

snorkeling, and scuba diving, with restrictions imposed to minimize visitor use conflicts, danger to visitors, and damage to natural and cultural resources. Mooring devices will be placed at selected coral reefs and shipwrecks for skindiving. Interpretation of reefs and shipwrecks will be provided by such means as exhibits, either designed with mooring devices or placed underwater, or by waterproof interpretive cards.

Regional Information System. The National Park Service will encourage cooperation among federal, state, and local agencies to establish a regional information center to help visitors effectively plan their vacations and weekend trips. Such a center would be strategically located on a major travel route and provide information about activity options, lodging and campground availability, tour scheduling, and fees at federal, state, local, and private recreation areas in this part of the state.

Information exhibits will be used at selected locations inside and outside the park to increase the park's identity within the region, increase boaters' awareness of the fragile resources in the park, and inform them of safe boating practices to be used while participating in the variety of recreational experiences available in the park.

General Development

The proposed development provides the facilities necessary for a quality visitor experience while minimizing impacts on the park's resources. A number of existing structures will be rehabilitated and new structures will be built only in those areas already impacted by existing development. All developed areas are within the 100-year floodplain, and developments at Convoy Point, Tannehill, Boca Chita, and Stiltsville are within the coastal high-hazard area. As shown on the map entitled Floodplains, the entire national park is located within either the 100-year floodplain or the coastal high-hazard area (area of 100-year coastal flood with velocity/wave action). Therefore, options for placement of facilities outside the 100-year floodplain are nonexistent in the park, and they are extremely limited or unavailable within 10 miles of the park boundaries. Moving park facilities out of the 100-year floodplain would be impractical, expensive, and costly in terms of efficiency of operations, resource and visitor protection, and energy conservation.

An alternative of removing all buildings from the high-hazard area was considered, but it was determined to be infeasible because it would not allow for visitor use and resource protection as intended in the park legislation. The Convoy Point facilities are needed at that location to introduce visitors to the park's estuarine resource at the water's edge, to provide cost-effective operations by placing the maintenance center near the facilities to be maintained (especially near the boats, which require constant maintenance), and to keep park administrators close enough to resources and visitors to maintain responsiveness to daily management needs and emergencies. Similarly, conversion of the Tannehill house to a ranger station is needed to provide adequate resource protection and response to visitor emergencies on the reef tract. Boca Chita will be adapted to provide a much needed day use area for recreational boaters. At all three sites, the facility function is closely tied to water use, and consequently the facilities must be near the bay or reef tract.

In both the 100-year floodplain and the high-hazard area the design of new structures or rehabilitation of existing structures will incorporate methods for minimizing storm damage as contained in the National Flood Insurance Program's "Floodplain Management Criteria for Flood-Prone Areas" (Code of Federal Regulations, title 44, sec. 60.3). Accordingly, new major structures will be elevated above the projected flood hazard elevation.

Further, the park staff will continue to maintain an active hurricane evacuation plan. The plan details responsibilities of individual park employees for advanced preparedness measures at the onset of the hurricane season (June-October); removing or securing park property, records, and utility systems during a hurricane watch; evacuating the public and staff during a hurricane warning; monitoring communications during a hurricane; and conducting rescue and salvage operations following a hurricane. The hurricane plan has proved effective in reducing property damage and maintaining safety during storms, and it will be annually reviewed and updated.

Information Signs and Exhibits. Identical information exhibits will be placed at Convoy Point, Elliott Key Harbor, University Dock, Adams Key, Boca Chita Harbor, Homestead Bayfront County Park, Black Point County Park, Matheson Hammock County Park, John Pennekamp State Park, and Everglades National Park in an effort to increase the park's identity within the region. Other locations may also be selected for this display. Each exhibit will locate the park, highlight the major resource components and their fragile natures, and describe the many activity opportunities available in the park.

A new park entrance sign(s) will be placed at the appropriate location(s) along the entrance road (North Canal Drive) to provide the necessary level of recognition for approaching visitors. The sign(s) will be placed to help people choose between visiting Homestead Bayfront County Park and Biscayne National Park.

Identical outdoor exhibits will be placed at key marinas and boat ramps located within the park and along the mainland to encourage types of boating behavior that will serve to protect both the boater and the bay and reef tract. Special attention will be given to the damage associated with propeller scars, improper anchoring techniques, and other appropriate safety messages.

At Convoy Point, Adams Key, Elliott Key, and Boca Chita exhibits will be provided to inform visitors of potential hazards associated with hurricanes and coastal flooding. Historic or 100-year flood levels will be marked on selected structures, and flooding information will be available.

Convoy Point. There will be considerable new development at Convoy Point to provide adequate facilities to support a park entry point for nonboating visitors and the administrative headquarters functions. Existing visitor use and administrative facilities are inadequate. The design of new buildings will take into consideration the floods expected to occur in this coastal high-hazard area, and they will be elevated accordingly. To avoid potential pollution of bay waters by stormwater

runoff contaminated by oil and other petroleum products, the developed area will be backsloped away from the shoreline to allow percolation and filtration of runoff through soils. Similarly, impervious surfaces will be minimized where practical by using marl or porous paving blocks rather than solid pavement. Facilities, programs, and recreational opportunities will be fully accessible to the handicapped in accordance with NPS management policies and the Rehabilitation Act of 1973 (PL 93-112). In addition to providing accessibility for all visitors, this will ensure that employment of the handicapped will not be foreclosed by architectural barriers. All new facilities at Convoy Point will be designed to minimize energy consumption. Guidelines for minimizing energy consumption through proper site planning and building design are found in Energy Conscious Planning Guidelines (USDI, NPS 1981c). In general, building siting and orientation will consider sun angles and take advantage of air movement for summer cooling. Construction features will include windows that open, location of smaller windows on southern exposures and larger windows on northern exposures, and adequate insulation since air conditioning will be required.

The Convoy Point Proposed Development Concept Plan (DCP) map shows the conceptual site plan for the headquarters area. Design considerations that were used in establishing the DCP were to separate visitor use functions from administrative/maintenance functions; separate pedestrian traffic from vehicular traffic; establish a continuous visitor use area and locate the visitor contact pavilion to take advantage of views of the bay, mangrove shoreline, and boat basin; locate the maintenance area close to the boat basin; take advantage of existing roads and hardened or paved areas to reduce costs; minimize road distances; build on existing highland; fill no wetlands; and minimize dredging and filling for the NPS maintenance boat basin.

