacted by both coastal surge/hurricane-flooding events and large rainfall flooding, the FEMA FIS incorporated a combined coastal and riverine effects analysis approach. The 1-percent-annual-chance riverine flood elevations were compared to the 1-percent-annual-chance coastal flood elevation in each riverine grid cell along this transition zone. If one flood elevation statistically dominated, it became the recorded 1-percent-annual-chance elevation. For most of these transitional grids, it was necessary to estimate the combined effects to determine the correct BFE. Based on this analytical approach, it is assumed that the stated regulatory flood elevations reported in table 1 represent a holistic synthesis of both flood sources along with CISA sea level rise and storm surge.

The FEMA FIS does not report flood water velocity or shear stress; however, it is possible to approximate the durability of these structures against regulatory-level hurricane forces with an experienced-based approach. Cho et. al. (2023) developed a copula for Hurricane Ian, investigating the inter-correlation of pairs of variables 1) peak discharge and flood volume, and 2) total rainfall depth and maximum wind speed; their analysis showed both pairs of variables were identified as occurring at return periods greater than 500-year. The combination of

trivariate groups 1) total rainfall depth, peak discharge, and maximum wind speed, and 2) wave height, total rainfall depth, and maximum wind speed yielded return periods greater than 300-year. These results indicate that Hurricane Ian is an appropriate storm against which to evaluate the longevity of the platforms in lieu of water velocity or shear stress data, given that similar elevated camping platforms were in place during 2022 Hurricane Ian. Park staff indicate that platforms in place during Ian were undamaged. Flood waters inundated the structures but receded quickly.

The proposed Tarpon Bay site is located within, but on the seaward edge of, Levee system L-29, owned and maintained by the South Florida Water Management District. This levee protects inland developed areas from coastal flooding with a designed overtopping annual chance of 0.002 (i.e., 1 in 500 years). Since the proposed Tarpon Bay site is at the periphery of the levee-affected area and is approximately 25 miles from the levee itself, increased flood hazard associated with the levee is minimal and likely does not significantly contribute to flood risk when compared to flood hazards from storm surge and sea level rise.

DESCRIPTION OF SITE-SPECIFIC FLOOD RISK

Human Health and Safety

Under normal tidal conditions, water depths beneath elevated camping platforms vary seasonally. In Florida Bay near the Flamingo District, median tidal elevations range from +0.5 feet NAVD88 (September–October seasonal high) to -0.5 feet NAVD88 (April–May seasonal low), based on USGS median annual gauge data derived from 2014–2026 records. Farther west, near Everglades City, this seasonal fluctuation is slightly larger, with median tide elevations ranging from -1 to 1 feet NAVD88. All proposed camping platforms would be elevated several feet above these seasonal tide fluctuations. During the regulatory flooding event, including tropical storms and hurricanes, flood depths (table 1) may increase rapidly, and wave action and currents may intensify, creating hazardous conditions for human occupation. Because elevated camping platforms are used for overnight camping, human presence within the floodplain inherently increases exposure to flood-related hazards, including inundation, high winds, lightning, and debris carried by moving water.

Storms and heavy rainfall events that can lead to flooding in coastal and estuarine areas may develop over a period of hours to days and can be forecasted ahead of time, providing opportunity for advance warning through National Weather Service forecasts, tropical cyclone advisories, and park-issued closures. Sudden-onset flooding with little warning is less common but may occur in association with fast-moving thunderstorms or localized weather events.

Egress from elevated camping platforms is exclusively by watercraft. Even under nonhazardous conditions, the remoteness and environmental exposure of the wilderness area require moderate to advanced boating and paddling skills, and egress from certain sites may be particularly arduous due to distance, tidal influence, shallow waters, or limited navigational markers. During normal conditions, access routes via rivers and bays remain navigable; however, during flood events associated with storms, egress may be unsafe or infeasible due to high winds, rough seas, strong currents, floating debris, or reduced visibility, increasing risk to visitors attempting to leave the site. Visitors may request assistance from NPS law enforcement

rangers to vacate backcountry campsites when conditions warrant, although, anecdotally, EVER law enforcement did not recall an instance in which wilderness campers became stranded during a flooding incident.

Property

Risks to federally funded NPS property and infrastructure are low but unavoidable. Park staff indicate that platforms in place during Ian were undamaged. Flood waters inundated the structures but receded quickly. Elevated camping platforms constitute government-owned infrastructure located within the floodplain and are subject to periodic inundation and exposure to wave action, corrosion, and debris impacts. Though not observed in the past, flood-related risks could include damage to pilings, decking, support members, and attached facilities such as portable toilets. Portable toilets are bolted to each elevated camping platform and additionally secured, e.g., with ratchet straps, as needed. When operationally feasible, sewage is pumped from the portable toilets before a predicted storm makes landfall. Extreme flood events may result in partial structural damage or loss, requiring repair or replacement; however, the primary cause of damage to park facilities in past storm events has been wind. The elevated design, use of hardened materials, and limited footprint of elevated camping platforms reduce vulnerability relative to non-elevated structures, and the camping platforms are intended to withstand routine flooding over the expected 25–30 year service life.

Floodplain Values

There are minimal risks to floodplain natural resource values from the proposed action. Construction of elevated camping platforms involves driving pilings into the seabed, which may disturb sediments and increase turbidity in the short term. Turbidity curtains are installed during construction to limit the spread of sediments outside the immediate construction area. During storm events, severe flooding could mobilize contaminants and debris from the portable toilets at the elevated camping platforms, adversely affecting water quality. These impacts would occur primarily within the vicinity of the campsite and would be negligible when considering the estuarine and marine area of the park.

