

**FPL TURKEY POINT UNITS 6 & 7
THREATENED AND ENDANGERED SPECIES
EVALUATION AND MANAGEMENT PLAN**

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	<u>SECTION</u>	<u>PAGE</u>
1	1.0 BACKGROUND.....	1
2	2.0 PROJECT	2
3	3.0 DESCRIPTION OF MANAGEMENT PROGRAM	5
4	3.1 Maintenance and Preservation of Nesting, Basking, and Nursery Habitat	6
5	3.2 Constraints on Traffic, Maintenance, and Construction.....	8
6	3.3 Population Monitoring	9
7	3.4 Public Outreach and Education	12
8	4.0 STATUS OF LISTED SPECIES AND CRITICAL HABITAT	12
9	4.1 American Crocodile	12
10	4.2 Eastern Indigo Snake.....	13
11	4.3 Wood Stork	13
12	4.4 Florida Manatee.....	14
13	4.5 Listed Bird Species.....	14
14	4.6 Florida Panther	14
15	4.7 Species in the Vicinity.....	15
16	4.8 Species Likely to not be Affected	15
17	4.9 Species Likely to be Affected	16
18	5.0 ENVIRONMENTAL BASELINE – AMERICAN CROCODILE	16
19	6.0 STATUS OF AMERICAN CROCODILE WITHIN PROJECT ACTION AREA	18
20	7.0 CONSERVATION AND MONITORING PLAN	19
21	8.0 EFFECTS OF THE ACTION	21
22	9.0 MITIGATION PLAN.....	22
23	10.0 CUMULATIVE EFFECTS	23
24	11.0 CONCLUSIONS	24
25	12.0 REFERENCES	25

(continued)

LIST OF FIGURES

- Figure 1 Units 6 & 7 Site Location and Everglades Mitigation Bank
- Figure 2 Cooling Canals and Adjacent Canals
- Figure 3 American Crocodile Designated Habitat Boundary
- Figure 4 Units 6 & 7 Aerial Plot Plan
- Figure 5 Crocodile Nest Locations 1978-2007
- Figure 6 Crocodile Nest Locations 2008
- Figure 7 Crocodile Sanctuaries in the Cooling Canal System
- Figure 8 Conceptual Crocodile Access Road Underpass Locations
- Figure 9 Conceptual Crocodile Access Road Underpass
- Figure 10 Panther radio telemetry data 1981-2008

APPENDICES

- Appendix A Florida Fish and Wildlife Conservation Commission
Special Purpose Permit No. WX06467a

1.0 BACKGROUND

The FPL Turkey Point plant property is located on the shore of Biscayne Bay in Miami-Dade County, Florida, approximately 25 miles south of Miami, 8 miles east of Florida City, and 9 miles southeast of Homestead, Florida (Figure 1). Access to the Turkey Point Plant is primarily via SW 344th Street/Palm Drive from its intersection with U.S. Highway 1. The Turkey Point Plant lies west of the boundary of the BNP, which extends along the shoreline both north and south of the generating facilities. The BNP headquarters are located approximately two miles north of the Turkey Point Plant generating facilities. The ENP is approximately 13 miles southwest of the Site.

Construction of the Turkey Point Plant in 1964 required the filling of mangrove habitat to raise the elevation of the site. Initially, the plant was designed with a once-through cooling system, which discharged warm water to Biscayne Bay. In order to avoid thermal impacts to the biota of Biscayne Bay, the once-through cooling design was abandoned in favor of the 5,900-acre closed-loop cooling canals that currently serve Units 1 through 4 for cooling and all five existing units as an industrial wastewater facility. Initially, a series of low-salinity test cooling canals was constructed in 1969, comprised of five canals and associated berms. The other cooling canals were completed in 1974; the canals of the existing industrial wastewater facility are approximately 5 miles long, 2 miles wide, and consist of 32 discharge and 7 return canals totaling 168 miles in length. Of the 5,900 acres contained within the cooling canals/industrial wastewater facility, approximately 1,500 acres are berms, which separate the canals and were created from spoils material from canal construction.

The majority of the cooling canals and the adjacent canals [the Interceptor Ditch (ID), L-31E Canal, the Sea Dade Canal (C-107) and Model Land Canals] are included within the area designated as critical habitat for the American crocodile (*Crocodylus acutus*) (Figures 2 and 3), which is classified as threatened by the USFWS and endangered by the FFWCC.

Adult crocodiles were first observed at Turkey Point in 1976 and nesting was first documented upon berms within the cooling canals in 1978 (Mazzotti and Brandt, 1994). As a result, FPL developed a crocodile management plan, which focused on the creation and enhancement of habitats for crocodile nesting, as well as monitoring the reproductive success, growth, and survival of hatchlings. FPL's efforts have resulted in a significant increase in the number of crocodile nests and hatchlings in the cooling canals over nearly three decades, from 2 nests and 30 hatchlings in the late 1970s to 28 known nests and 520 hatchlings in 2008. The nesting habitat maintained by FPL within the cooling canals and industrial wastewater facility has been responsible for virtually the entire increase in

population of the American crocodile reported in South Florida over the past 25 years (Tucker et al., 2004). In addition to the American crocodile, the Eastern indigo snake has been observed on FPL property south of the cooling canals/industrial wastewater facility within the EMB. Other threatened and/or endangered species are known to occur in the vicinity of the Turkey Point plant property.

2.0 PROJECT

FPL is seeking to construct and operate two approximately 1,100- MW (net) nuclear units on the existing approximately 11,000-acre Turkey Point plant property located in unincorporated Miami-Dade County, Florida, and referred to as the Project. The Project will include the two approximately 1,100-MW (net) nuclear units, and other associated facilities. Turkey Point Unit 6 is expected to be in commercial operation in 2018, and Unit 7 is expected to be in commercial operation in 2020.

The approximately 300-acre Site is entirely located within the existing closed-loop cooling canals and industrial wastewater facility. It includes:

- the Turkey Point Units 6 & 7 plant area, and
- the proposed laydown areas to the west (including the remnant cooling canal that will be filled).

Four steam electric generating units (two oil/gas-fired, two nuclear) and one natural gas-fired combined cycle electric generating unit presently operate at the existing plant. The plant is adjacent to the approximately 13,000-acre EMB, also owned by FPL.

Figure 4 presents the Site, associated facilities and areas used during construction. Associated facilities and areas used during construction contained within the Turkey Point plant property include laydown and parking areas, an access road on SW 359th Street, a nuclear administration building, training building and parking area, an FPL reclaimed water treatment facility and pipelines, radial collector wells and pipelines, an equipment barge unloading area, a heavy haul road from the existing barge turning basin to the Site, ~~an FPL owned fill source~~, spoils areas, potable water pipelines, transmission corridors exiting the property to the north and west and roadway improvements. The western transmission corridor extends from the Units 6 & 7 Site across the northern portion of the cooling canals; two structures upon cooling canal berms and associated access bridges from SW 359th Street will be located so as to avoid crocodile nesting areas.

The Site is located within the geographically defined boundaries of the USFWS-designated critical habitat for the American crocodile. Although the cooling canals and industrial wastewater facility are a beneficial environment for the American crocodile, the habitat within the Site is limited due to a lack of suitable nesting substrate, altered hydrology, and limited food sources. The majority of the Site is comprised of semi-barren hypersaline mudflats. As a portion of the industrial wastewater facility of the existing Turkey Point Plant, this mudflat experiences routine and drastic alterations in hydroperiod. Vegetative cover is sparse due to the high salinity and drastic fluctuations in water levels.

Two remnant canals bisect the mudflat area, previously utilized as part of the historic intake/discharge cooling water system of the Turkey Point Plant prior to construction of the closed-loop cooling canals. These remnant canals no longer connect to Biscayne Bay and are not influenced by tidal fluctuations. Mangrove heads exist along historical tidal channels within the surrounding mudflats.

The historical tidal connections to Biscayne Bay were severed during construction of the cooling canals and industrial wastewater facility, which has resulted in hypersaline conditions, altered hydrology, and elevated temperatures. Whereas undisturbed tidal creeks of Biscayne Bay typically contain dense mangrove growth along the entire creek channel, the channels within the Site contain sparse pockets of stunted mangroves, likely due to stress caused by the hypersaline conditions and drastic fluctuations in water levels.