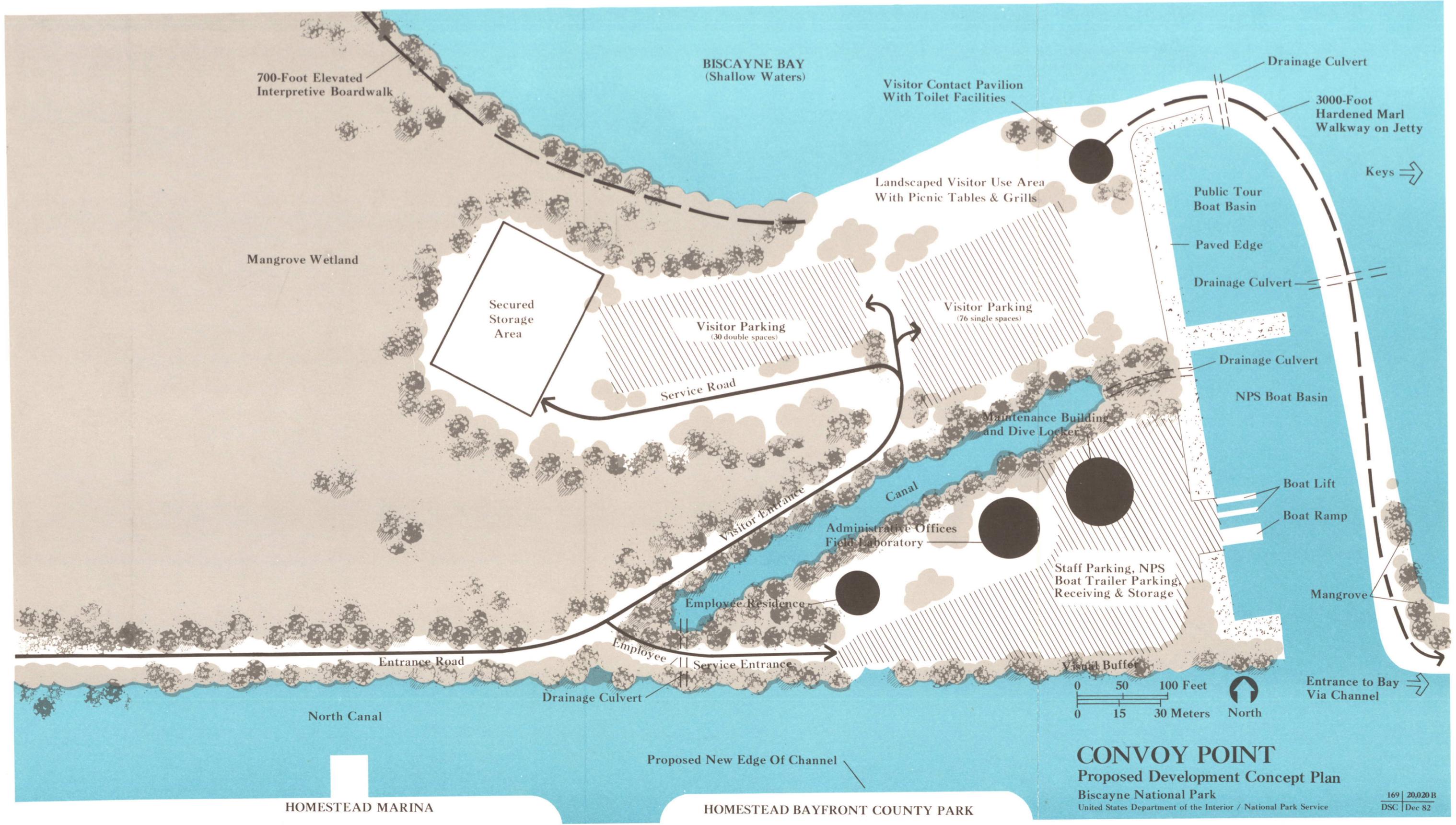
A new two-story structure with 3,000 square feet of enclosed space will house information, orientation, and interpretation services and the ticketing and waiting areas for the tour boat operation. The lower floor will include a ticket sales area, toilet facilities, and a small auditorium. The auditorium will be adaptable for special events, evening presentations, and interpretive film presentations when inclement weather prohibits tour boat operations. A film that explores the life forms and processes associated with the four profile environments will be produced for these special occasions and for offsite use. The second story, designed to afford a view of the bay and mangrove shoreline, will include an enclosed area for publications sales and information, a small exhibit area, and a small room for interpretive storage and work space. The exhibits will answer the question "What is Biscayne National Park?" by identifying the four profile environments represented. The second story will also provide a screened open-air observation porch with a designed seating capacity of approximately 50 to 75 people, where visitors may wait for tour boat departures. An exhibit that takes advantage of the view from the open-air porch will identify the visible environments--the mainland, bay, and barrier islands--and suggest scale by graphically portraying the location of the reef tract. An additional exhibit or exhibits in the same area may treat other identifiable points of interest. Visitors will board the tour boat in the adjacent existing boat basin.

A new short (700-foot) interpretive boardwalk and a new marked interpretive canoe trail along the bayshore/mangrove fringe will provide visitors a range of opportunities for discovering the mangrove shoreline's importance to the bay system. The boardwalk will meander through the mangroves to avoid removal of trees and to have a minimal impact on soils and understory vegetation. Another new, longer (3,000-foot) hardened marl walkway with turnouts for fishing will lead from the pavilion out to the jetty. The fishing turnouts will be designed to avoid additional filling within the bay. The jetty will contain two 6-foot-wide culverts to assist with tidal flushing. An outdoor exhibit along the jetty will focus on the more visible aspects of man's use of the bay, such as fishing and boating, and on other visual points of interest. (The Park Service will cooperate with the county in their construction of a similar boardwalk on the jetty at Black Point.) A glass-bottomed barge with a capacity of ten people will provide visitors a dramatic encounter with the bay and its lifeforms. The public use area will be landscaped and will have picnic tables with charcoal grills.