FLOODPLAIN IMPACT MITIGATION MEASURES

The following floodplain impact mitigation measures would be implemented:

- The National Park Service will continue to maintain and routinely update the Everglades and Dry Tortugas National Parks Hurricane Plan (latest edition released June 2025). While the official Atlantic hurricane season runs from June 1 until November 30, severe tropical weather and flooding events may occur any time of the year. Accordingly, EVER maintains a standing core Incident Management Team (IMT). The Hurricane Management Plan establishes defined processes and procedures to ensure the safety of park personnel and the visiting public, while minimizing impacts to park facilities, infrastructure, and equipment.
- Under the Hurricane Plan, backcountry campsites are closed whenever hazardous weather or flood conditions are forecasted. Backcountry permits reserved within the predicted

hazardous weather window are cancelled, visitors are notified, and existing occupants of backcountry campsites are required to vacate.

- As outlined in the Hurricane Plan, 72–48 hours prior to projected landfall, backcountry patrols are conducted in all park districts using aircraft and/or vessels. During this period, all backcountry permits are reviewed, and every individual listed on an active permit must be located and accounted for.
- The Government requires closing of operations between 48 and 72 hours of anticipated landfall of a tropical storm or hurricane as determined by the National Park Service.
- The National Park Service would continue to require contractors to adequately secure or remove all project construction materials from the site before a closure due to a tropical storm or hurricane.
- To reduce risk to NPS infrastructure and capital investment property, elevated camping platforms would be constructed of hardened materials (e.g., treated timber, concrete, aluminum, fiberglass, or other materials). The National Park Service will continue to require that elevated camping platforms be designed to meet criteria for deck live load, roof live load, dead load, wind load, wave loads for overwater structures, and compressive strength of materials. The life cycle of each elevated camping platform is expected to be 25–30 years, with their design intended to withstand frequent storms and inundations.
- The project would adhere to the project design criteria (PDCs) in order to be covered by USACE Jacksonville District Programmatic Biological Opinion. These PDCs include, but are not limited to, installing and maintaining turbidity curtains. Turbidity curtains would be used to reduce the spread of suspended sediments and would be secured to prevent entanglement by wildlife.
- Construction staging for elevated camping platforms would take place on the transport vessel, on temporary barges or other floating structures anchored at the sites, and/or on the camping platforms when sufficiently completed to allow for staging.

SUMMARY

The National Park Service has determined the proposed action to install new elevated camping platforms is necessary and consistent with Executive Order (EO) 11988, “Floodplain Management” and Director’s Order 77-2: *Floodplain Management*. The proposed action is necessary because new elevated camping platforms are needed to shorten travel distances between existing sites, address changing visitor use patterns, and respond to visitor needs for shorter, more flexible trip itineraries. The proposed action is a Class III action which involves human overnight occupation. Mitigation measures against flood risks include regular review and updates to the park’s Hurricane Management Plan, use of hardened materials and best-available construction standards to minimize damage during storm events, and implementation of mitigation measures to protect natural resources during campsite construction and

maintenance activities. Assuming flood risk mitigations are applied, risks to human life and safety, NPS investment, and floodplain function associated with the regulatory flood event are low.

REFERENCES

Cho, E., E. Ahmadisharaf, J. Done, and C. Yoo

- 2023 “A multivariate frequency analysis framework to estimate the return period of hurricane events using event-based copula.” *Water Resources Research* 59: e2023WR034786. [https:// doi.org/10.1029/2023WR034786](https://doi.org/10.1029/2023WR034786)

Department of Interior Office of Environmental Policy and Compliance

- 2022a Departmental Manual Part 520: Protection of the Natural Environment; Chapter 1: Floodplain Management and Wetlands Protection Policy and Responsibilities (520 DM 1).
- 2022b Departmental Manual Part 520: Protection of the Natural Environment; Chapter 2: Floodplain Management and Wetlands Protection Program Requirements (520 DM 2).

Executive Order 11988, “Floodplain Management”

- 1980 Executive Order of the President of the United States. May 28.

Federal Emergency Management Agency (FEMA)

- 2024 Flood Insurance Study Number 12021CV002C. Collier County, Florida, and Incorporated Areas. Version Number 2.5.3.5. Revised February 2024.

Keim, B. D., R. A. Muller, and G. W. Stone

- 2007 “Spatiotemporal Patterns and Return Periods of Tropical Storm and Hurricane Strikes from Texas to Maine.” *Journal of Climate* 20 (14): 3498–3509.

National Park Service

- 2003 Director’s Order 77-2: *Floodplain Management*.
- 2017 Everglades National Park Foundation Document.
- 2025 Procedural Manual 77-2: Floodplain Management. Washington Office, Washington, D.C.
- 2025 Everglades and Dry Tortugas National Parks Hurricane Plan, 2025 revision.

National Oceanic and Atmospheric Administration

- 2026 NOAA Atlas 14 Point Precipitation Frequency Estimates: FL.
<https://hdsc.nws.noaa.gov/pfds>.

National Oceanic and Atmospheric Administration, Office for Coastal Management

2026a Historical Hurricane Tracks (Global Hurricane Tracks from 1842–2026).

<https://www.climate.gov/maps-data/dataset/historical-hurricane-tracks-gis-map-viewer>

2026b Digital Coast Sea Level Rise and Coastal Flooding Impacts Viewer.

<https://coast.noaa.gov/slr/>

National Oceanic and Atmospheric Administration, Regional Climate Centers

2026 Applied Climate Information System (ACIS). <https://agacis.rcc-acis.org/>