



## United States Department of the Interior



FISH AND WILDLIFE SERVICE  
South Florida Ecological Services Office  
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August 31, 2005

Colonel Robert M. Carpenter  
District Engineer  
U.S. Army Corps of Engineers  
701 San Marco Boulevard, Room 372  
Jacksonville, Florida 32207-8175

Service Log No.: 4-1-05-I-8765  
Corps Application No.: SAJ-2004-7442(IP-TKW)  
Dated: July 26, 2005  
Project: Site 1 Impoundment  
Applicant: South Florida Water  
Management District  
County: Palm Beach

Dear Colonel Carpenter

This letter responds to your request dated July 26, 2005, for concurrence under section 7 of the Endangered Species Act of 1973, as amended (ESA) (87 Stat. 884; 16 U.S.C. 1531 *et seq.*). Your letter included excerpts of the final Project Implementation Report/Environmental Assessment prepared by the U.S. Army Corps of Engineers (Corps) for the Site 1 Impoundment Project. The Fish and Wildlife Service (Service) has reviewed the information presented.

### PROJECT DESCRIPTION

The proposed Site 1 Impoundment Project is a component of the Comprehensive Everglades Restoration Plan (CERP) and is one of the initially authorized CERP projects identified in legislation that was approved by Congress in the Water Resources Development Act of 2000 (Public Law 106-541). The project includes construction of a 1,660-acre impoundment on lands located in southern Palm Beach County (Figure 1), currently owned by the South Florida Water Management District (District). The proposed Site 1 Impoundment is designed to store up to 8 feet of water in the impoundment in two cells divided by an internal earthen levee. The minimum depth will be 6 inches. In addition, the proposed Site 1 Impoundment design includes between 110 and 140 acres of deep water refugia for fish. The exterior levees will be earthen and at least 16 feet in height. Additional information on height and configuration of the levees will be available during detailed design. A total of 1,101 acres of wet pasture will be converted to open water impoundment. Final design of the proposed Site 1 Impoundment and littoral shelves has not been completed; additional coordination may be required during detailed design. The site is located southeast of Arthur R. Marshall Loxahatchee National Wildlife Refuge (LNWR) adjacent to the Hillsboro Canal and L-40 in southeast Florida (Figure 2).



A Wetland Rapid Assessment Procedures analysis conducted on February 24, 2005, indicated 305.8 acres of melaleuca (*Melaleuca* spp.)/bay sawgrass, 180.1 acres of abandoned tree nursery, 26.2 acres of open water, 1,101 acres of wet pasture, and 160.6 acres of Australian pine (*Casuarina* spp.)/sawgrass currently occur on the proposed project footprint. These areas, totaling 1,773.7 acres, are considered jurisdictional wetlands by the Corps' Regulatory Division.

Vegetation on the site includes many exotic species such as Bahia grass (*Paspalum notatum*), Australian pine, and melaleuca. The Hillsboro Canal adjacent to the site is free of floating vegetation and the banks are vegetated with grasses, exotics, leather fern (*Acrostichum* spp.), cocoplum (*Chrysobalanus icaco*), pond apple (*Annona glabra*), sparse sawgrass (*Cladium jamaicense*), and common reed (*Phragmites* spp.). The Hillsboro Canal has been designated as a Class III water body by the Florida Department of Environmental Protection. A Class III water body has water quality criteria established to protect recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife (<http://www.dep.state.fl.us/water/surfacewater/index.htm>).

Wildlife species that may use the area, or have been observed on-site, include wading birds and waterbirds, including anhinga (*Anhinga anhinga*), limpkin (*Aramus guarana*), great blue heron (*Ardea herodias*), great egret (*Ardea alba*), tricolored heron (*Ardea tricolor*), white ibis (*Eudocimus albus*), and green heron (*Butorides striatus*), as well as other non-wading birds. Amphibians such as green tree frogs (*Hyla cenerea*), squirrel tree frogs (*H. squirella*), pig frogs (*Rana grylio*), southern leopard frogs (*R. utricularia*), legless sirens (*Siren lacertina*), and amphiuma salamanders (*Amphiuma means*) are also likely inhabitants of areas that remain wet for most of the year. Other herpetofauna including the swamp snake (*Seminatrix* spp.), water snake (*Nerodia* spp.), cottonmouth (*Agkistrodon piscivorus*), red bellied turtle (*Pseudemys nelsonii*), and mud turtle (*Kinosternon subrubrum*) may be present. Mammals such as the river otter (*Lutra canadensis*) and white-tailed deer (*Odocoileus virginianus*) commonly forage in wetlands and are known to utilize LNWR adjacent to the project site. Wildlife observed during the site visits include: white-tailed deer, armadillo (*Dasypus Novemcinctus*), and rabbit (*Oryzolagus cuniculus*); mosquito fish (*Gambusia affinis*), and sailfin molly (*Poecilia latipinna*) were observed in the canals on-site. Coyote (*Canis latrans*) scat was observed in the former nursery area.

