

National Park Service
U.S. Department of the Interior



Big Cypress National Preserve
Ochopee, FL

Criteria for Off-Road Vehicle and Hunting Access Within Big Cypress National Preserve In Response to Surface Water Levels

August 2006

Photo Courtesy of Ralph Arwood



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SUMMARY

On May 3, 2006 Big Cypress National Preserve (Preserve) staff met with stakeholders to discuss criteria to be used to implement temporal and spatial closures of recreational areas of the Preserve when necessary due to periodic high or low water levels. Those stakeholders included representatives of organizations advocating hunting and off-road vehicle use opportunities; the Seminole Tribe of Indians; and the Florida Fish and Wildlife Conservation Commission. The Miccosukee Tribe of Indians of Florida was invited to send representatives but declined, preferring instead to consult with the Preserve separately at a later date. That meeting was held on July 18, 2006. Minutes of both meetings are attached. The following is an implementation strategy that results from criteria developed for a 2000 Recreational ORV management plan for Big Cypress National Preserve, and suggestions arising from the May 3rd and July 18th meetings.

Big Cypress National Preserve is in southern Florida, centrally located between Miami and Naples. It extends from the northern boundary of Everglades National Park to 7 miles north of I-75. Water is the principal natural resource of the entire south Florida region, and about 90 percent of Big Cypress is flooded during the wet season (NPS, 1991). Because of the high annual rainfall and the flat topography, the inundation can last for several months beyond the actual rainfall period (Duever et. al., 1986). The ecology of the Preserve is finely tuned to the seasonal flow of water, and any interference can alter this sensitive subtropical habitat.

The legislation creating the Preserve, or the Enabling Legislation (Pub.L. 93-440 & 100-301), allows hunting and off-road vehicle use subject to limits and controls to protect the Preserve's "natural and ecological integrity in perpetuity." National Park Service policy, regulation, and laws stipulate a Superintendent may "... designate zones where and periods when no hunting, fishing, trapping, or entry may be permitted for reasons of public safety, administration, floral and faunal protection and management, or public use and enjoyment..."

In recent years Big Cypress National Preserve has closed various management units during all or part of the archery, muzzleloading, and general gun seasons due to unseasonably high water conditions. At other times low water extremes have resulted in closures to airboat use. When low water conditions prevail, considerations must be made to evaluate public safety and impacts to soil, vegetation, and hydrologic channelization. High water extremes make it difficult for wildlife to move with ease and can reduce food supplies by making sources inaccessible through inundation. In the case of game animals in high water conditions, hunting may cause additional stress forcing game to move through deep water thus depleting their energy supplies.

In September 2000 a record of decision was signed by the Director of the National Park Service for implementation of the Big Cypress National Preserve *Final Recreational Off-Road Vehicle Management Plan/ Supplemental Environmental Impact Statement*. This document included criteria for temporal restrictions to airboat operations in the southeast portion of the Preserve only and identified the need to develop criteria for opening and closing recreational use areas based on high or low water conditions for the entire Preserve.

Since publication of the ORV management plan/EIS the Preserve has developed six categories to characterize the status of surface water inundation at over 20 hydrologic monitoring stations located throughout the Preserve. The six categories describe surface water inundation relative to its placement with respect to major landscape types in the Preserve. From lowest to highest elevation, these categories are described as either: a swamp forest, cypress, wet prairie, hydric uplands, mesic uplands, and xeric uplands water level condition. High-water closures should be considered under conditions of extreme high water (when xeric uplands are

inundated) or unseasonably long durations of high water. High-water conditions place greater than normal demands on the Preserve's terrestrial wildlife (Jansen 1996). Therefore, the National Park Service has developed high-water triggers for wildlife protection and would temporarily close areas when those triggers were met. Low-water closures should be considered when water levels in airboat areas drop below shallow sheet flow conditions into patchy surface water conditions (when swamp forest areas begin to go dry). These are conditions in which potential impacts to soil and vegetation resulting from airboat use, public safety and the potential for wildland fire must be considered as rationale for restricting access during low water level extremes. The hydrologic criteria proposed in this paper are believed to provide a consistent, timely, and historically comparable framework for identifying area closure and reopening thresholds.

INTRODUCTION

ISSUE STATEMENT

In recent years the occurrence of high and low water conditions have prompted the National Park Service to temporarily close areas of the Preserve to off-road vehicles (ORVs) such as swamp buggies, airboats, and all-terrain vehicles (ATVs). This paper provides an overview of this subject, and discusses how hydrologic criteria can be used to assist future decision making.