The laydown area in the western portion of the Site contains approximately 12 acres of open water associated with an active cooling canal (Discharge Canal 1). This area experiences highly variable hydrology resulting from operation of the existing Turkey Point Plant. Due to the elevated temperature, high salinity, and altered hydrology, much of the substrate is bare sediment. Approximately 17 acres of dwarf mangroves and dead buttonwood are located near the shoreline of the open water/discharge Canal 1 area, stunted due to elevated salinity and temperature, as well as lack of tidal flushing with nutrient-rich waters from Biscayne Bay. The extreme low temperatures experienced in 1989 and the impact of Hurricane Andrew in 1992 further stressed the vegetative community within the Site, resulting in high mortalities, particularly of buttonwood.

Construction on the Site will impact a total of approximately 250 acres of wetlands associated with the mudflats, ditches, open water, mangrove heads, dwarf mangroves, and wetland spoil areas. A breakdown of the wetland impacts by habitat and their potential use by crocodiles is presented in the table below:

Habitat	Acres	Area (%)	Wetland Impact Acreage	Potential Crocodile Use
Remnant canals	8.4	2.9%	8.4	Foraging, Conveyance
Open water	12.0	4.1%	12.0	Foraging, Conveyance
Mangrove heads	12.2	4.2%	12.2	Foraging
Dwarf mangroves	16.9	5.8%	16.9	Foraging
Mud flats	187.5	64.5%	187.5	Basking
Wetland spoils areas	9.1	3.1%	9.1	Basking
Upland spoil areas	7.8	2.7%	0	Basking
Canals	16.7	5.7%	4.1	Foraging, Conveyance
Fill areas/roadways	20.2	6.9%	0	N/A
Total	290.7	100%	250.2	

Source: Miami-Dade County GIS Data, 2007.

Spoils material removed from the Site will be placed upon approximately 200 acres of existing spoils areas on the southern boundary of the cooling canals and along the existing berms of the Grand Canal. The spoils areas were specifically selected due to their lack of suitable nesting substrate conditions for the American crocodile. No crocodile nesting has been historically recorded within any of the spoils areas.

Impacts to the American crocodile will be avoided prior to, during, and following construction activities. Historical monitoring of the crocodile population within the cooling canals indicates occasional observations of basking crocodiles along the perimeter of the Site, but no utilization of the Site for nesting. Nevertheless, as the Site does contain potential habitat, FPL will continue enhancement activities designed to improve crocodile habitat through creation of additional juvenile freshwater refugia areas upon selected berms and vegetative restoration. In addition, to increase areas of suitable nesting habitat within the cooling canals, FPL will continue to conduct substrate

enhancement activities upon selected berms that have not historically supported crocodile nesting due to lack of preferred soil conditions. FPL will also create a system of wildlife underpasses along the primary access road in order to facilitate safe passage between the cooling canals/industrial wastewater facility and the test cooling canals (see SCA Section 3.2).

3.0 DESCRIPTION OF MANAGEMENT PROGRAM

This section discusses the existing Turkey Point crocodile management program, the conservation and management plan for the Project, the status of the American crocodiles within the Site, effects of the action, mitigation activities, and cumulative effects. FPL initiated a formal comprehensive crocodile management program for the industrial wastewater facility in the early 1980s, consisting of a combination of:

- Habitat preservation and creation of habitat suitable for crocodile nesting and basking;
- Establishment of exclusion zones at known nesting sites (nest sanctuaries);
- Daytime and nighttime monitoring surveys to document nesting activity and utilization of the cooling canals/industrial wastewater facility;
- Capture and tagging of hatchlings using American Veterinary Identification Devices (AVID) microchip technology;
- Relocation of hatchlings to low-salinity habitat during early life stages to increase survival; and
- Recapture, monitoring, and release of individuals to document growth and survival.

In addition to the monitoring and habitat enhancement activities that directly benefit the crocodile, FPL also has enacted an extensive crocodile awareness program to educate the public as to the status of the crocodile in South Florida. All of these existing activities will continue throughout the construction and operation phases of the new Units 6 & 7.

The management program has been extremely successful, evidenced by the annual increase in active nests and the number of hatchlings produced. The number of successful nests has increased dramatically, with an average of 0.7 additional successful nests per year from 1978 to 1999 (Tucker et al., 2004). Additionally, the number of hatchlings has increased at a rate of 13 (± 2) per year within the Turkey Point plant property (Tucker et al., 2004). Nest locations documented between 1978 and 2007 are illustrated in Figure 5. Not all of these nests are currently active. Nest locations documented during the 2008 survey are illustrated in Figure 6.

FPL administers the site in accordance with a management program for crocodiles that was initially prepared in 1983 and revised in 1991 and 2007. The management program addresses:

- Constraints on vehicular traffic within the cooling canals/industrial wastewater facility at night and during critical periods of the nesting season;
- Constraints on road maintenance and construction activities at night, during critical periods of the nesting season, and within known crocodile crossing sites;
- Identification and avoidance of nest site sanctuaries;
- Population monitoring program (nests, hatchlings, hatchling growth, and survival); and
- Training requirements for site personnel handling hatchlings and using equipment in the area.

FPL also has been active in removing exotic plants, particularly Brazilian pepper (*Schinus terebinthifolius*) and Australian pine (*Casuarina equisetifolia*), as recommended by the USFWS (South Florida Multi-Species Recovery Plan, 1999). FPL is currently implementing many of the Plan's recommendations for the American crocodile, including:

- Conducting a long-term monitoring program;
- Conducting a mark-recapture program to quantify growth and survival;
- Protecting nesting, basking, and nursery habitat; and
- Maintaining current nesting sites.

The following outlines the management and monitoring programs for the American crocodile at the Turkey Point Plant.

3.1 Maintenance and Preservation of Nesting, Basking, and Nursery Habitat

Construction of the cooling canals, industrial wastewater facility and associated berms created artificial nesting, basking, and nursery habitat for crocodiles in 1974. Since nesting was discovered within the cooling canals in 1976, FPL has enacted a series of management activities to improve the quality of habitat available to the crocodile and preserve known nesting sites. Natural nesting habitat includes sites with sandy shorelines or raised marl creek banks adjacent to deep water (USFWS, 1999). Berms within the cooling canals/industrial wastewater facility consist of spoils materials dredged from the construction of the adjacent canals, including peat and marl soils that are preferred

nesting substrate. Success of nests in South Florida is dependent primarily on the maintenance of suitable egg cavity moisture throughout incubation (USFWS, 1999), as well as the effects of predation. Flooding or desiccation can result in nest failure. The consistent water levels present within the industrial wastewater facility increase the percentage of successful nests.

Encroachment of exotic vegetation has degraded thousands of acres of wildlife habitat in South Florida, primarily Australian pine, melaleuca (*Melaleuca quinquenervia*), and Brazilian pepper (USFWS, 1999). Control of exotic vegetation is crucial for the creation and preservation of crocodile nesting and basking habitat. Basking habitat is characterized by raised, relatively open areas with surrounding native vegetation. Since exotic species often regrow quickly and invade new areas, periodic efforts to control exotic vegetation are required to maintain suitability of nesting sites. During the 1980s, FPL evaluated mechanical means, rather than chemical herbicides, to control vegetation within the canal berms. The “Berm Mower,” a wide-track bulldozer that pulls a chopping device, was adopted for use except at areas designated as crocodile nesting sanctuaries. This system encourages grass growth and discourages tree growth, opens potential nesting sites, and allowed FPL to discontinue use of chemical herbicides in 1992.

Although American crocodiles have salt glands that excrete excess salt and physiological mechanisms to reduce water loss (Dunson, 1970, 1980, 1982; Evans and Ellis, 1977; Dunson and Mazzotti, 1989; Mazzotti, 1989), maintenance of an osmotic balance requires access to low-salinity water for juveniles (USFWS, 1999). Hatchling crocodiles are particularly susceptible to osmoregulatory stress and may need to have water with salinity < 4 ppt available at least once per week to increase growth until reaching approximately 200 grams in weight (Mazzotti et al., 1986; Mazzotti and Dunson, 1984). Frequent rainfall typically provides a sufficient amount of freshwater, although hatchlings occasionally die during periods of low rainfall. To increase hatchling survival, FPL releases some tagged hatchlings to low-salinity environments, such as the depressional areas on top of cooling canal berms designed to retain freshwater and provide refugia for juveniles.