The size of the new visitor parking lot at Convoy Point, estimated at 1.35 acres, will depend primarily on the tour boat system. As described in the "Public Access and Transportation" section, the number of trips per day, number of boats, and sizes of boats will be determined later and will depend to a large extent on the economics of the concession-operated system. If the preliminary assumptions about the capacity of the tour boat system hold true, the parking requirement for Convoy Point will be about 106 spaces. This estimate was derived assuming that the carrying capacity of the tour boat system is 368 passengers per day, that those passengers arrive at Convoy Point in 115 vehicles (3.2 persons/vehicles), that 86 (75%) of those vehicles are parked at Convoy Point at any one time, and that an additional 20 vehicles belonging to fishermen and others are parked there at the same time, for a total of 106 vehicles. The parking area delineated on the Development Concept Plan map includes 76 single spaces (30,000 sq ft) and 30 double spaces (29,000 sq ft) for buses, large RVs, and vehicles pulling trailers.

Headquarters facilities will include a new 4,000-square-foot administrative building incorporating space for a field laboratory; a new 2,000-square-foot duplex employee residence; a new 4,300-square-foot maintenance building (which will include a dive locker and storage space on the second floor to be used during storm emergencies); a 1-acre utility compound with storage sheds and security fence; a ½-acre secured storage area; a new 300-foot-long NPS maintenance boat basin with boat docks, a boat ramp, and boat lift; and a new onsite mound-type sewage treatment facility, underground power lines, and water lines.

The new permanent employee housing will replace existing temporary structures (two house trailers). Housing is necessary to provide 24-hour security against theft and vandalism of NPS property, which includes buildings, motorboats and trailers, office and maintenance equipment, and supplies. Other alternatives, such as fencing and security guards, were considered, but were judged to be inadequate. Security is especially important because of the relative isolation of the site and the acknowledged occurrence of crime in the area. The site is located in an area which is not routinely patrolled by local law enforcement agencies.



CONVOY POINT
 Proposed Development Concept Plan
 Biscayne National Park
 United States Department of the Interior / National Park Service

Onsite housing is also necessary to provide temporary shore-leave quarters for rangers who live on the islands and to provide housing for employees who are unable to find other reasonable available housing nearby.

The public boat ramp at Convoy Point will be closed to the public when the new boat ramps are constructed at Homestead Bayfront County Park. The design of the new maintenance boat basin will facilitate tidal flushing by maintaining sloping rather than vertical bulkheads where feasible.

The new visitor contact pavilion and other visitor use facilities will be constructed first. The new administrative building, maintenance building, and housing will follow, as funds are programmed. During construction, maintenance will occupy its existing location (as shown on the map entitled Convoy Point, Alternative 1--Development Concept Plan: Existing Conditions); and administrative functions, housing, and visitor contact and toilet facilities will be housed in temporary structures and trailers.

Adams Key. Two existing employee residences, a storage shed with adjacent cistern, and a generator house will remain. Wind and solar devices are being considered to replace the existing diesel generator to provide power.

The wood-frame building that now contains public toilets and interpretive facilities will be rehabilitated for other interpretive uses. The laboratory portion will provide space for a small exhibit that will highlight the human history of this and other barrier islands from the time of their use by pirates to the more recent visits by presidents. An open sun/rain shelter and picnic tables with charcoal grills will remain. The existing 2,000-foot trail will be maintained and interpreted with such low-key measures as self-guiding brochures.

The existing boat dock will be enlarged by 80 feet, to a length of 155 feet, to accommodate private boats and the concession interpretive tour boats from Convoy Point. No dredging will be necessary for the enlargement. A smaller dock will be reconstructed nearby, at the site of existing dock ruins, to accommodate NPS boats. Work on the docks is scheduled to be done in 1983. Outdoor exhibits will be placed in the vicinity to stimulate interest in the cultural and natural history themes associated with the tours of the coral reef and lower keys. Native vegetation will be added along the fringes of the island to screen out views of the existing structures from the bay and Caesar Creek.

Elliott Key. The trail that runs nearly the full length of Elliott Key will be maintained for hiking and administrative purposes. Other existing trails will be maintained, and directional signs will be added to the trail between the harbor complex and University Dock.

At the Elliott Key Harbor complex the existing visitor information/orientation pavilion will be redesigned to accommodate new interpretive media and to make the building accessible to the handicapped. Some of the visitors that now go to Elliott Key Harbor are handicapped. With the advent of the public tour boat system, the number of these visitors will increase, and the facilities there should be

accessible to them. Methods that will be considered to provide accessibility include a ramp, hydraulic lift, or elevator. The primary use of the elevated space in the pavilion will be for a new audiovisual/exhibit presentation that will improve the communication and content of the park's major interpretive message. Using present technology, the central support structure will be adapted as a video "centerpiece" for interpreting the reef tract through projected images of a portion or portions of the reef. A multiple tape technique will allow for the presentation of a wide range of reef-related themes, providing the necessary variety for repeat visitors. Secondary exhibits, designed to be compatible with the floor-to-ceiling windows, will address appropriate themes supporting the video presentation. A space will be provided for a small information and book sales counter and storage for sales items.

The open lower level of the building will be screened to provide usable space for special activities and evening programs in an environment free of mosquitoes and flies. The ranger offices currently on the second floor will be relocated to the ground floor or to other buildings in the area.

Approximately 2,000 feet of the existing interpretive loop trail surface will be rehabilitated. Other existing visitor facilities will be maintained: a 66-slip boat harbor for use by private boats, NPS boats, and the tour boat from Convoy Point; a designated swimming/snorkeling area; a picnic area with picnic tables and charcoal grills; 35 designated campsites; a primitive group campsite; shower (available in 1983) and toilet facilities; a potable water source (available in 1983); and a first-aid room. A glass-bottomed barge will be provided for bay tours.

Two new employee housing units programmed for construction prior to this planning effort will be available in 1983. The maintenance/utility area, diesel generating station, and utility dock will be retained.

Solar power is being considered to provide hot water for the complex, and a photovoltaic system is now in use to provide power for the radio repeater.

At University Dock a toilet facility will be built to serve visitors at the popular swimming beach. An information exhibit will be provided, as well as picnic tables with charcoal grills. The existing dock (which is being replaced this year) will be maintained for use by private and NPS boats.

The Tannehill house is currently under an annually renewable special use permit as a private residence. When this use ceases, the facility will be adapted as a ranger station/residence. The existing wooden dock will be reconstructed, and a hiking trail will be maintained between the facility and Elliott Key Harbor.

Sands Key. The island will be returned to a natural state. The artificial canal leading to the "keyhole" (an interior salt pond) on Sands Key will be filled, and the salt pond will be restored to its original contours.