The attachment to your July 26, 2005, letter is an excerpt of the final Project Implementation Report/Environmental Assessment. This document contains commitments made by the Corps to minimize the potential for adverse effects on listed species. The Corps will implement the *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Ogden 1990), *Habitat Management Guidelines for the Bald Eagle in the Southeast Region* (Service 1987), and the *Draft Eastern Indigo Snake Standard Protection Measures* (Service 2002). Pre-construction surveys for nesting Everglade snail kites will also be conducted in the vicinity of the site. Since a construction schedule has not yet been set, additional coordination regarding construction activities during nesting seasons may be necessary. The measures stated above will minimize

effects to listed species by providing the Corps with information on species presence prior to construction and allowing time to implement the protection measures identified by the Service.

#### THREATENED AND ENDANGERED SPECIES

Your July 26, 2005, letter provided determinations that the Site 1 Impoundment “may affect, but is not likely to adversely affect” the federally endangered wood stork (*Mycteria americana*), endangered Everglade snail kite (*Rostrhamus sociabilis plumbeus*), endangered Florida panther (*Puma [=Felis] concolor coryi*), endangered West Indian manatee (*Trichechus manatus*), threatened bald eagle (*Haliaeetus leucocephalus*), threatened Audubon’s crested caracara (*Caracara cheriway*), and threatened eastern indigo snake (*Drymarchon corais couperi*). Your letter also provided a determination of “may affect, not likely to adversely affect” for the American alligator (*Alligator mississippiensis*). The American alligator is listed due to its similarity of appearance to the American crocodile (*Crocodylus acutus*); therefore, the Service would only include this species in consultations if the American crocodile was also present. Since the American crocodile is not present, this species will not be further addressed in this letter.

On May 3, 2005, the Service provided a final Fish and Wildlife Coordination Act (FWCA) Report in accordance with the FWCA of 1958, as amended (48 Stat. 401; 16 U.S.C. 661 *et seq.*). This final FWCA Report contained information on the potential effects of the Site 1 Impoundment on listed species. The Corps used this and other available information to perform its analysis of the effects of the Site 1 Impoundment Project on federally-listed threatened and endangered species.

In our June 8, 2005, letter, we stated a thorough analysis of the effects of the action on listed species was needed and both operations and ecological monitoring plans were necessary for us to complete our review and provide either concurrence or request initiation of formal consultation. Operations and monitoring plans for the Site 1 Impoundment Project are still under development. The Service is available to participate in their development to ensure effects to listed species are adequately addressed. This letter does not include concurrence on those plans. Additional consultation on those plans may be necessary in the future.

Following is a summary of the potential effects construction of the proposed project may have on threatened or endangered species potentially present in the project area, as well as the Corps’ determinations for each species that may be affected.

#### West Indian manatee

Manatee access to the proposed Site 1 Impoundment is limited due to the presence of the G-56 salinity barrier structure downstream of the site. However, water quality improvements from the project could have a beneficial effect on manatee habitat downstream of the G-56. In addition, the Corps will implement the Standard Protection Measures for Manatees. Therefore, the Corps has determined the proposed project “may affect but is not likely to adversely affect” this species. The Service concurs.

### Florida panther

Panthers are rarely located east of Lake Okeechobee in Palm Beach County and the closest telemetry points are located to the west of Water Conservation Area (WCA) 2A. The site contains over 1,700 acres of degraded wetland habitat. The proposed project footprint does support prey species for the panther; however, denning sites appear unavailable. The project location is separated from the panther consultation area by the WCAs. The L-40 levee and Hillsboro Canal may also fragment the proposed Site 1 Impoundment location from more suitable habitat to the west. In addition, the proposed Site 1 Impoundment is located outside the panther consultation area (Figure 3) and the CERP Landscape Level Project Planning Siting Map for Panther Conservation (Figure 4) (Service 2004). The benefits to LNWR and WCA 2A should provide higher quality habitat for Florida panther prey species through improvements in tree island health and a reduction in the rate of expansion of cattails. Based on this information, the Corps has determined the proposed project “may affect but is not likely to adversely affect” this species. The Service concurs.