Existing nesting sites and newly discovered successful nesting sites are protected as sanctuaries, and are not cleared or disturbed in any way. All nest site sanctuaries extend the entire width of the berm and typically are 100 meters in length. The boundaries of each sanctuary are clearly marked with 14-by 15-inch signs that state “KEEP OUT CROCODILE NESTING AREA” to inform maintenance personnel of their locations (Figure 7). Maintenance activities, including clearing, burning, or dredging within 300 yards of any nest sanctuary during the nesting season (March 1 to September 30)

must be coordinated by the FPL Land Utilization Site Superintendent in consultation with the FPL Senior Environmental Specialist.

3.2 Constraints on Traffic, Maintenance, and Construction

Disturbance is one of the major factors adversely affecting the success of crocodiles in South Florida, either directly through road kills or indirectly, by intimidating individual crocodiles from returning to their preferred habitat (Ogden, 1978; Kushlan, 1988). Disturbance has the greatest effect during the nesting season when females make frequent trips to the nest. Observations suggest that repeated close human presence may cause female crocodiles to abandon nests or relocate nest sites (Kushlan and Mazotti, 1989).

Traffic, maintenance, and construction activity during reproductive periods may discourage courtship and mating within the cooling canals and surrounding canals. Nighttime traffic may result in abandonment of nests or death of hatchling crocodiles dispersing from the cooling canals to the ID (Wilcox and Mazzotti, 1990). Blocking crocodile berm-crossing points impedes travel and may result in the termination of nesting activity by females. To minimize the disturbance of crocodile activity and still allow for the construction of the Project, required maintenance of the cooling canals and surrounding vicinity, and placement of spoil materials, the following constraints on vehicular traffic, maintenance, and construction are followed:

- Minimize vehicular traffic (particularly heavy equipment) in the industrial wastewater facility south of SW 359th Street, with the exception of the Units 6 & 7 Site and berms adjacent to the Grand Canal and the southern perimeter berm;
- Minimize any vehicular disturbance along the southern perimeter berm from June to August, corresponding to the hatching and post-hatching life stages;
- With the exception of the berms adjacent to Grand Canal, SW 359th Street, and the Units 6 & 7 Site, minimize any vehicular activity (except necessary security patrols, maintenance, and monitoring) at night within the industrial wastewater facility during all times of the year;
- Do not allow routine road maintenance or construction for canal berm roads during daytime hours between March and September, or at night during any time of the year;
- Do not block known crocodile crossing sites with fill, and do not create any barriers at known crossing points, including leaving construction materials or equipment overnight;
- Minimize boating within the canals during all times of the year; and
- Ensure that site personnel are trained in crocodile habitat protection techniques.

To further reduce the potential for vehicular impacts associated with construction and operation of the Project, FPL is proposing to install a system of wildlife underpasses to allow crocodiles to move safely under the primary access road to the plant when traveling between the main cooling canals and the test cooling canals and associated freshwater ponds on the berms to the north (Figure 8). The proposed crossings will be bottomless culverts constructed of precast concrete with wing walls to direct crocodiles through the openings (Figure 9). Chain link fencing with mesh size small enough to prohibit passage of hatchling crocodiles or other suitable fencing (3 meters high) will also be installed on either side of the primary access road to the plant from the L-31E Canal east along the length of the test cooling canal area to facilitate utilization of the underpasses and discourage attempts to cross the access road. This wildlife underpass design is similar to those used successfully in other parts of the country for control of the movement of wildlife and should significantly reduce and/or eliminate the probability of traffic mortalities associated with the Site access road.

3.3 Population Monitoring

Monitoring of the number and location of nests, production of hatchlings, and their growth and survival has been conducted within the Turkey Point plant property since 1978. Surveys are conducted to identify nest locations, nest sites are revisited during the hatching period, and each hatchling is captured, permanently marked for identification, measured, weighed, sexed, and released. Permanent identification allows for the recapture of individuals after several years to document survival and growth rates.

Surveys are conducted throughout the year, with different surveys conducted in different seasons based upon crocodile behavior and life history. The population monitoring program at the Turkey Point Plant involves surveys conducted during the breeding, nesting, hatching, and post-hatching phases of the crocodile's life cycle, as well as on-going surveys documenting crocodile activities, as summarized in the following table:

Date	Season	Surveys	Data Collected
January-March	Pre-mating-mating	ID Daytime/Nighttime	Number of individuals, location, approximate size, behavior.
March-April	Nesting	Daytime/Nighttime Nest Site Survey	Number of individuals, location, approximate size. Adults observed during evening at potential nest sites; daytime surveys to return to potential nest sites and locate nests. Begin Hobo® Temp datalogger project.
May-August	Incubation/hatching	Daytime/Nighttime	Night surveys 4 times/week to find successful nests and capture all hatchlings. Each hatchling to be measured, weighed, sexed, marked through scute clip, marked with AVID microchip, then released in suitable habitat. Recapture crocodiles < 5 to 6 years of age for growth assessment. Complete Hobo® Temp datalogger project.
September-December	Post-Hatching	ID, Daytime/Nighttime	Number of individuals, location, approximate size, behavior. Recapture crocodiles <5 to 6 years for growth studies.

All personnel involved with the crocodile monitoring activities are trained. Participants are required to pass an annual exam based upon the crocodile management protocols. Additional training requirements for personnel include competence in airboat operation under daylight and nighttime conditions, a background in principles of biology, and familiarity with overall site safety and security procedures. Each member of the team currently performing surveys has between six and ten years of experience. Each individual is included by name under FPL's special purpose permit from the FFWCC.

Daytime vehicular surveys of the ID are conducted once a week before noon starting at the southern end of the ID and proceeding north. Data recorded include the start and end time of the survey, location of crocodile observation (miles from the south end), estimated size (to nearest quarter meter), behavior, and, if possible, identification. In addition, crocodile berm crossing sites are examined for number and direction of drags. Crossing sites are swept clean after data are recorded.

Night surveys are conducted in the cooling canals/industrial wastewater facility by airboat; in the ID by truck, jon boat, or canoe, and in the adjacent L-31E, C-107, and Sea Dade Canals by jon boat or canoe. All surveys begin shortly after dark and crocodiles are located through eyeshines using a high-powered quartz halogen spot light when conducting surveys from an airboat or with head lamps or

flashlights when surveying from a jon boat or canoe. Data recorded include survey route, start and end time, weather conditions, personnel, and locations, size, and identification (if possible) of all animals observed. During the nesting season, the primary purpose of night surveys is to locate nests and capture hatchlings for measurements and tagging with AVID microchips.

Daytime nest surveys consist of locating possible nest sites, monitoring of all possible nest sites, and post-hatching surveys. All previously active nesting areas and nest site sanctuaries are examined for current activity, such as tail drags and digging. It is important to identify nests as early as possible because crocodiles do not regularly visit the nests during the incubation period; therefore, signs of activity around incubating nests are minimal and identifying their locations is nearly impossible. All identified nests should be monitored once weekly throughout the nesting season. A final survey is conducted after the nest has hatched. Data collected include nest description, soil type, cavity depth, surrounding vegetation, number of eggshells, number of unhatched eggs, date of initiation (if known), and date of hatching.

Captured hatchlings are transported to the on-site laboratory and data are collected on each individual, including:

- Total length,
- Length from snout to vent,
- Head length,
- Head width, and
- Weight.

Each hatchling is permanently marked for identification through scute (scale) marking, a non-harmful method of clipping the scutes on the dorsal of the tail to identify their location as Turkey Point and the year of capture for each individual. Numerical values are assigned to the single caudal whorl scales and to the left and right double caudal whorls, which allows for individuals to be uniquely marked by removal of only three or four scales. In addition, each hatchling is implanted with an AVID microchip, in accordance with the FFWCC's special purpose permit (Permit # WX06467a) (see Appendix A). The AVID microchip technology involves a computer chip programmed with a unique identification number that is encased in smooth biocompatible glass and is small enough to fit into a hypodermic needle. A scanner is used to send a radio wave signal to the microchip, which

sends back the chip's unique identification number. The AVID microchip tagging method is a non-harmful method to permanently identify hatchlings produced within the Turkey Point plant property.