During the hunting seasons of 1994-1995, 1995-1996, 1999-2000, and 2005-2006 various areas of the Preserve were closed to hunting due to extremely high water conditions. Historic water level information has been used almost exclusively to determine when to open and close Preserve management units for hunting and other public recreational purposes. While it is known that high water incidents in the past, particularly in the Everglades, have had severe impacts on wildlife populations, the duration and depth upon which similar wildlife stress occurs in the Preserve is not well understood and remains subject to debate (Sobczak, 2006). During the 1994-1995 hunting season 51 radio-collared deer were being tracked in the interface between Big Cypress National Preserve and Everglades National Park as part of a research investigation into the spatial dynamics of a protected population adjacent to a hunted population. This study coincided with a record high water event during a 5 month flood period between November 1994 – March 1995 where 25 (50%) of the collared deer died. Water depths at ground level during this time approached or exceeded 0.6 m (1.97 feet) which elevated deer mortality levels in the wet prairie tree island habitat of the Zone 4 Stairsteps Management Unit of the Preserve (Labisky et al. 1997). At the same time even lower levels probably affect feral hog mortality levels due to their shorter stature.

At this time the Labisky et al. (1997) study remains the only scientifically sound investigation of extreme high water conditions on the deer population of Big Cypress, and this study concentrated only on the wet prairie hammock habitat of the extreme southeastern Preserve. Of the recorded 25 collared deer deaths during the 1994-1995 season, 75 % were attributed directly or indirectly to extreme high water. Also noted was a significant reduction in productivity by does during the 1995 fawning season. Unfortunately the study ended before the 1995-1996 hunting season.

Due to topography, the Stairsteps Management Unit of the Preserve is among the most vulnerable to impacts from high water. The few scattered hammocks are relatively small, and previous high-water closures of these areas have been implemented when many of those hammocks were themselves inundated. These sparse areas of high ground almost certainly force game animals to congregate in higher than normal densities making them more susceptible to predation by humans and other wildlife alike.

Additionally, and perhaps most importantly, the effects of high water upon the Florida panther must be considered. As this endangered species' population has increased so has their dependence upon their prey base. Deer and hogs are their primary prey, however for some as yet undocumented reason the hog population in Big Cypress has plummeted since the 2000-2001 hunting season. This necessarily increases the panther's dependence upon deer. During periods of high water it may be presumed that

as deer become more restricted to high ground panthers must have greater success in their hunting efforts. However, due to their shorter stature it would seem unlikely that panthers would have as much success catching deer in deep water. If the stress of high water coupled with hunting became high enough to cause suppression of deer numbers it could adversely affect the panther.

USE OF ORVs IN THE PRESERVE

Use of ORVs in the Big Cypress watershed predates establishment of the Preserve. Their use first began in the 1920s in conjunction with construction of the primary roads and railroad grades that opened the interior swampland of the Big Cypress Swamp (Tamiami Trail, State Road 29) to backcountry vehicular transport. ORV use was originally associated with entrepreneurial efforts to harvest natural and geologic resources. Recreational ORV use did not become common until the 1940s (Tebeau, 1966). Today, ORV use often occurs in unison with hunting, but both activities also occur exclusive from each other as well. Unlike Everglades National Park which is off limits to hunting and off-road vehicles in accordance with the legislation that created it, Congress explicitly authorized these activities in the Preserve.

ORV operation is allowed within the Preserve by virtue of the Enabling Legislation that states "... the Secretary shall develop ... such rules and regulations as he deems necessary and appropriate to limit or control the use of Federal lands and waters with respect to: (1) motorized vehicles, ...", but does not provide further direction (U.S. Congress, 1973).

The Legislative History also provided guidance on how Preserves, as unique units of the national park system, should be managed in general – by merit of Big Thicket National Preserve, Texas, and Big Cypress National Preserve, Florida, being the first areas designed as this new unit type in 1974. The Legislative History states: "(t)he principal thrust of these areas should be the preservation of the natural values which they contain." It also states: "(n)ational preserves may accommodate significant recreational uses without impairing the natural values, but such public use and enjoyment would be limited to activities where, or periods when, such human visitation would not interfere with or disrupt the values which the area was created to preserve (U.S. Congress, 1974)."

More recently, greater clarity has been established with respect to all aspects of off-road management in the Preserve with completion of the Preserve's 2000 ORV management plan. In addition to establishing an ORV management system that allows ORV use on a system of trails, thereby ending an era of less-restricted, dispersed ORV use, the plan also established a framework for instituting temporal closures. Preserve-wide 60-day closures to ORV use have been instituted on an annual basis from June to August, a time of the year that historically experiences significantly less ORV use due to hot weather, mosquitoes, and absence of hunting. It has also been recognized that areas of the Preserve may be subject to additional temporal closures in the presence of environmental conditions incompatible with recreational use such as severe high or low water, hurricane impacts, or extreme fire danger.