### Everglade snail kite

The proposed Site 1 Impoundment is located adjacent to LNWR and WCA 2A which are both designated Everglade snail kite critical habitat (Figure 5). No known nesting locations are documented in proximity to the site. However, Everglade snail kites will likely forage where appropriate perching habitat and apple snails (*Pomacea paludosa*) are found. Both native and exotic apple snails are consumed by Everglade snail kites. There are adequate perches for hunting by Everglade snail kites on the proposed project site.

Everglade snail kite foraging use of the site is probably low at present due to the lack of suitable habitat for apple snails. The water bodies on the site do not appear to have topography or water quality parameters that would support apple snails, although shells have been seen in the vicinity of some of the ditches on-site. The small pond on the west side of the proposed project site in proximity to the proposed Hillsboro Aquifer Storage and Recovery well location appears to be too deep and does not support emergent vegetation for apple snail egg deposition. Likewise, the larger borrow pit in the center of the site is believed to be deeper water (accurate depths have not been measured) and has little emergent shoreline vegetation. In addition, apple snail egg clusters were not observed during any of the site visits.

Exotic apple snails may be present at the proposed project location. These exotic apple snails are not dependent upon emergent vegetation to reproduce. The exotic apple snails are voracious eaters and may affect the amount of emergent vegetation in the proposed Site 1 Impoundment and associated littoral shelves.

Final design of the impoundment and the eastern boundary canal’s littoral shelves will influence whether use by either Everglade snail kites or apple snails would increase, decrease, or remain static. The selected plan is designed to store up to 8 feet of water in the impoundment. The minimum depth will be 6 inches. The design and slope of interior levee walls could affect the

ability of emergent vegetation to become established. Emergent vegetation is necessary for native apple snails to deposit their eggs and may provide a food source for exotic apple snails. The presence of emergent vegetation in the littoral shelves could, likewise, affect the ability of apple snails to colonize them.

If the Site 1 Impoundment or the littoral shelves on the eastern boundary provide habitat for apple snails after construction, snail kites may be attracted to the site. The amount of habitat provided cannot be determined until more information on the design of the littoral shelves is available. Likewise, the extent of habitat improvements, due to improved water quality and hydropattern, in LNWR and WCA-2A cannot be quantified at this time although it is likely improvements in the hydroperiods in these areas would improve the quality of designated Everglade snail kite critical habitat.

Construction activities associated with the project may disturb Everglade snail kites in adjacent natural areas. The extent of disturbance would be dictated by the timing and duration of construction. Information on timing of construction is unavailable at this time. The Service is available to review the construction schedule, when established, to ensure potential Everglade snail kites nesting in the vicinity, are not at risk.

The Corps will perform pre-construction surveys for the Site 1 Impoundment Project. The Service has recommended that an inner 425-foot (130-meter) protective zone around a nest site will reduce disturbance to birds on the nest, based on known flushing distance (Rodgers and Schwikert 2003). A 1,640-foot (500-meter) area surrounding the nest should be protected from habitat disturbances. These surveys will allow the Service to ensure construction activities do not occur in proximity to nesting Everglade snail kites and, therefore, will not disturb them. Based on this information, the Corps has determined the proposed project “may affect but is not likely to adversely affect” this species. The Service concurs.

#### Wood stork

The proposed Site 1 Impoundment is adjacent to the LNWR and is approximately 5.3 miles from the nearest wood stork rookery at LNWR. The proposed Site 1 impoundment is within the core foraging area (18.6 miles) of this LNWR wood stork rookery. The proposed Site 1 Impoundment location currently provides opportunities for wood stork foraging. The wetlands present are degraded and contain exotic vegetation; however, the creation of an impoundment will eliminate wood stork use of those wetlands in the future. The Corps plans to operate the impoundment to maintain approximately 6 inches of water in the cells. This type of operation would minimize the potential to mobilize contaminants and provides habitat for fish species. The proposed Site 1 Impoundment design also includes between 110 and 140 acres of deep water refugia for fish. With the presence of deep water refugia and fluctuations in water levels, the Site 1 Impoundment could provide foraging opportunities for wood storks and other wading birds in the vicinity of the site after construction and during operations, especially during low water or drought conditions. It is unlikely wood storks would nest or roost within the proposed

impoundment footprint because there will not be suitable nesting and roosting habitat structure post-construction.

A total of 1,101 acres of wet pasture will be converted to open water impoundment which will provide limited foraging opportunities for this species. Littoral shelves present in the seepage canal on the eastern boundary of the project should provide foraging opportunities for wood storks. Design of the seepage canal is incomplete; therefore, we are unable to determine the amount of the new foraging areas created through project construction.