FPL's FFWCC special purpose permit allows for the delivery of crocodile scute samples to Southwest Texas State University for DNA testing. Through DNA analysis, information on the genetic diversity, breeding dynamics, and interbreeding between the crocodile population within the Turkey Point plant property and individuals from the ENP and/or Key Largo populations is collected. Analysis of population genetics of threatened or endangered species is a valuable tool for management and maintenance of diversity amongst a population with a limited number of individuals.

In addition, the FFWCC special purpose permit allows for the insertion of Hobo® Temp dataloggers in the interior and exterior of American crocodile nests in order to provide continuous monitoring of nest temperature during incubation. The correlation between nest temperature and sex of hatchlings is well-documented for the American alligator (*Alligator mississippiensis*), but has not been studied extensively with nests of the American crocodile. Through cooperation of the University of North Dakota, the current study at Turkey Point will generate data to evaluate the influence of nest temperature on sex of hatchling crocodiles.

3.4 Public Outreach and Education

Public education is required to provide accurate biological information and to stimulate interest in the conservation of the American crocodile (USFWS, 1999). As part of FPL's commitment to raising public awareness about the threatened American crocodile in South Florida, FPL publishes extensive information in both electronic and written formats, which is made available free of charge to environmental groups, schools, regulatory agencies, and the general public. In addition, FPL has made the Turkey Point Plant available to major media groups such as National Geographic, the Discovery Channel, and CNN, numerous newspapers and television series for filming educational documentaries and preparing articles about the American crocodile and the success of the breeding population within the industrial wastewater facility.

4.0 STATUS OF LISTED SPECIES AND CRITICAL HABITAT

4.1 American Crocodile

Although the Site is located within the USFWS-designated critical habitat area for the American crocodile (see Figure 3), crocodiles are not known to habitually utilize the Site for foraging or

nesting due to the lack of suitable nesting substrate, altered and highly variable hydrology, and limited food supply. According to the USFWS (Federal Register, Vol. 42, No. 184, September 1977), the following area (exclusive of those existing man-made structures or settlements that are not necessary to the normal needs or survival of the species) is critical habitat for the American crocodile:

“All land and water within the following boundary in Florida beginning at the easternmost tip of Turkey Point, Dade County, on the coast of Biscayne Bay; then southeastward along a straight line to Christmas Point at the southernmost tip of Elliott Key; then southwest along a line following the shores of the Atlantic Ocean side of Old Rhodes Key, Palo Alto Key, Anglefish Key, Key Largo, Plantation Key, Windley Key, Upper Matecumbe Key, Lower Matecumbe Key, and Long Key, to the westernmost tip of Long Key; then northwestward along a straight line to the westernmost tip of Middle Cape; then northward along the shore of the Gulf of Mexico to the north side of the mouth of Little Sable Creek; then eastward along a straight line to the northernmost point of Nine-Mile Pond; then northeastward along a straight line to the point of beginning”.

4.2 Eastern Indigo Snake

According to the FNAI database (FNAI, 2003), an occurrence of the state-threatened Eastern indigo snake (*Drymarchon corais couperi*) was documented within an area south of SW 344th Street/Palm Drive adjacent to the existing FPL daycare facility in 1981. This individual was observed within a rockland hammock habitat, which does not occur within the Site. An indigo snake was observed during a survey in 2004 within the EMB, south of the industrial wastewater facility.

4.3 Wood Stork

No wood stork (*Mycteria americana*) nesting colonies or roosting sites are located within the area surrounding the Site. According to the FFWCC wading bird surveys of 1999, two active wood stork colonies are present within Miami-Dade County, both located along Tamiami Trail (U.S. Highway 41) between 20 and 30 miles northwest of the Site. Wood storks are known to occasionally forage within the western portions of the Units 6 & 7 Site, in the open water area associated with Discharge Canal 1. Two known wood stork colonies occur within the vicinity of the West Preferred/Secondary Transmission Corridors. Both colonies are found south of U.S. 41 (Tamiami Trail), one approximately one mile west of the West Secondary Corridor and nearly three miles west of the West Preferred Corridor. It was last observed active in 2004 (FNAI, 2009). The second colony is located between the West Preferred/Secondary Corridors (approximately 0.6 mile west of the West Preferred Corridor). This colony was last reported active in 2004 also (FNAI, 2009).

The USFWS has defined a wood stork colony's core feeding area as a radius of 18.4 miles surrounding the nesting colony. Impacts to wetlands within the core feeding area are to be replaced through in-kind compensation or offset through habitat improvements onsite that would increase the quantity and/or quality of potential foraging habitat.

4.4 Florida Manatee

The Florida manatee (*Trichechus manatus latirostris*) is known to occur in Biscayne Bay, but does not occur within the Site or the industrial wastewater facility, as the closed-loop cooling canals do not connect to the Bay. Turkey Point Units 1 through 4 utilize the industrial wastewater facility for cooling, and do not contribute any thermal discharge into Biscayne Bay that could attract manatees during winter months. Any culverts constructed as part of the Project mitigation plan will be constructed in accordance with the CERP Interagency Manatee Task Force Manatee Conservation Plan (CERP, 2003), as applicable.

4.5 Listed Bird Species

In addition to the federally endangered wood stork, six species of wading birds classified by the FFWCC as species of special concern have been observed within the Site: the little blue heron (*Egretta caerulea*), reddish egret (*Egretta rufescens*), white ibis (*Eudocimus albus*), snowy egret (*Egretta thula*), roseate spoonbill (*Platalea ajaja*), and tricolored heron (*Egretta tricolor*). All six of these species are listed as species of special concern in Florida by the FFWCC, but none are listed federally by the USFWS. No critical habitat designations for these wading birds exist.

No nesting has been observed within the Site, although wading birds occasionally use the area for foraging.

Two species of birds classified as threatened by the FFWCC were observed on the Site, the white-crowned pigeon (*Patagioenas leucocephala*) and the least tern (*Sterna antillarum*). Neither of these species is listed federally by the USFWS.

4.6 Florida Panther

The USFWS Florida Panther (*Puma concolor coryi*) Consultation Area includes the western boundary of the Turkey Point plant property, a portion of the existing transmission line right-of-way, and a portion of the proposed access road improvement corridor. No panthers have been observed in this area since 1988. Portions of the West Preferred and Secondary Transmission Corridors also occur within the USFWS Panther Consultation Area. This corresponds to the general vicinity element

occurrence locations identified in the FNAI database, indicative of the presence of habit conditions suitable for the panther.

According to FFWCC panther telemetry data (dated 1981-2008), one panther (FP 21) was recorded in the area west of the plant in 1987 and 1988 (Figure 10). Records further indicate that this individual was captured for monitoring by the USFWS in March 1987, then removed from the wild in July 1988 for medical reasons and relocated to White Oak Plantation in Nassau County. Panther FP 21 was eventually euthanized in December 1997.

The FFWCC panther telemetry data identifies one panther (FP 16) occurring in the vicinity of the West Preferred Transmission Corridor in 1987 and 1988. According to the FFWCC data, this male panther died of unknown causes in 2000 near the northeastern boundary of the ENP. Telemetry data indicate two panthers (FP 42 and 85) in the vicinity of the Second Transmission Corridor in 1990 and 2001, respectively. These individuals were located west of the L-31N canal; both were reported deceased in 1995 (FP 42) and 2004 (FP 85).

4.7 Species in the Vicinity

Additional listed species known to occur in the nearby BNP that could potentially utilize the Site for foraging include the peregrine falcon (*Falco peregrinus*), limpkin (*Aramus guarauna*), American oystercatcher (*Haematopus palliatus*), brown pelican (*Pelicanus occidentalis*), and bald eagle (*Haliaeetus leucocephalus*). These species have not been observed within the Site. According to the FFWCC's bald eagle nest location database, no nests occur within 20 miles of the Site.

