

United States Department of the Interior

FISH AND WILDLIFE SERVICE South Florida Ecological Services Office 1339 20th Street Vero Beach, Florida 32960



October 2, 2014

Julie Dick Everglades Law Center, Incorporated 1172 South Dixie Highway, Suite 246 Coral Gables, Florida 33146

Dear Ms. Dick:

Thank you for your letter dated August 8, 2014, regarding a dead American crocodile (*Crocodylus acutus;* crocodile) recently found within the Cooling Canal System (CCS) at Florida Power and Light's (FPL) Turkey Point Power Plant. The U.S. Fish and Wildlife Service (Service) appreciates your concern and attention to the issue of crocodile recovery and conservation. With respect to Turkey Point Power Plant, you noted the waters of the CCS have experienced an increase in temperature and salinity, a bloom of cyanobacteria (commonly referred to as "blue-green algae"), and that FPL has begun using chemicals to treat the outbreak of cyanobacteria. Based on these factors, you recommended the death of this crocodile be highly scrutinized by the Service and suggested a necropsy be conducted to determine the cause of death. The Service respectfully disagrees with your recommendation on this mortality; however, we support your recommendations that monitoring continues at the facility.

The Service has been closely following the conditions at the CCS and FPL's treatment of cyanobacteria bloom. We have had detailed discussions with FPL and the Nuclear Regulatory Commission (NRC) regarding improving the water quality at the CCS and treating the cyanobacteria bloom in a manner that does not negatively affect the crocodile or other fish and wildlife in the area. Moreover, the Service has recently concluded an informal consultation with the NRC, per requirements of the Endangered Species Act of 1973, as amended (Act) (87 Stat. 884; 16 U.S.C. 1531 *et seq*), for FPL's request to amend their operation license for existing nuclear power units 3 and 4 at the Turkey Point Power Plant. The license amendment increases the Ultimate Heat Sink (UHS) temperature limit for the CCS from 100 degrees Fahrenheit (°F) to 104 °F (Service 2014, see enclosure).

Crocodile mortalities occur for a variety of reasons (*e.g.*, intra-specific aggression, disease *etc.*) and it is not uncommon to occasionally observe a dead crocodile within parts of the crocodile's range in south Florida or the CCS. The Service agrees the CCS provides a harsh environment for crocodiles. The less than average precipitation within recent years has contributed to an increase in salinity, temperature, and turbidity of the water, and the bloom of cyanobacteria in the CCS. At times during the year, sections of the CCS may exhibit salinities and water temperatures above the known limits of tolerance for the crocodile. Crocodiles respond to high water temperatures by moving into areas of lower temperature within or outside of the cooling canal system. However, to date, FPL's crocodile monitoring suggests recent increases in water

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temperature and salinity have not altered crocodile use of the CCS. Ongoing monitoring of crocodile movement and body condition in the CCS will provide valuable indicators to whether the changes in environmental conditions are negatively affecting the local population.

The Service's evaluation of the recent crocodile mortality is that it was unlikely the result of the increased salinity and temperature in the CCS or the current treatment of cyanobacteria by FPL. Based on our knowledge of crocodilian biology and the fact that only one deceased crocodile has been observed, the Service does not believe that a necropsy or further testing to attempt to evaluate the cause death of the crocodile observed in the CCS is necessary at this time. Furthermore, the collection location of the crocodile referenced in your letter, at the intake well, makes it impossible to determine where in the CCS the crocodile died and what environmental stressors, if any, may have been present at the time of mortality. The decomposed state of the crocodile creates further challenges when considering whether an in-depth necropsy would provide causal information. However, we are investigating options to establish a necropsy protocol for Turkey Point Power Plant so that should a crocodile mortality indicate a questionable cause a death in the future, FPL and the Service will be better prepared to implement the proper specimen processing.

Regardless of the cause of this mortality, the Service agrees the water quality conditions in the CCS need to be improved in order for the CCS to support the long-term viability of the local crocodile population. As a long-term solution to water quality, FPL is requesting permission from the Florida Department of Environmental Protection (DEP) to install six new artesian wells at the Turkey Point Power Plant and add up to 14 million gal per day of brackish water from the Floridian aquifer into the CCS. The periodic (as needed) introduction of brackish ground water, in combination with natural rainfall, is anticipated to reduce the salinity of the water in the CCS to approximately 34 parts per thousand (ppt; the salinity of the water in the CCS when it was originally built and the current salinity of Biscayne Bay adjacent to the Turkey Point Power Plant), reduce the likelihood of future cyanobacteria blooms, and prevent the seepage of hypersaline water into Biscayne Bay. Modeling conducted by FPL's consultant and the South Florida Water Management District indicate the salinity threshold of 34 ppt will be met in approximately 2 years. FPL will continue to conduct long-term sampling of water within the CCS to ensure the salinity threshold and water quality are maintained.

Please be assured we are keeping a close watch on the situation at the CCS. FPL will continue their current crocodile monitoring at the Turkey Point Power Plant to evaluate growth, survival, abundance, and spatial distribution of the crocodiles. This monitoring began following the recent permitted uprating of the nuclear power units (*i.e.*, modifications made to increase power production by 20 percent to meet current and future demand). FPL has also committed to an additional 2 years of crocodile monitoring following approval of the license amendment by the NRC (Service 2014) and will provide a report to the Service detailing the results of the monitoring on a semi-annual basis. Should there be any changes to the practices at Turkey Point Nuclear Power Plant that may affect crocodiles or should any new information indicate current practices are harming crocodiles; the Service will recommend NRC re-initiate formal consultation under the Act. Thank you for your interest in protecting federally listed species and fish and wildlife

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resources. Should you wish to coordinate a meeting with the Service to discuss your concerns further or if you have any additional questions regarding this project, please contact John Wrublik at 772-469-4282.

Sincerely yours,

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Craig Aubrey Field Supervisor South Florida Ecological Services Office

Enclosure

cc: electronic only Biscayne National Park, Homestead, Florida (Bryan Faehner) Biscayne National Park, Homestead, Florida (Sarah Bellmund) Corps, Palm Beach Gardens, Florida (Garett Lips) FPL, Juno Beach, Florida (Stacy Foster) FWC, Tallahassee, Florida (FWC-CPS) NRC, Washington, D.C. (Briana Grange) NOAA Fisheries, West Palm Beach, Florida (Brandon Howard) Service, Davie, Florida (Laura Brandt) Service, Miami, Florida (David Pharo)

LITERATURE CITED

Eisler, R. 1998. Copper hazards to fish, wildlife, and invertebrates: a synoptic review. U.S. Geological Survey, Biological Resources Division, Biological Science Report USGS/BRD/BSR--1997-0002. 98 pp.