In addition to the direct habitat conversion, prolonged construction may disturb the foraging patterns of nesting wood storks in LNWR and WCA 2A locations. This effect might be avoided by performing construction activities from June through November when wood storks are not nesting. The Corps will implement the roosting, feeding, and nesting restrictions in the *Habitat Management Guidelines for the Wood Stork in the Southeast Region* (Ogden 1990) to minimize the potential effects of the proposed project on this species. The guidelines implemented will depend on timing of construction (*i.e.*, nesting season guidelines would not be necessary if construction takes place outside the nesting season). Based on the commitment to implement relevant restrictions, the Corps has determined the proposed project “may affect but is not likely to adversely affect” this species. The Service concurs.

#### Bald eagle

The bald eagle is protected under the ESA, the Bald and Golden Eagle Protection Act (16 U.S.C. § 668 *et seq.*), and Migratory Bird Treaty Act (40 Stat. 755; 16 U.S.C. § 701 *et seq.*). Noise and nighttime lighting, should they be used during construction activities, could alter bald eagle foraging patterns in waterbodies in the vicinity of the proposed Site 1 Impoundment including the Hillsboro Canal, LNWR, and WCA 2A. The Service consulted the Florida Fish and Wildlife Conservation Commission’s bald eagle nest site locator (<http://wld.fwc.state.fl.us/eagle/eaglenests/Default.asp>). A search in Palm Beach County indicated no known nest locations are present in the vicinity of the Site 1 Impoundment Project. All known nest locations in Palm Beach County are a minimum of 20 miles north of the site. The proposed Site 1 Impoundment also does not have large trees capable of holding bald eagle nests and no evidence of bald eagle nests in man-made structures was identified during site visits. This information indicates disturbance during construction and operation of the Site 1 Impoundment to nesting eagles is unlikely.

The Hillsboro Canal likely provides foraging opportunities for bald eagles. Because up to 8 feet of water would be stored in the impoundment, the construction and operation of the proposed Site 1 Impoundment might increase bald eagle use of the area, particularly if the littoral shelves described in the Water Preserve Areas Feasibility Study (Corps 2001) are incorporated into final design.

Although no active or inactive bald eagle nest sites are located in proximity to the proposed project (the nearest nest location is greater than 20 miles to the northwest of the site), the Corps will implement the *Habitat Management Guidelines for the Bald Eagle in the Southeast Region*

(Service 1987). Bald eagle nesting season in the southeastern United States is from October 1 to May 15. To reduce the potential effects of human-related activities on bald eagles, construction activities should be planned between May 16 and September 30 outside the primary and secondary zones of bald eagle nests. Based on this information, the Corps has determined the proposed project “may affect but is not likely to adversely affect” the bald eagle. The Service concurs.

#### Audubon’s crested caracara

The pasture area on the proposed Site 1 Impoundment site does provide a large expanse of open pasture area preferred by Audubon’s crested caracara; however, small stands of cabbage palms or other suitable nest trees are lacking. Known nest sites are not located in proximity to the proposed Site 1 Impoundment or any location in Palm Beach County (Layne 1978, Sprunt 1954, Stevenson 1976, Service 1989, Service 1999). Construction of the impoundment would eliminate any potentially suitable habitat for the caracara. The Corps is planning to include Audubon’s crested caracara in the protocol for pre-construction surveys and will contact the Service should adults or nests be located on or near the site. The Corps has determined the proposed project “may affect but is not likely to adversely affect” this species. The Service concurs.

#### Eastern indigo snake

Construction of the proposed Site 1 Impoundment and inundation of upland habitats may affect eastern indigo snake habitat. However, levees constructed as part of the proposed project can provide habitat for eastern indigo snakes after completion of construction. Since eastern indigo snakes use a mosaic of upland and wetland habitats, the entire footprint of the site, approximately 1,800 acres, might be considered suitable eastern indigo snake habitat. The abandoned tree nursery affords areas for prey to reproduce and signs of small mammals were found throughout the site. The site dries out after the wet season providing a large expanse of open pasture with pockets of wetlands. The size and configuration of the internal and boundary levees is unknown at this time, therefore, the amount of upland habitat at various times of the year and at various water levels remaining post-construction cannot be determined. In addition to the levee habitat, eastern indigo snakes will be able to use the littoral shelves during dry down as additional foraging habitat.