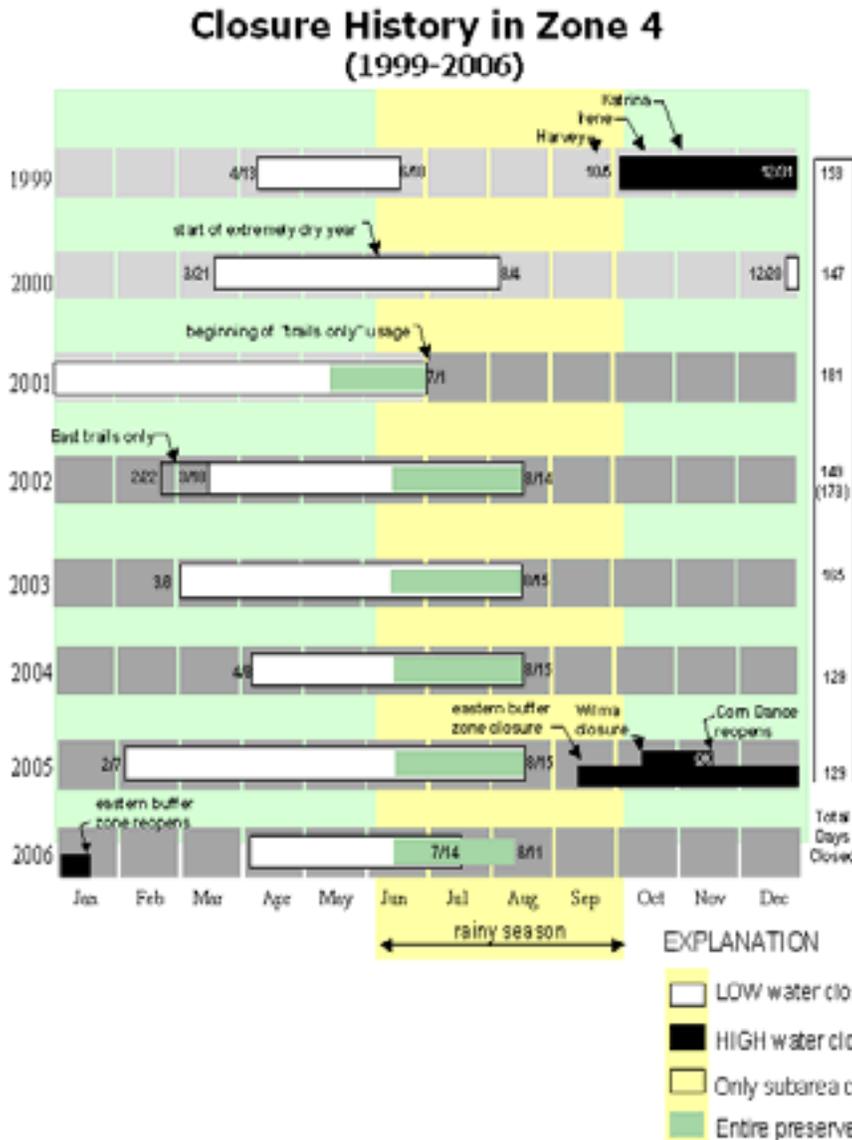
PAST MANAGEMENT PRACTICES

The National Park Service has temporally closed areas of the Preserve to ORV use due to high-water and low-water conditions in the past. Preserve-wide closures to ORV use were implemented in 1994-1995, 1995-1996, 1999-2000, and 2005-2006 due to the occurrence of unusually high water in the summer and fall of these years. High-water closures were prompted by observations that water depth in the prairies was at or above deer chest heights, that islands of upland habitat (tropical hardwood hammocks and pinelands) were inundated with water, and that deer and other animals were utilizing road grades as high-water refugia. The high-water conditions were thought to cause excessive stress on wildlife; including limited mobility and food availability, elimination of dry refugia, increased exposure to water, and increased vulnerability to hunting pressure and predation.

Partial Preserve closures to ORV use has also been prompted by low-water conditions in the winter and spring seasons from 1999 to present (Fig 1). Low-water closures were prompted by observations that airboat activity

in the presence of insufficient surface-water depths can lead to environmental damage including formation of shallow channels in the trails, exposure of bedrock where soil is thin, reduction of vegetation, alteration of surface water drainage and duration. It should be pointed out that airboat activity is self-regulating to an extent under low water conditions because operators tend to discontinue use in the area when the primary trails go dry. However, it may be desirable to impose restrictions to observe public safety and fire danger precautions, and to minimize soil, vegetation, and wildlife impacts prior to the onset of this “self-regulating” mode.