4.8 Species Not Likely to be Affected

The Project is not likely to affect the wood stork, manatee, listed bird species, or the Florida panther. Due to the lack of nesting colonies, roosting areas, and significant feeding habitats within the area associated with the Project, no adverse impacts to wood storks are anticipated. No occurrence of manatees within the areas associated with the Project has been documented and no adverse impacts to manatees are expected, as no areas of manatee habitat will be affected. Listed species of birds observed within the Site are highly mobile and locally common, are able to access similar habitat in the vicinity of the areas associated with the Project and are not dependent upon the highly disturbed wetlands associated with the Site for nesting or foraging. Listed bird species are not likely to be adversely affected as a result of the Project, as large areas of similar habitat will remain following construction. The Site is outside of the Florida Panther Consultation Area. Portions of the transmission and access roads corridors include the western edge of the Consultation Area, but no

panthers have been observed within this area in 20 years, according to USFWS telemetry data and the FNAI database.

4.9 Species Likely to be Affected

Listed species likely to be affected within the Site are limited to the American crocodile, which may be affected through loss of potential foraging habitat. FPL has been issued a Special Purpose permit #WX06467A by the FFWCC (see Appendix A) to capture American crocodiles for marking, recapture and scientific data collection purposes, and to relocate crocodiles as necessary.

5.0 ENVIRONMENTAL BASELINE – AMERICAN CROCODILE

[From *Ecological Risk Assessment for American Crocodile in the Cooling canals at FPL's Turkey Point Facility* – ESE, Inc. 2000, except where noted].

The American crocodile is a primarily coastal crocodilian that occurs in parts of Mexico, Central and South America, the Caribbean, and, at the northern end of its range, in southern Florida. The current distribution of the American crocodile in Florida is limited to extreme South Florida, including coastal areas of Miami-Dade, Monroe, Collier, and Lee Counties. They are found primarily in mangrove swamps and along low-energy mangrove-line bays, creeks, and inland swamps (Kushlan and Mazzotti, 1989).

The primary factor threatening the Florida populations of the American crocodile has been loss of nesting habitat due to human development. Nesting populations were restricted to portions of the shoreline of northeastern Florida Bay and Barnes Sound in 1975, including one population on the northeastern shore within ENP and one on the eastern shore of Barnes Sound in northern Key Largo. At that time, crocodiles were declared federally endangered. In 1978, a third nesting colony was discovered within the Turkey Point plant property. It appears likely that this population colonized the area after development of the industrial wastewater facility, utilizing the artificial substrates of the canal berms as nesting substrate.

To protect crocodiles, the NPS established a crocodile sanctuary in northeastern Florida Bay in 1980, the USFWS acquired the Crocodile Lake National Wildlife Refuge on Key Largo, and FPL implemented their Site Management Program in 1983. Monitoring programs were established around all three nesting areas, focusing on reproductive success and growth and survival of hatchlings.

Ogden (1978a) estimated that between 1,000 to 2,000 American crocodiles existed in South Florida in the early 20th century, but the population had been reduced to approximately 100 to 400 adults in the 1960s and 1970s (Ogden, 1978b). The American crocodile population in southern Florida has increased substantially over the last 20 years. The USFWS (1999) recently estimated the total population at 500 to 1,000 animals. The recent increase is best represented by changes in nesting effort. Survey data (gathered with consistent sampling effort) indicate that nesting has increased from an average of 16 nests per year during 1978 to 1982, to an average of 38 nests per year during the period 1995 through 1998. Female crocodiles produce only one clutch per year, so the population of productive females has more than doubled in the last 16 years. It is likely that the male population has also increased in rough proportion to the females (USFWS, 1999). The distribution of crocodiles during the non-nesting season may vary considerably over years since adult crocodiles can disperse great distances. However, the majority of crocodiles are present in the vicinity of the documented nesting areas (Kushlan and Mazzotti, 1989).

During the five-year period from 1978 to 1982, more than 60 percent of Florida's crocodile nests were in ENP on the northeastern shore of Florida Bay. However, during the past five years, less than half the nests were in ENP, as nesting effort has increased dramatically within the Turkey Point plant property during the past 20 years. Within ENP, the nesting area has expanded approximately 30 km to the west since 1970 (Mazzotti, 1999), extending now as far west as Cape Sable. In 1970, nesting in ENP was restricted to northeastern Florida Bay, with the westernmost nests near Black Betsy Key.

The nesting populations in ENP, the Turkey Point plant property, and Key Largo are not isolated. Crocodiles have been documented to migrate at least 30 km, and tagged hatchlings from Turkey Point and ENP have been recovered near the Key Largo nesting area. Juvenile and subadult males are forced to migrate to avoid adult males, who would attack them. Dispersal is beneficial to the genetic diversity of the population, but limits the ability of mark and recapture programs to accurately quantify survival of hatchlings by nesting area.

Mazzotti (1989) defined the optimal nesting habitat requirements for American crocodiles. The most important requirements for nesting success of crocodiles are the presence of elevated, well-drained nesting substrate adjacent to relatively deep (> 1 meter) intermediate salinity (10 to 20 ppt) water, protected from the effects of wind and wave action, and free from human disturbance. The man-made nesting areas along canal banks (berms) at the Basin Hills area of the Crocodile Lake National Wildlife Refuge and the Turkey Point industrial wastewater facility provide nearly ideal

nesting conditions. The exception is the relatively high salinity in the industrial wastewater facility, although this has been ameliorated by the creation of freshwater ponds in the interior of the berms and by the existence of nearby lower salinity canals.

In contrast, in northeastern Florida Bay (ENP), the most successful natural nesting areas are sandy beaches often kilometers away from good nursery habitat. Creek nest sites in ENP are within good nursery habitat, but are at low elevation, making them vulnerable to flooding (Mazzotti; 1989, 1999). Nests on artificial substrates in the Flamingo/Cape Sable area of ENP are also in nursery habitat, but are at risk to depredation by raccoons (Mazzotti, 1999). Hence, the unintentional creation of man-made nest sites within the Turkey Point industrial wastewater facility and on North Key Largo has provided good conditions for nesting, and to some extent, has compensated for the loss of nesting areas elsewhere in South Florida. One of the most striking aspects of nesting habits of the American crocodile is its ability to find and use artificial substrates for nesting. In fact, virtually the entire increase of crocodiles nesting in South Florida is due to crocodiles nesting on artificial substrates similar to those of the Turkey Point cooling canals.

6.0 STATUS OF AMERICAN CROCODILE WITHIN PROJECT ACTION AREA

Surveys have been conducted throughout the industrial wastewater facility documenting American crocodile observations since the early 1980s. The Site is within the boundary of the USFWS critical habitat designation for the American crocodile. However, the Site does not attract crocodiles because many of the environmental conditions that are suitable for crocodile foraging and nesting are not present.

The Site is primarily devoid of vegetation and experiences frequent and drastic episodic changes in hydroperiod, making it undesirable for crocodile foraging or nesting. Due to the lack of consistent hydroperiod, food sources for crocodiles are relatively scarce within the Site. Crocodile nesting does not take place in this area due to the lack of suitable nesting substrate as well as potential aversion to human disturbance associated with the existing Turkey Point generating facilities.

The features that attract crocodiles to the industrial wastewater facility include the elevated berms that provide a lee side regardless of wind direction, an ample food supply, the shallow water canals bordered by deeper canals that allow movement to and from the area, and the presence of freshwater ponds within a hyper-saline environment. The southwest corner of the industrial wastewater facility is an area where crocodiles have a wide variety of habitats available. Within 75-meters, crocodiles

can choose between the hyper-saline environment of the cooling canals, the salinity of Biscayne Bay, and the freshwater of the ID. These conditions are unique to the cooling canals but are not present within the Site, as this area was not designed in the same fashion as the rest of the industrial wastewater facility.