Conversion of the existing pasture and forested areas to open water habitat would result in a loss of habitat for the eastern indigo snake. However, construction of the proposed Site 1 Impoundment will also result in removal of exotic vegetation. Construction of additional access roads and associated vehicular use could increase risk to the eastern indigo snake. In our final FWCA report, we recommended all access and levee roadways be posted at 25 mph. The Corps has incorporated that into their project design and analysis on the effects of the proposed project on eastern indigo snakes. The Corps has also agreed to post educational information on the

eastern indigo snake at all educational kiosks on-site and to implement the Service's *Draft Eastern Indigo Snake Standard Protection Measures* (Service 2002).

Based on this information, the Corps has determined the proposed project "may affect but is not likely to adversely affect" the eastern indigo snake. The Service concurs.

If modifications are made to the project, additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary. Please contact Jane Tutton at 772-562-3909, extension 235, if you have any questions regarding this letter. The cooperation of your staff and the staff of the local sponsor, the District, is greatly appreciated.

Sincerely yours,



James J. Slack <sup>For</sup>  
Field Supervisor  
South Florida Ecological Services Office

cc:

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Corps, West Palm Beach, Florida (Tori White)

DEP, Tallahassee, Florida (Greg Knecht)

DEP, West Palm Beach, Florida (Dianne Crigger)

District, West Palm Beach, Florida (Millie Radzikhovsky, Kathy Collins)

EPA, Jacksonville, Florida (Eric Hughes)

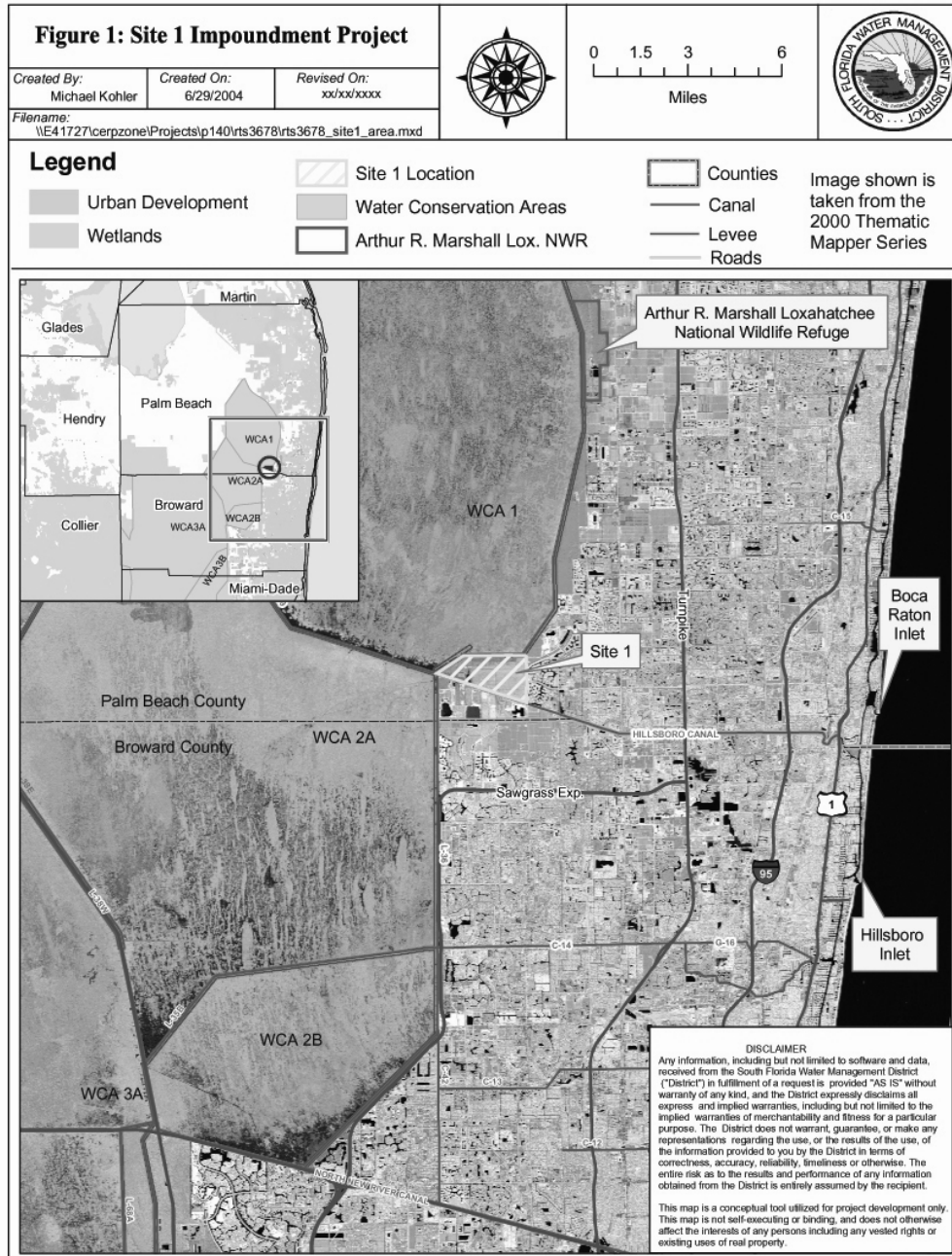
FWC, Vero Beach, Florida (Joe Walsh, Yvette Alger)