Boca Chita. When the National Park Service acquires the necessary interests in Boca Chita, the island will be developed to support day use by private boaters. A new toilet facility and small maintenance/storage

building will be provided, adaptively using existing structures if possible, and the existing screened open-air pavilion will be upgraded for use as a picnic shelter. The light tower at the harbor entrance will be rehabilitated to allow visitors to climb to the top for an elevated view of the bay. A series of handrail exhibits will identify points of interest visible from the tower and will address other appropriate theme topics. Other existing structures will be removed, leaving a large part of the island as open space for visitor use. Picnic tables with charcoal grills will be provided. The exotic Australian pines will be removed, and native vegetation will be planted to provide shade and shoreline stabilization.

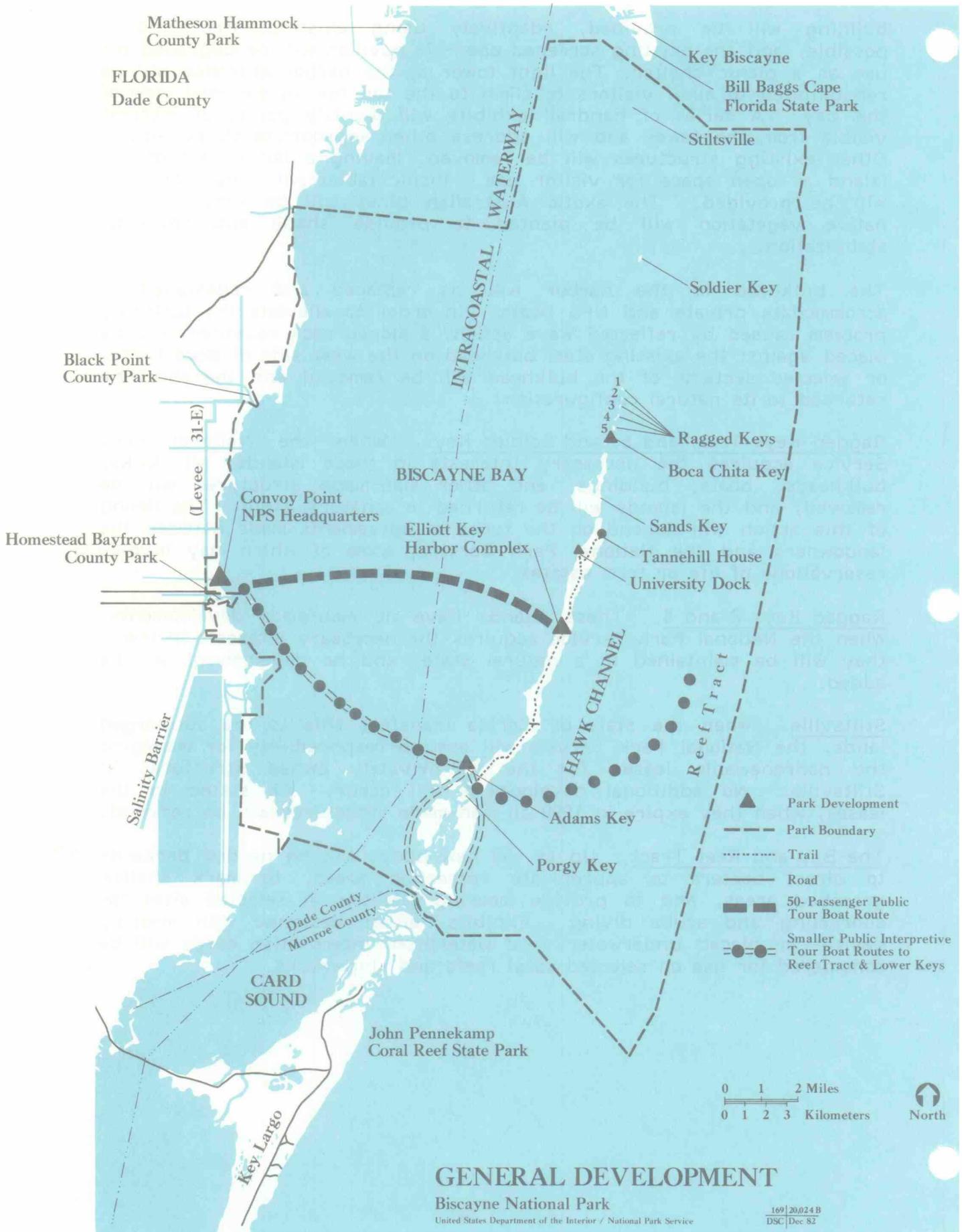
The bulkhead in the harbor will be replaced and redesigned to accommodate private and NPS boats. In order to alleviate the turbidity problem caused by reflected wave action, a sloped rock revetment will be placed against the existing steel bulkhead on the west side of Boca Chita, or selected sections of the bulkhead will be removed and the shoreline returned to its natural configuration.

Ragged Keys 1, 3, and 5, and Soldier Key. When the National Park Service acquires the necessary interests in these islands, all docks, bulkheads, boats, buildings, and other man-made structures will be removed, and the islands will be returned to a natural state. The timing of this action will depend on the types of agreements made between the landowners and the National Park Service, some of which may involve reservations of life or term estates.

Ragged Keys 2 and 4. These islands have no man-made developments. When the National Park Service acquires the necessary interests in them, they will be maintained in a natural state, and no development will be added.

Stiltsville. When the state of Florida transfers title to the submerged lands, the National Park Service will assume responsibility for managing the nonrenewable leases for the 15 privately owned structures in Stiltsville. No additional development will occur. As stated in the leases, when they expire in 1999 all man-made structures will be removed.

The Bay and Reef Tract. Up to 150 new buoys will be needed parkwide to direct boaters to appropriate recreation areas, to mark shallow grassbed areas, and to provide mooring facilities at selected sites for snorkeling and scuba diving. Exhibits, either designed with mooring devices or placed underwater, and waterproof interpretive cards will be considered for use on selected coral reefs and shipwrecks.