Facilities associated with the Project, including the FPL reclaimed water treatment facility, reclaimed water pipelines, nuclear administration building, training building and parking area, and transmission lines, are located north of the USFWS critical crocodile habitat boundary and do not provide basking, nesting, or foraging habitat comparable to the conditions within the industrial wastewater facility. Similarly, the location of the radial collector wells and delivery pipelines upon previously-filled upland areas of the Turkey Point peninsula does not provide significant nesting, basking, or foraging habitat for the crocodile. The western transmission corridor extends outside of the critical habitat boundary from the Units 6 & 7 Site across the northern portion of the industrial wastewater facility; structures located upon canal berms and associated access bridges from SW 359th Street will be designed to avoid crocodile nesting areas.

7.0 CROCODILE CONSERVATION AND MONITORING PLAN

The conservation and monitoring plan for the Project addresses specific actions to be taken prior to the initiation of clearing, during construction, and following construction to ensure that adverse impacts to the crocodiles are avoided.

The conservation and monitoring plan is designed to ensure that the crocodiles will not be adversely impacted as a result of the Project. The plan involves the continuation of the existing Threatened and Endangered Species Management Program, expansion of the scope to include the Site, and the addition of specific actions pre-construction, during construction, and post-construction as follows:

A. Pre-Construction

- Pre-clearing surveys will be conducted throughout the Site to locate any individual crocodiles utilizing the Site. Day and night surveys will be conducted twice monthly at the Site prior to initiation of construction activities. Individuals may be live-captured by non-harmful means by authorized FPL personnel and relocated to the cooling canals. Captured crocodiles are processed and held only long enough to transport them to a suitable release site within the canals.
- The existing American crocodile protection/education plan shall be utilized to include the Project for all construction personnel to

follow. A program of lectures, brochures, videos, and informational signs will be utilized for all construction personnel to become familiar with the crocodile's protected status under federal law. Information included in the education materials will include, at a minimum:

- a. A description of the American crocodile, its habitat and behavior, and protective status under federal law;
 - b. Instructions not to injure, harass, or kill this species;
 - c. A description of the appearance of crocodile signs, such as tail drags and claw marks, by which construction personnel become familiar with the identification of crocodile utilization of the construction areas;
 - d. Directions to cease clearing activities if crocodiles are observed within the site and allow the crocodiles sufficient time to move away from the site prior to resuming clearing; and
 - e. Telephone numbers of FPL Environmental Specialists to be contacted immediately upon observation of any crocodiles and/or crocodile signs in the construction areas.
- Preparation of a pre-construction monitoring report for submittal to the USFWS and FFWCC. The monitoring report will include a summary of all surveys, documentation of any crocodiles and/or crocodile signs observed at the Site, approximate size, location, and behavior of individuals observed, summaries of any relocations conducted, and identification of any relocated individuals.

B. During Construction

It is likely that intense human activity during construction will discourage crocodile utilization of the Site and vicinity. A perimeter wall will be installed around the plant area in the early phases of construction and should prevent crocodile intrusion into that area. In addition, to avoid adverse impacts and document any utilization of the Site during construction, the following activities will be conducted during construction:

- Education of all construction personnel, as described above, including installation of signs along the perimeter of the construction site alerting personnel as to the crocodile's protected status under federal law; instructions to avoid injury, harassment, or killing of any crocodiles; and contact numbers to inform FPL Environmental Specialists of any crocodile observations.
- Monitoring surveys will be conducted within the construction areas weekly. Both day and night surveys will be performed, and any crocodiles within the Site will be live-captured through non-harmful means and released to the canals.
- Daily monitoring surveys will be conducted in the active construction zone by a contractor trained by FPL's Environmental Specialists. Observations of any crocodile signs or individual crocodiles will be documented and immediately reported to the

supervising contractor and FPL's Environmental Specialists. If crocodiles are observed within the active construction zone, all work will cease immediately and the individuals will be live-captured through non-harmful means, processed and released. Minimization of traffic disturbance and installation of wildlife underpasses and small-diameter mesh fencing along the primary access road, as described in Section 3.2 (Description of Management Program: Constraints on Traffic, Maintenance, and Construction), will be adhered to during the construction phase. Spoils material from the Site will be transported via truck using the roads adjacent to the Grand Canal. The use of the Grand Canal roads ensures that traffic associated with the transport of spoils materials will be routed so as to avoid disturbance of nesting sanctuaries. Spoils material will be deposited along the Grand Canal berms and the berm on the southern boundary of the cooling canals (Figure 4), avoiding areas of crocodile nesting habitat and juvenile nursery areas. Trucks transporting spoils materials will abide by the vehicular constraints outlined in this plan.

- Utilization of low, angled fencing around the Site to further discourage crocodile utilization of the construction zone.
- Preparation of monthly monitoring reports for submittal to USFWS and FFWCC summarizing results of the weekly day/night surveys conducted within the Site as well as results of the daily surveys conducted within the active construction zone.

C. Post-Construction

Following construction, the Site will become part of the overall Turkey Point Threatened and Endangered Species Monitoring and Management System. Although highly unlikely due to the level of human activity and surrounding barriers, any nuisance crocodiles observed within the Project will be captured and relocated to the cooling canals. A summary of post-construction activities follows:

- The Site will remain part of the overall crocodile monitoring and management system; and
- Mitigation activities will be designed to benefit crocodiles through creation of additional freshwater refugia and vegetative restoration on the berms in the main cooling canals and test canal system.

8.0 EFFECTS OF THE ACTION

The Project is not likely to affect the wood stork, manatee, listed bird species, or the Florida panther. Listed species likely to be affected by the Project are limited to the American crocodile. The management and monitoring protocols described above will be adhered to prior to, during, and following construction activities, in order to minimize impacts to individual crocodiles. The construction of the Project will not result in changes to the function and operation of the cooling canals or crocodile nesting habitat. Utilization of the Site will result in the loss of approximately 250

acres of disturbed wetlands within the industrial wastewater facility that is primarily devoid of vegetation and experiences frequent and drastic episodic changes in hydroperiod, making it undesirable for crocodile nesting or foraging. Due to the lack of suitable substrate, no crocodile nesting activity occurs within the Site. Spoils materials will be added to areas of existing spoils along the southern boundary of the industrial wastewater facility and the berms adjacent to the Grand Canal. These spoils areas do not contain suitable nesting habitat, nor do they contain any freshwater refugia for juvenile crocodiles; therefore, no adverse impacts to the breeding population are anticipated. Traffic along SW 359th Street east of the L-31E Canal could potentially impact crocodile movement between the industrial wastewater facility and the test cooling canals. This potential impact will be mitigated through construction of wildlife underpasses. In addition, transmission structures placed upon the berms within the northern portion of the industrial wastewater facility and associated access bridges from SW 359th Street will be situated to avoid crocodile nesting areas.

9.0 MITIGATION PLAN

Wetland impacts associated with the Project will be mitigated through a combination of wetland restoration, enhancement, and preservation consistent with the regional restoration goals of the CERP within the Biscayne Bay Coastal Wetlands study area and the Model Lands Basin, as well as use of the agency-approved mitigation banks, including the FDEP- and USACE-approved EMB.

The proposed wildlife underpasses associated with SW 359th Street east of the L-31E Canal will ameliorate the potential impacts of construction traffic upon crocodiles between the industrial wastewater facility and the test cooling canals (see Figure 8). The proposed wildlife crossings will be bottomless culverts constructed of precast concrete with wing walls to guide the crocodiles through the openings. Fence barriers will be installed and trenched into the ground on either side of the access road from the L-31E Canal east along the length of the test cooling canal area to promote utilization of the wildlife underpasses (see Figure 9).

To further encourage use of the underpasses, they will be placed in locations where crocodile crossing trails already exist. Automatic cameras may be placed along the access road at Test Canal 3 and Test Canal 5, as well as several locations to the west along the access road to collect baseline information regarding crocodile movement along the access roads. This information may be used to adjust the final locations of the underpasses, as necessary. In order to minimize disturbance of crocodiles resulting from the safety lighting associated with the access roads, lights will be positioned and shields utilized, if necessary, such that illumination is restricted to the road right-of-way.