Service, Jacksonville, Florida (Miles Meyer)

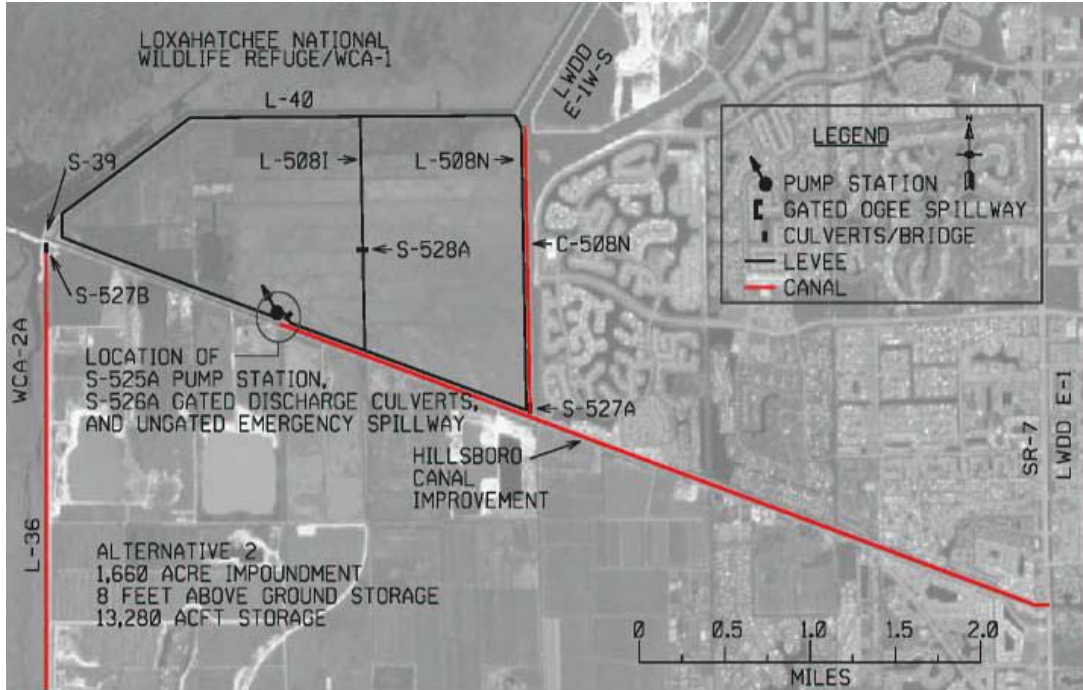


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**Figure 1.** Site 1 Impoundment location in Palm Beach County, Florida. This CERP project will store water for urban use to reduce urban demands on water from the natural system.



**Figure 2.** Site 1 Impoundment selected plan and infrastructure. The selected plan includes additional and replacement structures, inflow pumps, two impoundment cells, a levee system with seepage control, and improvements to the Hillsboro Canal.