These high- and low-water temporal closures were lifted when the affected areas were thought to have returned to environmental conditions deemed suitable for ORV activity, but the lack of pre-defined objective thresholds potentially made these temporal closures difficult to plan around, controversial, and subject to limited public support. The absence of clearly defined criteria makes application of restriction periods subject to the ethos, availability, and experience level of resident resource managers and therefore open to unsubstantiated change in the future. For example, there is no record of airboat closures in the early 1990s despite an extended dry condition during this period, nor are there any instances of high-water closures in 2003 despite the occurrence of high water in the summer and early fall of that year. While it is known that high water incidents in the past, particularly in the water conservation areas of the Everglades, have had severe impacts on wildlife populations, the duration and depth upon which similar wildlife stress occurs in the Preserve is not well understood and remains subject to debate, giving rise to the need for a stakeholder-accepted method for applying both closure and opening criteria.



DESCRIPTION OF RAINFALL AND HYDROLOGY REGIME

Rainfall occurs in distinct wet and dry seasons in the Preserve. The wet season lasts for an approximate 6 month period from mid-May to late October, and accounts for approximately 75 percent of south Florida's annual rain. The four summer months of June, July, August, and September constitute the core part of the rainy season, during which 8-10 inches of rain fall per month. This rainfall is derived from a regular pattern of afternoon convection storms, although rainfall amounts can be significantly augmented by frontal and tropical storms during this period. The dry season lasts for an approximate 6 month period from late October to mid-May, during which approximately 10-15 inches of rain falls.

The Preserve's flat topography, low elevation, lack of well defined flow channels, and semi-impervious soil substrate severely limit the natural capacity of its landscape to drain away the abundant summer rainfall, which in turn results in the formation of a shallow, extensive, and slowly-flowing transient surface water body called sheet flow.

The presence, duration, and depth of surface water inundation depends on hydrologic inputs – such as rainfall and upstream flows – and the distribution and abundance of habitat types within the Preserve. Swamp forest and cypress areas hold surface water longer and deeper than wet prairie, which in turn hold water longer and deeper than pineland or upland habitats.

HYDROLOGIC CRITERIA

Six water level categories have been developed to characterize the status of surface water inundation at over 20 hydrologic monitoring stations located throughout the Preserve. The six categories describe surface water relative to its placement with respect to major landscape types in the Preserve. From lowest to highest elevation, these landscape types include swamp forest, cypress, wet prairie, hydric uplands, mesic uplands, and xeric uplands. More detailed narrative descriptions of the six categories are provided below.

Swamp forest. This includes the deepest forested swamp habitat in the Preserve. Swamp forest is the lowest lying wetland type in the Preserve. It holds surface water the deepest (18-24 inches) and longest (8-10 months) of any other wetland type in the Preserve.

Cypress. This includes tall stands of cypress found in the Preserve's strands and cypress domes. The cypress landscape type holds water at a maximum depth of 12-18 inches during the late summer months, with a total inundation period of 6-8 months.

Wet prairie. This includes open prairie areas in the Preserve which are dominated by a variety of grasses and sedges, including sawgrass, and which other wetland types (marshes, pinelands, and cypress) are interspersed to varying degrees. The wet prairie landscape type holds standing water for 2-6 months at a maximum summer depth of 6-12 inches.

Hydric uplands. This includes hydric pine flatwood and hydric hammock landscapes in the Preserve. The hydric upland landscape type holds standing water for 1-2 months at a maximum summer depth of 2-6 inches.

Mesic uplands. This includes mesic pine flatwood and mesic hammock landscapes in the Preserve. The mesic upland landscape type holds standing water for less than 1 month at a maximum summer depth of less than 2 inches.

Xeric uplands. This includes xeric pine flatwood and xeric hammock landscapes in the Preserve. The xeric upland landscape type does not hold standing water for any duration or at any depth during the average year.

Figure 2 maps the geographic distribution of the 20 hydrologic monitoring stations in the Big Cypress National Preserve. The numeric surface water stage values used for each station to define the six categories are shown in Table 1.