GENERAL DEVELOPMENT

Convoy Point

Construct new

- visitor information/orientation station
- interpretive boardwalk through mangrove fringe
- jetty walkway with fishing turnouts
- landscaped area with picnic tables
- visitor and staff parking
- administration building with field laboratory
- maintenance building with dive locker
- maintenance boat dock
- utility compound
- employee housing
- interpretive canoe trail

Replace existing power, water, and sewer lines

Maintain existing

- tour boat basin
- maintenance storage area

Close existing boat ramp to public use after the service is offered at the neighboring Homestead Bayfront County Park

Porgy Key

Remove man-made structures upon expiration of life estate
Return to natural state

Adams Key

Provide new

- outdoor interpretive exhibit
- self-guiding facilities for foot trail

Enlarge existing public/NPS boat dock (scheduled for 1983)

Rehabilitate existing small NPS boat dock (scheduled for 1983)

Recondition existing interpretive facility

Plant native vegetation for screen

Maintain existing

- picnic tables
- sun/rain shelter
- foot trail
- employee residences
- ranger station

Elliott Key Harbor Complex

Redesign visitor information/interpretation pavilion

Relocate ranger offices

Improve interpretive facilities

Resurface interpretive trail

Maintain existing

- showers and toilet facilities (available in 1983)
- potable water (available in 1983)
- picnic tables
- sun/rain shelter
- campsites
- swimming area

public/NPS boat basin

utility dock

maintenance area (available in 1983)

employee residences (available in 1983)

University Dock

Provide new

- toilet facility
- information sign
- picnic tables

Maintain existing

- swimming beach
- boat dock (replaced in 1982/1983)

Tannehill House

Adapt as ranger station/residence upon expiration of special use permit

Replace boat dock

Maintain hiking trail to Elliott Key Harbor

Sands Key

Fill artificial canal and restore salt pond to original contours

Return island to natural state

Boca Chita

The following will be done after acquiring necessary interests in land:

Provide new

- picnic tables
- information/interpretation exhibits
- toilet facility
- maintenance/storage facility

Rehabilitate existing

- screened open-air pavilion
- light tower
- boat basin
- shoreline bulkhead

Remove other structures

Replace Australian pines with native vegetation

Ragged Keys and Soldier Key

The following will be done after acquiring necessary interests in land:

Remove all man-made structures

Allow islands to return to natural state

Stiltsville

Manage existing leases until 1999 upon transfer from state, then remove all man-made structures as stated in the leases

Bay and Reef Tract

Provide new markers parkwide

Management Zoning

NPS management policies are applied to park lands and waters according to a standard system of management zones and subzones. In general, management zones reflect the most appropriate uses and management philosophies for specific areas within parks. Zoning is based on the park's enabling legislation, NPS policies, and most importantly, a thorough understanding of park resources and their capability to support uses consistent with the park's management objectives.

At Biscayne, the management objectives for the four planning units (mainland, bay, barrier system, and reef tract) were considered in defining management zones. As shown on the Management Zoning map, the zones and subzones are often continuous from one planning unit to the next.

Natural Zone. Lands and waters in the natural zone are managed to conserve natural resources and processes while accommodating visitor uses and experiences which do not adversely affect the natural systems.

Protected Natural Area Subzone. This subzone includes lands and waters which are unusually fragile or ecologically significant. The management objective is the perpetuation of significant natural values, and human intrusion is either prohibited or minimized.

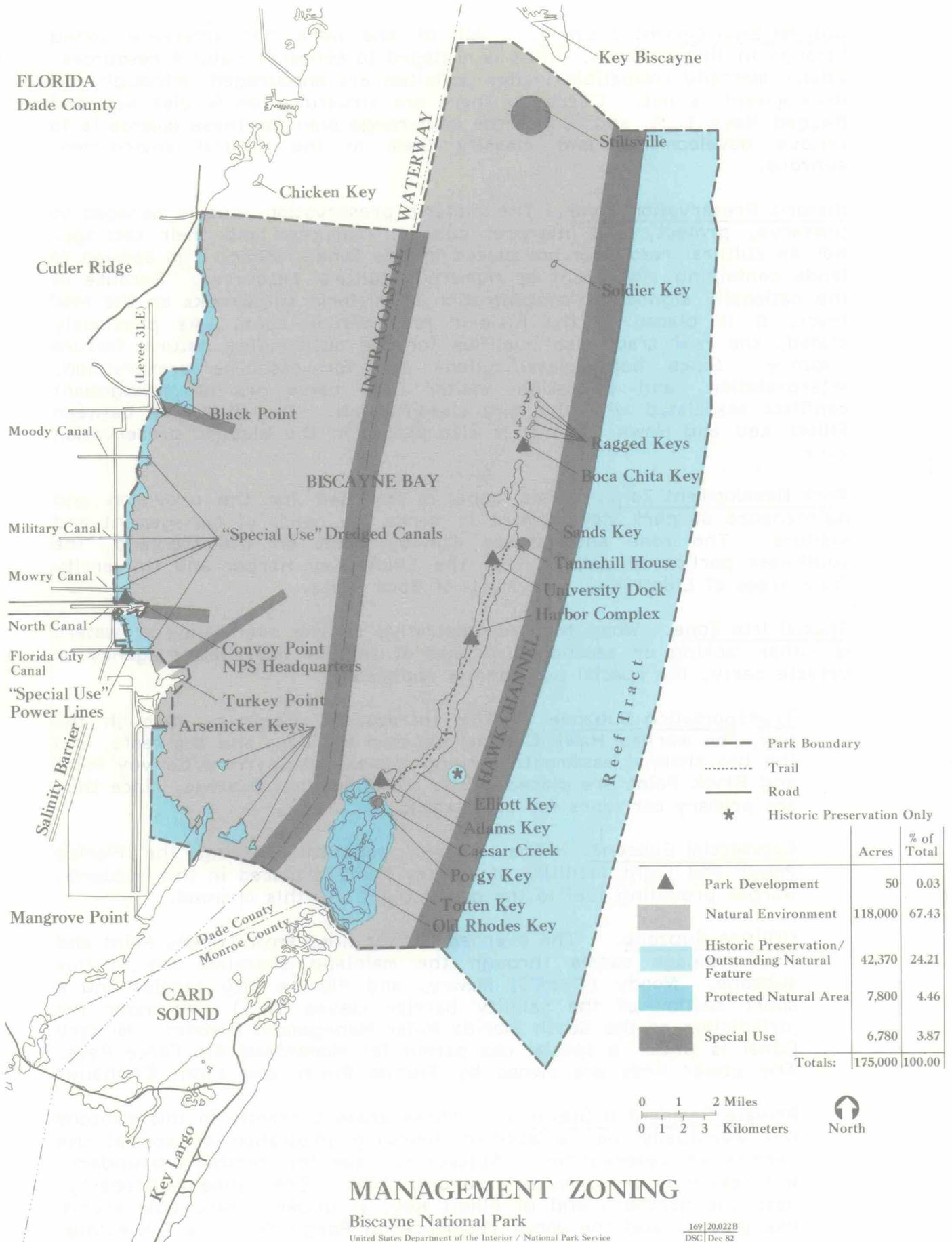
The keys, tidal creeks, and shallow waters between Caesar Creek and the southern boundary of the park are placed in this subzone. This area includes pristine uplands and estuarine communities, a fragile saltwater lagoon, and habitat for numerous animals, some of which are threatened (e.g., Schaus swallowtail butterfly) or endangered (e.g., American crocodile).