This wildlife underpass design is similar to those successfully used in other parts of the country for control of the movement of wildlife, and should significantly reduce or eliminate the probability of traffic mortalities associated with the Turkey Point Units 6 & 7 access road. Most research on the use of highway underpasses by wildlife has focused on hoofed mammals (Reed et al., 1975; Singer and Doherty, 1985, in Foster and Humphrey, 1995). However, there is ample evidence of wildlife underpass benefits with regards to reduction in reptile and amphibian mortality in Florida. On U.S. Highway 441 through Paynes Prairie State Preserve in Alachua County, a wildlife underpass system was constructed consisting of a concrete wall located parallel to and approximately 9 meters from the roadway. The wall is approximately 1 meter high with a 15.2 centimeters overhanging lip. There are 8 culverts to allow wildlife movement underneath the roadway: 2 partially submerged box culverts (2.4 meters by 2.4 meters), 2 usually dry box culverts (1.8 meters by 1.8 meters), and 4 round culverts (0.9-meter diameter). Alligator, snake, turtle, and frog mortality declined dramatically after construction of the underpass (Barichivich and Dodd, 2002).

Alligators have been documented utilizing the wildlife underpasses installed as part of the upgrade of Alligator Alley (Interstate 75) in southwestern Florida from two lanes to four (Foster and Humphrey, 1995). Most of the underpasses along Alligator Alley consist of two bridges constructed of concrete with a 3-meter high chain link fence topped with three strands of barbed wire to prohibit animals from entering the highway right-of-way. Given the use of wildlife underpasses by alligators, it is expected that crocodiles will adapt to utilize the proposed wildlife underpasses at the Turkey Point plant property.

During construction and operation, FPL will continue the habitat enhancement and construction of depressional areas on the berms within the industrial wastewater facility, which will increase the quality of habitat for the crocodile and promote juvenile survival and growth through additional areas of freshwater refugia.

10.0 CUMULATIVE EFFECTS

Impacts to wetlands and habitat for threatened or endangered species associated with the Site, as well as the associated facilities, will be avoided and minimized to the greatest extent practicable. Unavoidable impacts will be mitigated to ensure no net loss of wetland functions or reduction in the continued existence of threatened or endangered species populations in the vicinity.

The cumulative effect of loss of wetland habitat will be offset through a combination of wetland restoration, enhancement, and preservation consistent with the regional restoration goals of CERP

within the Biscayne Bay Coastal Wetlands study area and Model Lands Basin, as well as the use of the agency-approved mitigation banks, including the FDEP- and USACE-approved EMB.

Activities to offset the cumulative effects of loss of habitat related to the American crocodile include the creation of additional freshwater refugia areas on the berms within the industrial wastewater facility, increased areas of suitable nesting habitat within the cooling canals through substrate enhancement activities, as well as the creation of underpasses that allow the safe passage of crocodiles between the main cooling canals and the test cooling canals.

11.0 CONCLUSIONS

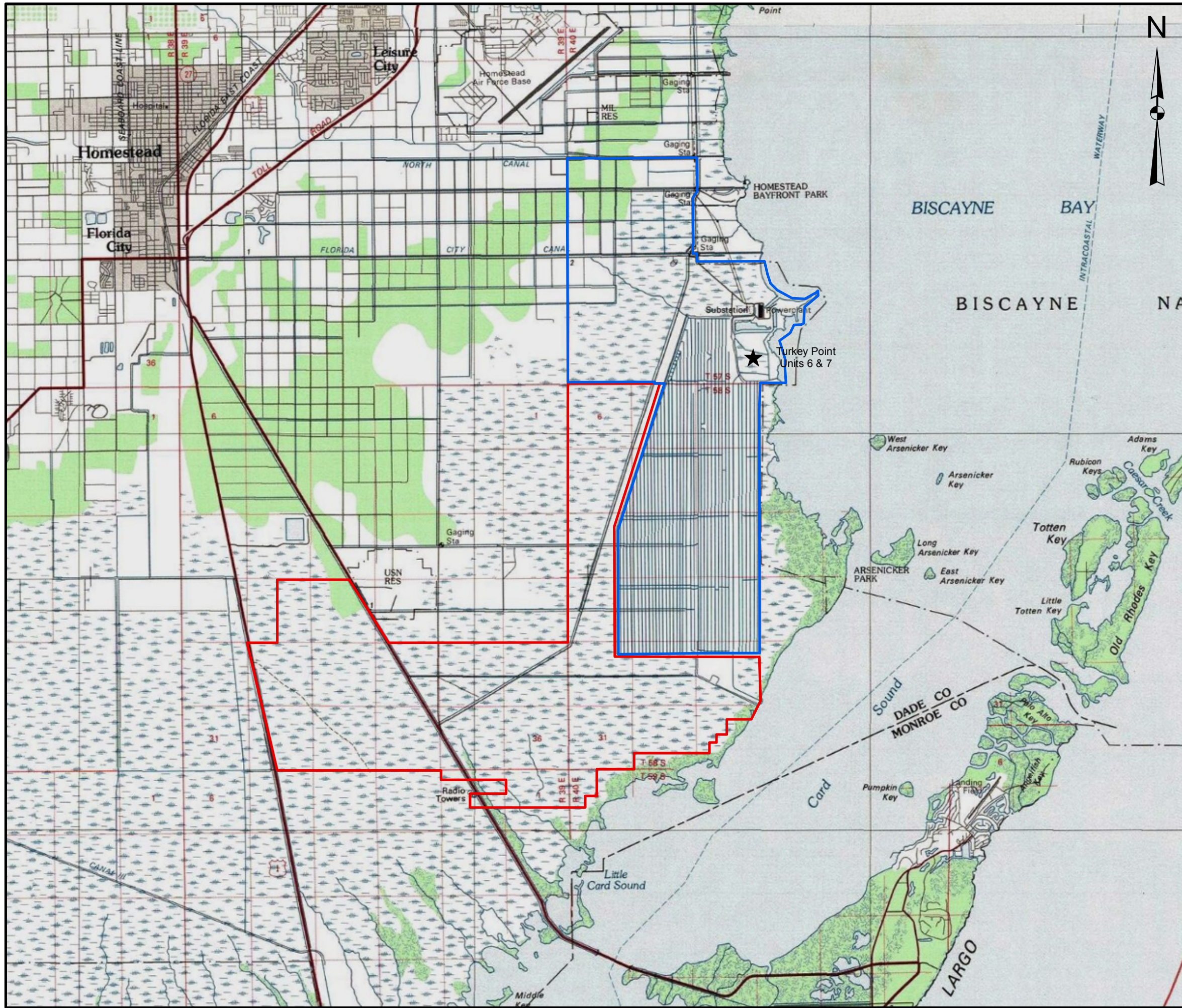
The Project is not likely to affect the wood stork, manatee, wading birds listed as species of special concern, or the Florida panther. Due to the lack of nesting colonies, roosting areas, and significant feeding areas within the Site and associated facilities, as well as the Project's mitigation plan, which will offset all wetland impacts, no adverse impacts to wood storks are anticipated. No occurrence of manatees within the Turkey Point plant property has been documented, and the USFWS guidelines for new culvert placement will be followed to avoid accidental entrapment of manatees within offsite mitigation areas. Listed species of birds observed within the Site are highly mobile and locally common, are able to access similar habitat in the vicinity of the Site, and are not dependent upon the Site for nesting or foraging. The Project will not jeopardize the continued existence of these species in the region. No occurrence of the Florida panther within the Turkey Point plant property has been documented, and no adverse impacts to the panther are anticipated due to construction and operation of the Project.

Listed species likely to be affected by the Project are limited to the American crocodile, affected through loss of potential foraging habitat, basking habitat, and travel corridors. The conservation and management plan for pre-construction, during construction, and post-construction periods will minimize adverse impacts to the crocodile at the Site, and the creation of additional freshwater refugia on the berms within the industrial wastewater facility will directly benefit juvenile crocodiles. After reviewing the current status of the American crocodile at the Site, it is our opinion that the use of this area is not likely to jeopardize the continued existence of the crocodile at the Turkey Point Plant, and no reduction in the size or health of the crocodile population is anticipated.