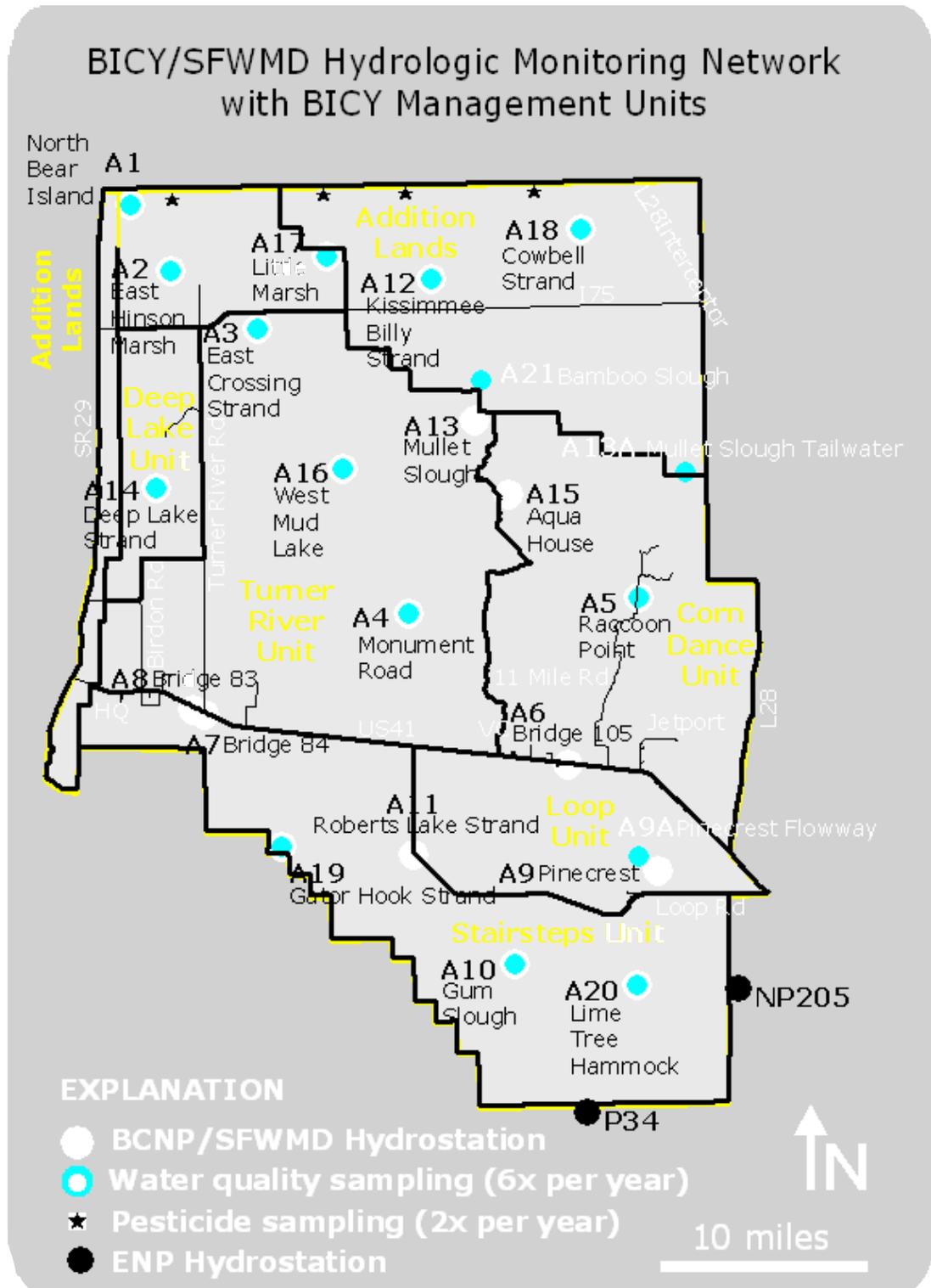


Figure 2. Map of hydrologic monitoring stations in Big Cypress National Preserve.

Table 1. Stage thresholds* for describing surface water conditions in Big Cypress National Preserve

Station name	Station ID	Swamp forest	Cypress	Wet Prairie	Hydric	Mesic	Xeric
N Bear Island	A1	14.30	14.80	15.30	15.80	16.13	16.80
E Hinson Marsh	A2	13.30	13.80	14.30	14.80	15.13	15.80
E Crossing Strand	A3	12.70	13.20	13.70	14.20	14.53	15.20
Monument Road	A4	8.30	8.80	9.30	9.80	10.13	10.80
Raccoon Point	A5	9.10	9.60	10.10	10.60	10.93	11.60
Bridge 105	A6	6.70	7.20	7.70	8.20	8.53	9.20
Bridge 84	A7	2.00	2.50	3.00	3.50	3.83	4.50
Bridge 83	A8	2.00	2.50	3.00	3.50	3.83	4.50
Pinecrest	A9	6.00	6.50	7.00	7.50	7.83	8.50
Gum Slough	A10	2.90	3.40	3.90	4.40	4.73	5.40
Roberts Lake Strand Kissimmee Billy Strand	A11 A12	3.60 13.10	4.10 13.60	4.60 14.10	5.10 14.60	5.43 14.93	6.10 15.60
Mullet Slough	A13	11.50	12.00	12.50	13.00	13.33	14.00
Deep Lake Strand	A14	9.40	9.90	10.40	10.90	11.23	11.90
Aqua House	A15	10.60	11.10	11.60	12.10	12.43	13.10
W Mud Lake	A16	11.20	11.70	12.20	12.70	13.03	13.70
Little Marsh	A17	13.70	14.20	14.70	15.20	15.53	16.20
Cowbell Strand	A18	12.90	13.40	13.90	14.40	14.73	15.40
Gator Hook Strand	A19	1.00	1.50	2.00	2.50	2.83	3.50
Lime Tree Hammock	A20	4.40	4.90	5.40	5.90	6.23	6.90
P34	P34	1.90	2.40	2.90	3.40	3.73	4.40

* Units are feet above sea level relative to the NGVD 1929 datum.