The four Arsenicker Keys and the surrounding submerged lands and waters up to 1,500 feet from the shoreline are placed in this subzone to protect rookeries for several species of wading birds and the endangered southern bald eagle (USDI, FWS 1981b).

The mainland mangrove shoreline, excluding the developed area at Convoy Point and the drainage canals, is also in this subzone. The ecological significance of the mangrove community has become increasingly apparent in the region as this ecosystem has diminished due to coastal urbanization and industrialization. The mangrove estuaries filter surface runoff, provide essential nutrient cycling, and provide significant wildlife habitat.

Outstanding Natural Feature Subzone. Lands and waters in this subzone possess unusual intrinsic values or uniqueness and are managed to conserve those values, but with an emphasis on public appreciation and interpretation. The reef tract from the eastern edge of Hawk Channel to the park's eastern boundary at the 60-foot contour is in this subzone. The offshore and patch reefs in this tract are the northernmost living coral reefs in the United States and can provide a unique and educational visitor experience. (The reef tract is jointly classified as a historic preservation zone).

FLORIDA
Dade County



MANAGEMENT ZONING

Biscayne National Park

United States Department of the Interior / National Park Service

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Natural Environment Subzone. All of the park not otherwise zoned belongs in this subzone, which is managed to conserve natural resources. Environmentally compatible visitor activities are encouraged, although new development is not. Currently there are structures on Soldier Key and Ragged Keys 1, 3, and 5, but the long-range plan for these islands is to remove developments and classify them in the natural environment subzone.

Historic Preservation Zone. The historic preservation zone is managed to preserve, protect, and interpret cultural resources and their settings. Not all cultural resources are placed in this zone; rather, it is applied to lands containing significant or numerous cultural resources. Because of the nationally significant concentration of historic shipwrecks on the reef tract, it is placed in the historic preservation zone. As previously stated, the reef tract also qualifies for the outstanding natural feature subzone. Since both classifications call for resource preservation, interpretation, and compatible visitor use, there are no management conflicts associated with the joint classification. The shipwreck between Elliott Key and Hawk Channel is also placed in the historic preservation zone.

Park Development Zone. This zone is managed for the provision and maintenance of park development to serve the needs of management and visitors. The zone encompasses Convoy Point on the mainland, the southwest portion of Adams Key, the Elliott Key Harbor and University Dock areas of Elliott Key, and much of Boca Chita.

Special Use Zone. When NPS administrative control over lands or waters is either lacking or secondary to that of another government agency or private party, the special use zone is applicable.

Transportation Subzone. The Intracoastal Waterway through the bay, the marked Hawk Channel between the keys and the reefs, and the two channel easements serving Homestead Bayfront/Convoy Point and Black Point are placed in the transportation subzone, since they are primary corridors for boat traffic.

Commercial Subzone. The channel easement serving the Florida Power and Light facilities at Turkey Point is placed in this subzone. Barges providing fuel to the power plant use this channel.

Utilities Subzone. The overhead power lines from Turkey Point and five drainage canals through the mainland shoreline are in this subzone. Moody (C-102), Mowry, and Florida City canals, and a short section of the salinity barrier (levee 31-E) are under the jurisdiction of the South Florida Water Management District. Military Canal is under a special use permit for Homestead Air Force Base. The power lines are owned by Florida Power and Light Company.

Private Residential Subzone. Three areas currently in this subzone will eventually be reclassified following expiration of special use permits or reservations. Stiltsville, near the northern boundary, will remain under private lease until 1999. The Tannehill property, near the northern end of Elliott Key, is under a renewable special use permit, and the Jones residence on Porgy Key is a life estate.

Management of Natural Resources

The National Park Service will take necessary actions to preserve and protect natural resources and processes while allowing established recreational uses to continue. Appropriate controls will be placed on recreational activities to minimize visitor use conflicts and resource damage. Natural resources will be managed through a flexible program designed to cope with the changing pressures on the park from regional development and an expected increase in park use. Management actions will be in accordance with NPS policies and guidelines and all applicable federal, state, and local laws and regulations. Specific actions for carrying out the general strategies described in this section are detailed in the park's resources management plan (USDI, NPS 1982e), and individual action plans will be developed as necessary.

Pollution Control and Abatement. The park will continue to monitor water quality in the bay and reef tract and will expand the monitoring program to the newly authorized park waters. The National Park Service will continue to cooperate with the Corps of Engineers, Coast Guard, Environmental Protection Agency, Fish and Wildlife Service, National Marine Fisheries Service, and state and local regulatory agencies in reviewing applications for dredge, fill, or effluent discharge permits which may influence park water quality. The National Park Service will seek a cooperative agreement with the South Florida Water Management District to reduce possible adverse impacts on park resources associated with drainage canal discharges. Canal discharges will be sampled to evaluate their impact on bay water quality.

The National Park Service will seek to terminate three special use permits for proposed channel dredging within the park, and it will issue no new dredge permits for submerged lands under its jurisdiction. The Coast Guard, Corps of Engineers, Florida Power and Light Company, and Dade County will be consulted to ensure that maintenance of the three existing channels and the Intracoastal Waterway causes no major resource impacts. Maintenance of park boat basins or channels will be conducted with minimal impact on water quality.

Water pollution from recreational and commercial boat use will be controlled by educating boaters about proper waste disposal, boating ethics, and potential for damage to benthic resources and by actively enforcing federal, state, and local boating regulations. The National Park Service will continue to cooperate with other government agencies in maintaining a contingency action plan for containing oil and toxic materials spills affecting park waters.

Sewage treatment and solid waste disposal will comply with the Federal Water Pollution Control Act, the Resources Conservation and Recovery Act, and other applicable federal, state, and local regulations. NPS boats and other equipment will be properly maintained and operated to prevent pollution of park waters.