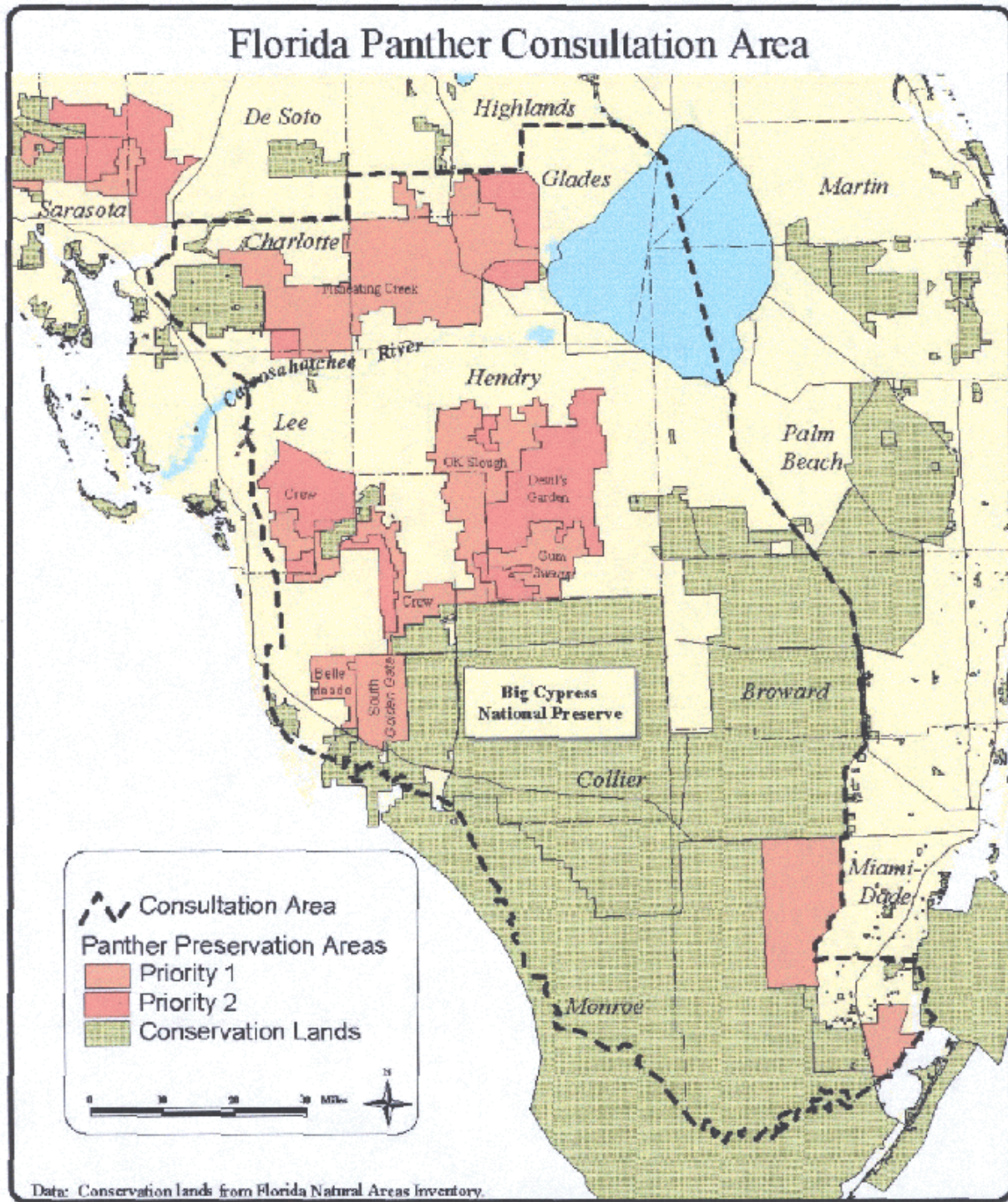
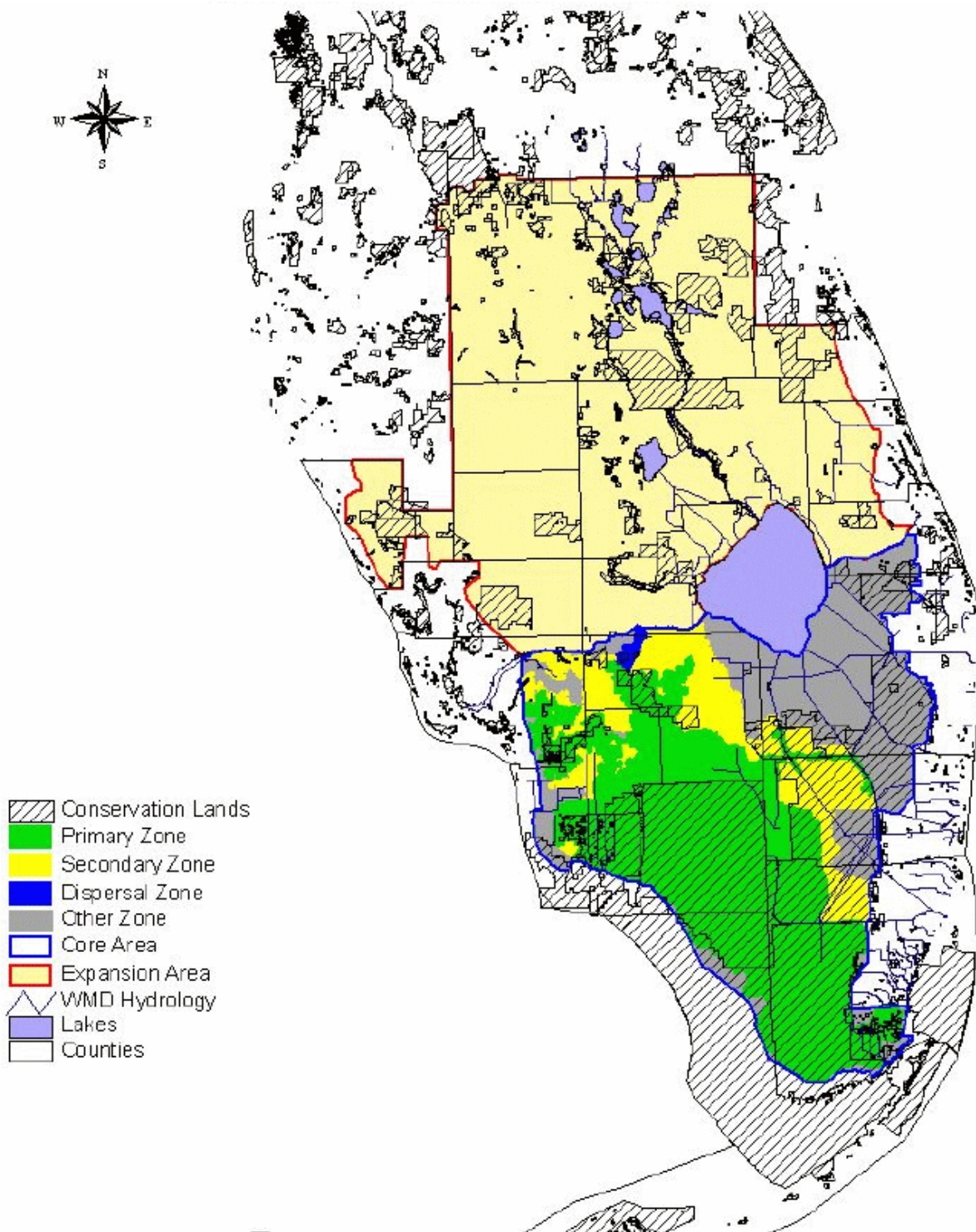
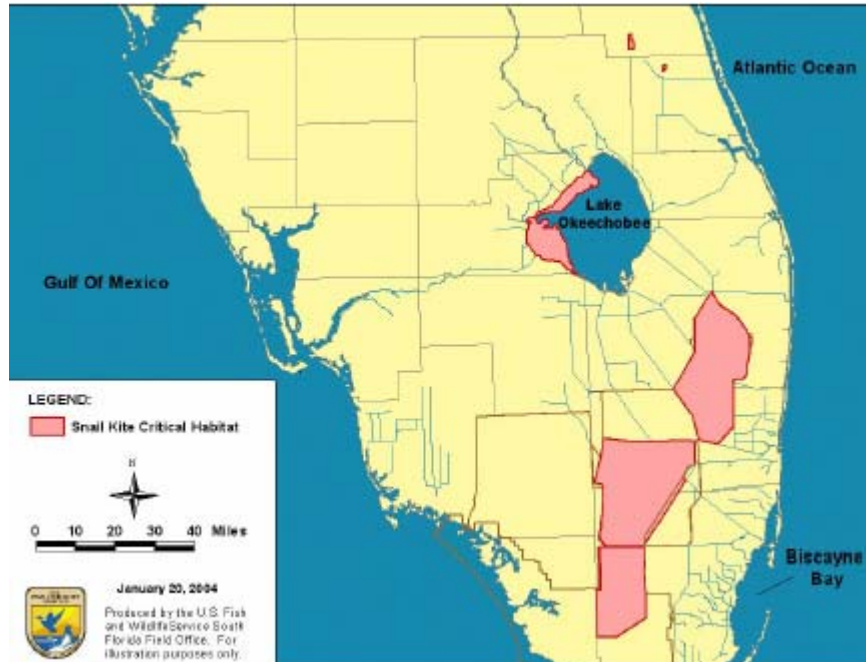


Figure 3. Florida panther consultation area (Service 2000).



**Figure 4.** Comprehensive Everglades Restoration Plan Landscape Level Project Planning/Siting Map for Panther Conservation



**Figure 5.** Everglade snail kite designated critical habitat.