ACCESS GUIDELINES

During the May 6, 2006 and July 18, 2006 meetings many observations achieved consensus from the stakeholders. Among those were the necessity to preserve game populations, allowance of recreational opportunities, and the need to protect other Preserve resources. From the meetings it was acknowledged that in extreme instances, the need to temporarily close the Preserve to certain uses may be necessary, and that there was a difference between temporarily “high” water and durations of “extreme high” water, and that the Preserve should focus on extreme high water conditions. There was consensus among the participants of the meetings that it is sometimes difficult to make immediate associations of wildlife responses to high water events and that some wildlife responses won’t actually be observable until some time following high or extreme high water inundation, and that more data may have to be collected in order to make those associations. The meeting participants also acknowledged that timing of high water inundation or low water conditions combined with the duration of such events is a large factor in the necessity for closures related to water levels. Consensus from the stakeholder meetings was that the sustainability of ORV and hunting access should be contingent upon conditions when **extreme** high water or **unseasonably long durations** of high water are not present, and that low-water closures should be considered when water levels in airboat areas drop below the typical shallow sheet flow and dry surface conditions prevail.

Stakeholders have articulated that an important component of any guideline used needs to be something the affected stakeholder can understand, accept, and for planning purposes, be able to predict when closures and openings are inevitable. At both meetings there was discussion on the method the Florida Fish and Wildlife Conservation Commission uses to establish closures in the Water Conservation Areas. Their criteria is based upon water levels, deer surveys, and observed condition of deer. Since it is acknowledged that deer movements and deer condition are relative to water levels, hydrologic criteria may be the most reliable, consistent, timely, and historically comparable framework for guiding decision making on ORV and recreational access. In order to acquire a better understanding of more global affects of high water on Preserve resources, additional information and considerations along with hydrologic criteria will also be used to close the data gap, and these include:

- Field observations by NPS staff and recreational users
- Collection and analysis of other natural resource information
- Impending meteorological forecasts
- Consultation with cooperating agencies
- Conditions on adjacent lands

Based on the Preserve’s objective of eliminating a situation where a *specific* single water level target could trigger action only to be reversed when that level changes, thereby creating uncertainty, and a determination that closures are necessary only when extreme conditions prevail, the Preserve advocates the use of water level conditions to determine access restrictions. The two extremes that bracket the typical water level conditions within the Preserve are described as: 1) when water inundates the xeric upland habitats for extreme high water, and 2) when swamp forest habitats begin to dry out for extreme low water.

CONCLUSION

Absent other environmental conditions or emergencies that may prevail upon managers to limit and control ORV access and hunting within the Preserve, access to ORV trails within a management unit would be open when water levels are between swamp forest and xeric water level conditions as described in Table 1 and water-related effects to wildlife are consistent with effects experienced in a seasonally-typical hydrologic inundation regime.

High water closures would be implemented within a management unit when a two-week average of daily water levels observed within that unit reaches or exceeds the xeric water level threshold listed in Table 1. Access to the closed management unit would be reopened when a two-week average of daily water levels was less than or

equal to the mesic water level threshold for that management unit. Low water closures would be implemented within the Stairsteps management unit when a two-week average of daily water levels observed within that unit is less than or equal to the swamp forest water level threshold listed in Table 1. Access to the Stairsteps unit would be reopened when a two-week average of daily water levels was greater than or equal to the wet prairie water level threshold for the Stairsteps unit. The length of time the Stairsteps Unit remained closed due to low water could be applied to the annual 60-day Preserve-wide closure to ORVs imposed by the 2000 ORV management plan.

The hydrostations where these observations would be made for each management unit are listed below:

Management Unit	Hydrostations
Bear Island	A1, A2, A17
Corndance	A5, A6, A15
Stairsteps	A7, A10, A11, A19, A20, P34
Turner River	A3, A4, A8, A13, A16
Loop	A9
Deep Lake	A14
Addition	A12, A18, A21

This criteria, generated with the help of affected stakeholders provides a management framework that will lend itself to consistent, timely, and informed decision-making in the future.