Air quality will be monitored in the park to identify any changes that might prove hazardous to visitor health or park resources. The National Park Service will continue to cooperate with Dade County in acquiring air

quality data and will continue to take an active role in reviewing emission permit applications potentially affecting the park in cooperation with the Environmental Protection Agency, the Florida Department of Environmental Regulation, and Dade County. Noise levels will be monitored to establish baseline data for assessing the impact of air traffic and other noise on park wildlife and the visitor experience. A monitoring program for radioactivity levels will be established, and an evacuation contingency plan in case of an accident at the nearby Turkey Point nuclear power plant will be developed in cooperation with the Federal Emergency Management Agency and state and local governments.

The National Park Service will operate its facilities and equipment in compliance with standards set by the Clean Air Act and the Noise Control Act. Managed burning, including slash burning for exotic plant control, will be coordinated with the Metropolitan Dade County Department of Environmental Resources Management to minimize the effects of smoke on air quality.

Management of Marine Resources. In accordance with the 1980 park legislation, NPS rangers will continue to enforce Florida state law governing sport and commercial fishing. Collection of tropical fish, coral, or other nongame species will continue to be prohibited. The current program of monitoring fisheries will be expanded to the new park waters. As information needs are identified, the park will monitor specific fishery resources or contract with reputable researchers for the data. The intent of managing commercial and sport fishing within the park will be to sustain a composition of native marine populations similar to that which existed prior to fishing pressures. Specific information on marine resources for Biscayne National Park prior to park establishment is lacking. Therefore, available studies of south Florida fisheries, including baseline fisheries data collected in the park between 1976 and 1980, will guide managers in determining the appropriate levels of marine populations that should be sustained. If it appears, based on research or regular monitoring, that further restrictions on locations, times, or methods of fishing within the park are warranted, the National Park Service will consult with the state for either revising the state fishing regulations or revising (through the secretary of the interior) the park regulations, as provided for in the 1980 legislation.

Benthic resource mapping of the bay and reef tract will be expanded to include the new park waters. Aquatic flora and fauna will be periodically sampled to determine the composition, density, and health of communities and to monitor the effects of drainage canal discharges, boat propeller scarring, anchor damage, and other threats. The park will conduct, or contract with reputable researchers for, specific studies to guide management of aquatic resources. Portions of turtle grass beds or other benthic communities in the bay or reef tract that are particularly sensitive to prop scarring may be protected from motorboat use. Methods of restoring areas damaged by prop scars will be investigated. Motorboat racing will not be allowed within the park, and sailboat regattas and other special boating events will be restricted to the area of the bay north of the Featherbed Bank area where the water is deeper.

Snorkeling and scuba diving will be permitted throughout most of the reef tract, and selected sites of interpretive value and capable of withstanding concentrated visitor use will be marked. Moorings will be provided at such locations to reduce anchor damage. Because improperly placed mooring buoys can damage more resources than a multitude of small-craft anchors, it is critical that the mooring devices (such as mooring posts and combination posts with chains) be sensitively designed and located. The impacts of both the mooring devices and the concentrated visitor use will be monitored, and the mooring devices will be relocated or removed if unacceptable resource damage occurs.

Management of Terrestrial Resources. Parkwide monitoring of exotic species (e.g., Australian pine, Brazilian pepper, Mexican red-bellied squirrel) will continue, as will monitoring of insect and disease damage and natural succession. The status of rare or unusual species, such as least tern, nesting wading birds, Sargents cherry palm, and champion-sized trees (see p. 76, 1978 Final Environmental Statement, General Management Plan, Biscayne National Monument) will be determined. The additional lands included within the new park boundary will be inventoried and mapped for vegetative cover, including the distributions of native plants, species of special concern, and exotics.

Management actions will be taken to protect terrestrial resources. Extirpated species may be reintroduced if suitable habitat remains and it is economically feasible. Exotic plant species will be controlled through cutting, limited application of EPA- and NPS-approved herbicides, and other approved methods. A high priority for the exotic species control program will be the Australian pine on Elliott Key, Sands Key, Boca Chita, the Ragged Keys, and Soldier Key, since these stands are a seed source for volunteer pines on keys to the south. As soon as sufficient interest is acquired in the northern islands, these stands will be removed. Exotic animal populations (e.g., Mexican red-bellied squirrel, feral cats) will be reduced or eliminated. Outbreaks of insects or diseases which are unnatural or which threaten private property will be suppressed. Fires ignited by lightning or other natural causes will be allowed to burn in prescribed areas of the park where burning will not threaten human life, private property, physical facilities, cultural resources, protected or unique species, or outstanding natural features. Prescribed burning will be used in the control of exotic species or other management purposes. All other fires not meeting prescriptions will be suppressed as quickly as possible. Fire prescriptions and control methods will be described in a fire management action plan.

In park developed areas, mosquitoes, sand fleas, and other insect pests will be locally controlled as necessary for visitor health and safety. Integrated pest management practices will include limited habitat manipulation (e.g., improved tidal circulation, lawn mowing) and limited application of EPA- and NPS-approved pesticides. Because these insects are native species and are essential components of the natural food web, large-scale reduction of insects is not a management objective, and broad-scale application of pesticides will not be conducted.

The National Park Service will continue to avoid to the extent feasible any further occupation or modification of floodplains and wetlands, in

accordance with Executive Orders 11988 ("Floodplain Management") and 11990 ("Protection of Wetlands"). The park will actively assist private landowners and federal, state, and local regulatory agencies in protecting wetlands that are outside the park boundary but whose use may affect park resources. Moreover, the values of wetlands and floodplains will be enhanced by using them for their educational, recreational, and scientific qualities through expanded interpretive programs and research emphasis.

Camping will continue to be permitted at the Elliott Key Harbor campground, and backcountry camping will continue on Elliott and Sands keys (other camping sites may be considered), with an authorized backcountry permit. The system of free permits will ensure a quality backcountry experience and protection of natural resources.

Management of Endangered or Threatened Species. Endangered or threatened species will continue to be protected (see "Affected Environment"). Surveys of listed species will be conducted periodically, and their habitats will be protected from development or modification. Visitor use of sensitive habitats will be restricted as necessary during critical feeding, nesting, or reproduction periods. Specific actions will include eliminating motorboat access to the mouths of Moody, Military, Mowry, and Florida City canals to protect manatees, and seasonally restricting access to the Arsenicker Keys to avoid disturbance of nesting bald eagles. Interpretive programs to enhance public appreciation and protection of listed species will continue. Monitoring of sea turtle nests on the keys will be intensified to identify species nesting on park beaches, to evaluate park nesting habitat, and to evaluate the impact of predators on sea turtle reproduction. Based on the results of monitoring and informal consultation with the Fish and Wildlife Service, actions will be taken as appropriate to protect nests and hatchlings from predation.