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HYDROLOGY AND WILDLIFE-BASED TEMPORAL CLOSURE CRITERIA MEETING
May 3, 2006
Big Cypress National Preserve

Attendees:

Ron Clark – NPS
Frank Deninger – JPCR
Sarah Grubs – Seminole Tribe
David Buckhalt – Everglades Protection Society
Allen Buckhalt – Hunting-Recreation
Barbara Jean Powell – Everglades Coordinating Council
Steve Schulze – NPS
Jamie Cloninger – Everglades Protection Society
Mike Wood
Jen Williams – FWC
Bob Sobczak – NPS
Ryan Levins – NPS
Pedro Ramos – NPS
Edith Sparks – NPS/Facilitator
Karen Burke – NPS/Facilitator

I. INTRODUCTION AND HISTORY

Ron opened with a need to recognize 3 basic tenets which guide us:

- Responsibility to Tribes to preserve the herd
- Responsibility to preserve recreational opportunities
- Responsibility to preserve the resource

Note: Send out copies of literature cited (i.e., Labisky Reports, etc.) and D. Jansen's 1996 report on high water effects

Barbara Jean questions validity of report's findings:

- Make good decisions from good science
- Conduct peer review of data

Pedro questioned what criteria should be used for a comprehensive approach?

Jen suggested we do homework:

- Requested copy of the closure history referenced in Ron's introductory remarks
- Requested copy of the literature cited for the closure document
- Suggested an opportunity to submit written comments
- And suggested holding a follow-up meeting with more advanced notice so everyone can attend

Frank requested clarification on the cultural-based criteria: Tribe's culture. Asked for same concern for his constituent's culture.

Ron asked Frank to provide specific written comments regarding traditionally associated people relative to temporal closures so he could gain a greater understanding of the issue.

Barbara Jean suggested the need to differentiate between what happens in the grass (water conservation areas) and healthy ecosystem of the Preserve. An offer was made to provide a trip for Pedro into these areas.

Barbara Jean stated recreational use is reduced down to 10% of what was originally authorized.

Frank stated buggy permits dropped significantly.

Barbara Jean explained there was a free lifetime ORV permit at one time (6-7,000). That was the Congressionally-authorized level.

Jen offered to provide information to Ron to distribute on FWC's three criteria used for closures of the water conservation areas: 1) water 2) deer surveys, and 3) condition of deer.

Frank questioned whether the NPS has public safety concerns, particularly– fire danger during low water levels. Ron responded that higher fire danger is usually corresponds with lower water levels, but also another safety issue during low water levels in airboat country is access which can inhibit search and rescue efforts.

II. ARE CLOSURES NECESSARY?

- Jen—agrees they are necessary but criteria is needed to determine when to close
- Barbara Jean—yes, but perceptions are not correct. Closures are necessary only when extreme conditions prevail.
- Jamie—there are very many unnecessary closures. Each Zone is different, need different criteria for each Zone.
- Ron—agreed that this was a good point and the we now have the capability to look at the issue by management unit.
- Barbara Jean—don't base all decisions on depth at P34.
- Allan—questioned the need for a 60-day closure and why can't low-water closures be counted as part of the 60-day closures
- Ron—agreed there may be a way to do this, to apply low-water closure time to the annual 60-day closure
- Barbara Jean—this would be especially helpful in StairStep. Closures cause great mental stress
- Allen—now that we're stuck to using trails, isn't there less potential for disturbance to wildlife so why close it?

III. HYDROLOGIC MONITORING NETWORK by Bob Sobczak:

Bob's web-based hydrologic information can be found at www.FGCU.EDU/BCW

Barbara Jean—wondered why we couldn't show duration at the depth that will adversely impact the resource, impact on the habitat. Barbara Jean emphasized that is where we need to go and should capture long-term science that we don't have today.

Frank—concerned that we may be using “worst case scenario” with the deepest wells.

Bob explained that the well depth was referenced to the whole system and that the monitoring sites can be averaged to develop trends regarding water depth.

Barbara Jean—wants to follow-up with Bob Sobzack. Can we join BICY data with other in 3A?

Frank—is it possible to show “mound” habitat?

Bob —not possible at this time, perhaps in future.

IV. WILDLIFE RESPONSE TO HIGH WATER

Ron—referenced a Labisky article observing deer have mobility problems when water levels approach 2 feet of depth.

Barbara Jean—animals become acclimated to human areas, become disturbed after long closures.

Frank—observed that the 1995 high water had benefits

Jamie—lack of vehicles causes damage because it is common for game to feed on churned-up ground (frogs, crayfish, etc.). Food chain diminishes (StairStep). Look at checkpoint data on deer.

Jen—during high water in the conservation areas deer were observed crowding on levees, and had signs of hoof rot.

Barbara Jean—need good analysis of checkpoint data.

Jamie—deer were abundant the day after Hurricane Andrew.

Allan—deer don't die from deep water in BICY. They die in the grass (water conservation area).