The National Park Service recognizes its responsibility to protect endangered or threatened species under section 7 of the Endangered Species Act. Proposals for the management of federally protected species were developed through informal consultation with the U.S. Fish and Wildlife Service and the National Marine Fisheries Service. The National Park Service will continue to cooperate with those agencies for implementing management actions concerning endangered or threatened species.

Management of Cultural Resources

General Policies. Management of cultural resources will be in compliance with the National Historic Preservation Act of 1966, as amended, and numerous other mandates, as specified in the NPS "Management Policies" and "Cultural Resources Management Guideline" (NPS-28). Known cultural resources are described in the "Affected Environment" section. A historic resource study entitled "Preliminary Historical Studies Plan, Biscayne National Monument" was performed by T. Stell Newman of the National Park Service in 1975.

All cultural resources will be preserved on site if possible. Any area that will be affected by construction, human use, or natural erosion will have a complete inventory of cultural resources (as defined by section 110 of the National Historic Preservation Act), and least-impact management alternatives will be developed from that information. The review requirements in section 106 of the National Historic Preservation Act will be accomplished under the terms of the programmatic memorandum of agreement among the National Park Service, the Advisory Council on Historic Preservation, and the National Conference of State Historic Preservation Officers (see appendix E). The Florida State Historic Preservation Officer and staff of the Advisory Council on Historic Preservation have participated in the preparation of this plan. All undertakings which may affect cultural resources will be reviewed in advance by NPS regional cultural resource specialists to ensure that all feasible planning or design measures are taken to avoid or minimize impairment of the resources (XXX form). Unavoidable adverse effects will be mitigated by professional data retrieval involving controlled excavation, architectural recording, or other acceptable means.

The condition of cultural resources subject to natural and human impacts will be systematically and professionally monitored, documented, and evaluated so that appropriate recommendations for preservation and/or mitigation can be made. A parkwide cultural resource preservation guide will be prepared by NPS cultural resource specialists in collaboration with the park staff. The guide will provide specific detailed direction for the management of cultural resources in the course of day-to-day park operations, with emphasis on schedules and procedures for monitoring the impacts on cultural resources.

Cultural resources acquired with lands, easements, or term estates will be professionally recorded and evaluated for eligibility to the National Register of Historic Places or the NPS List of Classified Structures and Cultural Sites Inventory. Careful consideration will be given to the type and extent of property rights needed to ensure the preservation of cultural resources. Management alternatives for acquired or newly discovered cultural resources which are not covered by this plan will be evaluated on a case-by-case basis in consultation with appropriate NPS regional cultural resource specialists.

Management of Submerged Archeological Resources. When funds are available, historic research and a systematic archeological survey to locate, record, and evaluate submerged archeological resources will be conducted. The National Register form for the Offshore Reefs archeological district will be amended to reflect any new data, including district boundary revisions.

The park superintendent, in consultation with regional cultural resource specialists, may temporarily close selected highly significant or sensitive submerged archeological sites to public access until protection can be ensured; place mooring devices at selected nonsensitive sites (those sites most capable of withstanding intensive visitor use); and install unobtrusive submerged signs on highly sensitive or popular wrecks, informing diving visitors of the protected status of those resources (such signs would not be obvious from the surface of the water).

Interpretive programs will strive to foster public respect for and appreciation of the archeological values of shipwrecks and other submerged sites. Outreach programs--perhaps in cooperation with agencies such as Everglades National Park, Fort Jefferson National Monument, John Pennekamp Coral Reef State Park, the Florida Marine Patrol, and the Florida Division of Archives, History, and Records Management--may be implemented to inform boating visitors about the park. (The NPS Submerged Cultural Resources Unit is currently developing model interpretive programs for parks with shipwrecks and other underwater archeological resources.)

Selected park staff will receive training regarding significant underwater cultural resources and the methods and equipment used in illicit salvage operations. The training, which will be given annually or at the discretion of the superintendent, may be a cooperative undertaking with the agencies listed above and will be conducted by expert instructors from the NPS Southeast Archeological Center and Submerged Cultural Resources Unit or other appropriate organizations.

Regulations prohibiting the disturbance or destruction of submerged archeological resources will be vigilantly enforced by park personnel.

Management of Terrestrial Archeological Resources. If required, data recovery efforts will be programmed in timely advance of construction starts (a minimum of one fiscal year is recommended).

If possible, archeological surveys of the keys will be undertaken following hurricanes or other severe storms that may have removed impenetrable vegetation or washed up artifacts from offshore shipwrecks. The superintendent will notify the NPS Southeast Archeological Center that such storms have occurred.

Management of Collections. Two specific documents will be prepared to aid the management of collections. Acquisition of objects, documents, and collections will be guided by a scope of collections statement. Collections will be used in a beneficial but nonconsumptive manner, such as for scholarly study or interpretation, and will be kept in environmentally controlled storage or exhibit areas. Curation will be guided by a collection preservation guide.

Significant private collections (e.g., the Tannehill collection and Rebozo's Cocolobo Club materials) will be recorded, if possible.

Archeological site location records will be made available only to those with authorized managerial or professional interests in such resources, in accordance with the Archeological Resources Protection Act of 1979. Irreplaceable records, archives, objects, or collections will not be kept in the 500-year floodplain, in accordance with Executive Order 11988 ("Floodplain Management").

Oral History and Folklife Resources. The park will continue to explore cooperative arrangements with the American Folklife Center for professional guidance in interviewing, documenting, and archiving. The Florida state folklorist and the National Council for the Traditional Arts will also be consulted. Significant informants will be interviewed.

The park will interpret the folklife of the Conchs who once occupied the keys. In order to provide an adequate data base for such interpretation--thus discouraging stereotypical treatment--the National Park Service will encourage and support the study of regional folklife (see American Folklife Preservation Act of 1976).

Historic Structures. The remaining structures of the Cocolobo Club complex on Adams Key will continue to be adaptively used. The historic scene of the complex will be maintained, as possible, and additional structures will be kept to a minimum and will be harmoniously designed. In accordance with NPS policy, the Cocolobo structures will not be significantly altered before review by the NPS regional cultural resource specialists, approval of the regional director, and concurrence of the associate director for cultural resources, Washington, D.C.

Other historic structures in the park are in an advanced state of ruination and are not architecturally significant. They will be allowed to deteriorate naturally and will be managed as archeological resources.