V. POSSIBLE CRITERIA

- High water doesn't impact in Preserve unless it's an extreme like in 1995:
 - Alligators swimming across Turner Road
 - Raccoons hanging in trees
 - There's a difference between high and extreme

- In 1995 there was no dry season:
 - The duration of the high water
 - El Nino year
 - Soft soil
 - Abnormally high rainfall
 - Water backup
 - Surrounds the tie-back—triggers to look at it
 - Improve hydrology on 11-mile Road & Loop Road

- Checkpoint data from FWC—weight, measurement, etc.
- Number of users/distribution—stress impact
- Examine trip tickets and compare to high water events
- Cultural impact
- An ethnographic survey should be completed
- Put less weight on past closures
- Disbursed use, through adaptive management, in Zone 4
- Trails are beneficial to whole ecosystem
- Fly over/survey during Hunting Season with high water, not just May/August. Do during a day that's least obtrusive to Hunters.

VI. IDEAS

- Wildlife cameras
- Deer Surveys & Index
- Anecdotal Observations
- Get data/comments from stakeholders (i.e., Jamie—call and get knowledge, “what do you think?”)
- Ride along with them
- Map isolated large rain events
- Include in analysis the impact on Panthers
- Emphasize that the need is to focus on opening areas rather than closing them

Notes of July 18, 2006 meeting with representatives of the Miccosukee Tribe on closure criteria for ORV and hunting access

Attendees

Representing the Miccosukee Tribe were:

Fred Dayhoff

F.K. Jones

Steve Terry

Representing the NPS were:

Pedro Ramos

Ron Clark

Bob Sobczak

On July 18, 2006 the above representatives from the NPS and the Miccosukee Tribe met to discuss the document explaining the proposed criteria to be used to determine when ORV and hunting access should be allowed or restricted due to seasonal fluctuations of surface water levels in Big Cypress National Preserve. Introductory remarks were made by the NPS explaining what had taken place at the May 3rd meeting, the agenda and topics covered, so that all could have the same base from which to begin. The following were comments/suggestions made by the Tribal representatives during the July 18th meeting:

There is a need to demonstrate a component of ethics and sportsmanship for hunting and ORV use in the document. Also, demonstrable wildlife behavior is not apparent until after closures are well beyond necessary.

The Preserve needs to collect more data through the installation of more hydrologic monitoring stations along the eastern Preserve boundary to capture the effects of WCA 3A, and its influence on the western side of the L-28 levee. The map provided in the document (page 7) was used to indicate where these additional stations should be placed.

On Page 2 of the document, management of airboat trails could also be related to when caprock is exposed along the trails.

The definitions described under the Hydrologic Criteria section need refinement to explain exactly what conditions prevail during each of the six criteria. (It was explained that these criteria are indeed being revised to better describe the environmental conditions on the ground.)

During times of high water the Tribe observes that those deer that can, move into the Preserve from Water Conservation Area 3A, that these deer are important to the Tribe and that since they move into the Preserve, a consideration for their protection is needed. To do that, when WCA 3A closes, the Preserve should automatically close the eastern Corn Dance area.

The trigger document needs to include a paragraph distinguishing the difference between closures for protection of resources and closures for emergency situations such as hurricanes, high fire danger, etc. (It was pointed out that this idea has been captured in the Conclusion segment of the document.)

For decision-making, the Preserve should put the greatest emphasis on hydrologic criteria rather than on the listed items on Page 9 (field observations, etc.).

The title of the document is offensive because it places emphasis on maintaining ORV use over resource protection. The title should be modified to reflect a resource protection emphasis and the document must reflect managing the effects of high water and draught so as not to put too much emphasis on ORV use and access.

Regarding wild hog population decline in Big Cypress, the reason stated is “unknown” but the decline may be attributable to increases in predator populations.

The hunting seasons in the Preserve are too long due to the accommodation of special hunts (muzzleloader, archery) precipitated by the Florida Fish & Wildlife Conservation Commission in response to people who desire to hunt year-round. These special seasons allow too liberal an approach to hunting and should be taken into consideration for game conservation.

Relying on deer counts and surveys are not practical due to the difficulty in conducting these efforts in the Preserve. Don't rely upon observations made by untrained or inexperienced staff members or by recreational users who may have a bias in reporting observations favorable to their interests. When you wait for deer or other wildlife responses to high water conditions to be observable, you've waited too long.

Page 3, last paragraph – 60-day closure approach (using the dry season closures as time counted for the Stairsteps Unit) should be abandoned in favor of the ORV Management Plan approach, in accordance with the reasons it was established in the first place. Using the approach of applying the number of dry season closure days has impacts on fledging birds that use airboat trails to forage. The ORV Plan states these closures are from June- August and were created for this reason. Follow the approved plan.

Regarding dry season, and fire danger the Preserve should insist upon and regulate the use of spark arrestors on ATCs and swamp buggies.

A 10-day to 2 week period of normal water levels are necessary for recovery times when considering reopening closed areas.

The document fails to consider the effects of high water on vegetation.

The meeting concluded with the commitment by the Preserve to provide the final document that is under revision to all the participants of both meetings that took place during this criteria development process.