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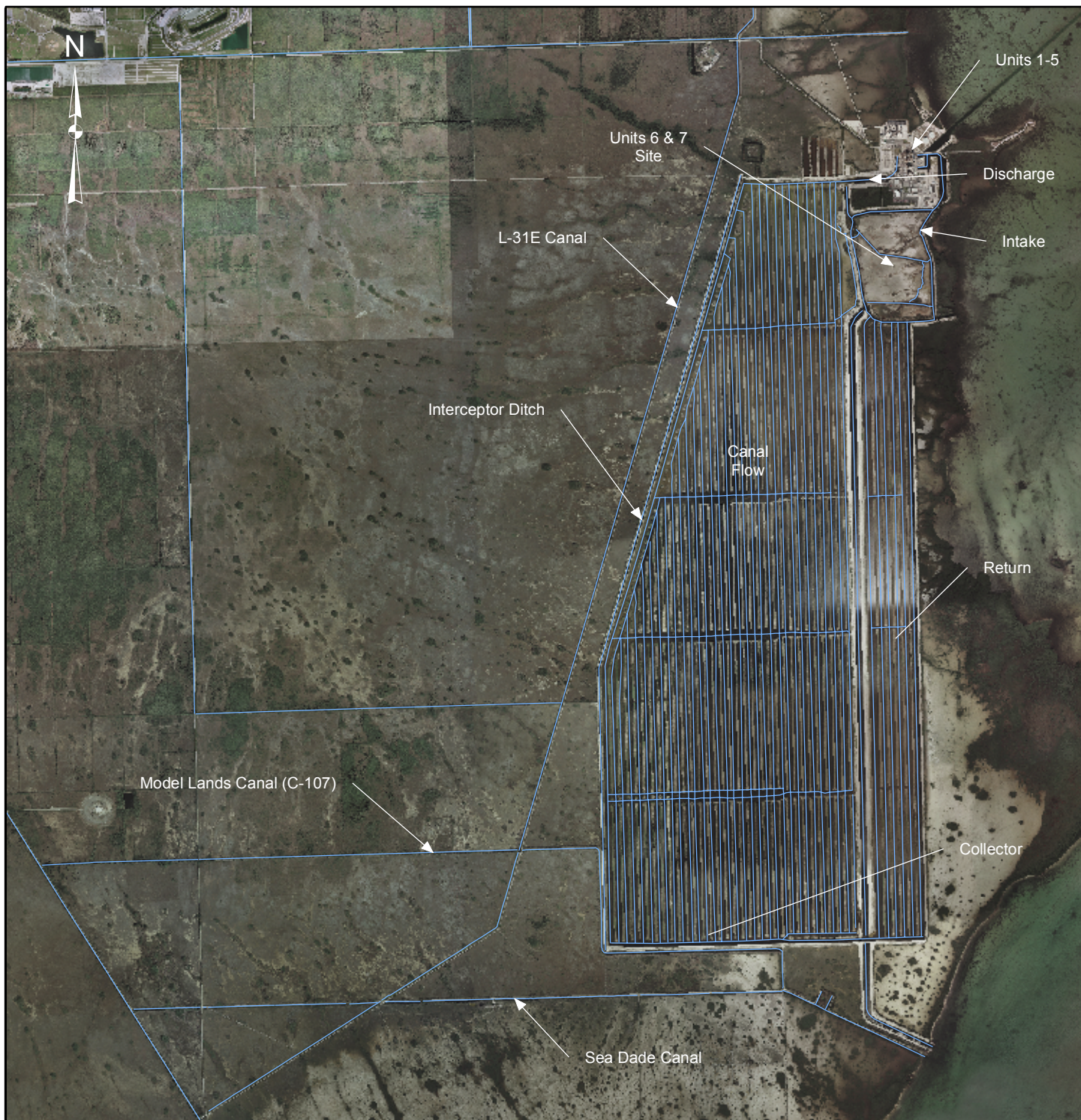
LEGEND

- ★ Turkey Point Units 6 & 7
- ▭ Turkey Point Plant Property
- ▭ Everglades Mitigation Bank

REFERENCES




PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	UNITS 6 & 7 SITE LOCATION AND EVERGLADES MITIGATION BANK	
	FILE No. 08387584P001	FIGURE 1
	REV. 0	
	PLOT DATE 6/14/2009	

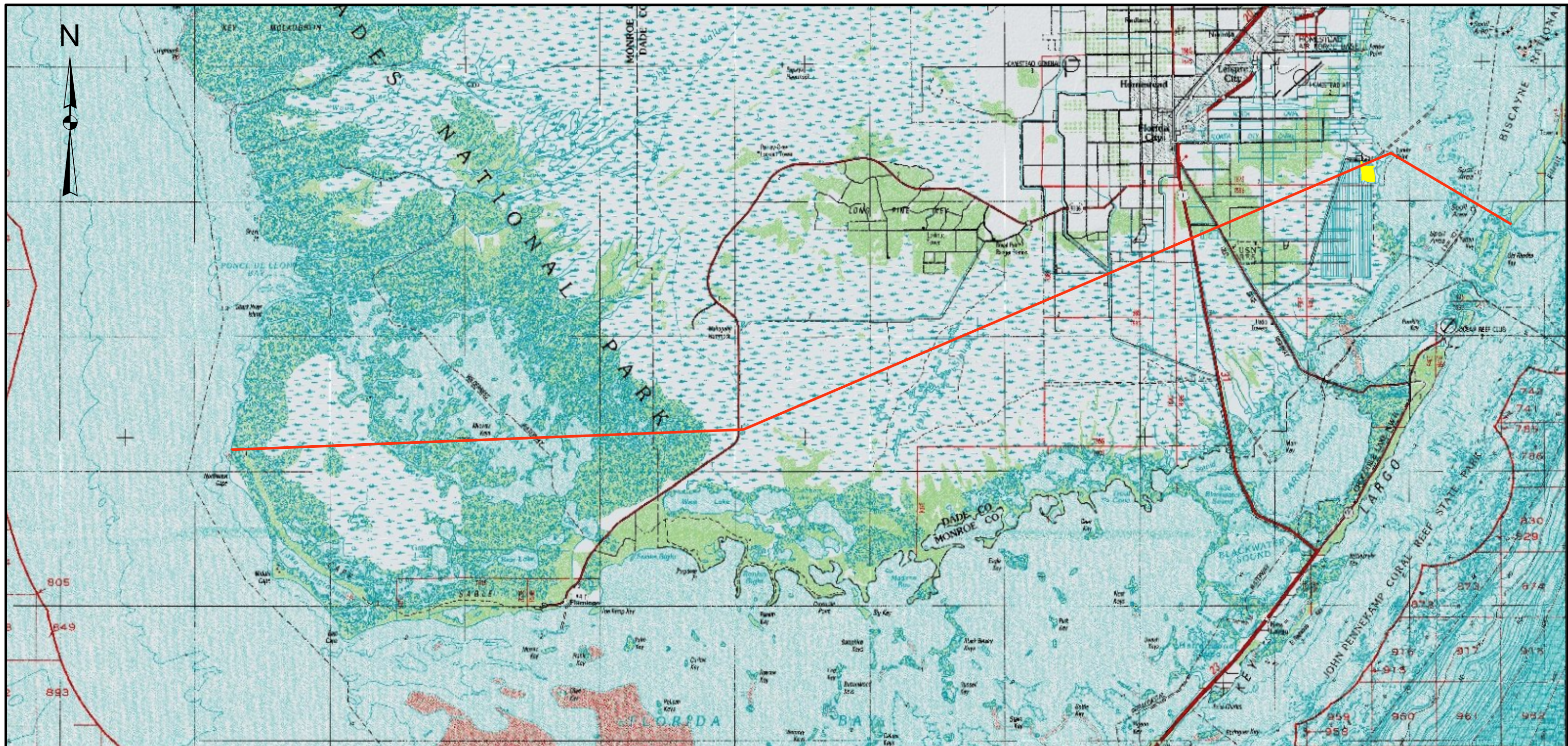


LEGEND

— Canals

REFERENCES

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	COOLING CANALS AND ADJACENT CANALS	
	FILE No. 08387584P002	FIGURE 2
	REV. 0	
	PLOT DATE 6/14/2009	



LEGEND

- Northern Boundary of Designated Critical Habitat for American Crocodile
- Turkey Point Units 6 & 7 Site



REFERENCES

1. Topographic Image, USGS, 2001.
2. American Crocodile Boundary, USFWS, 2005

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT		
TITLE	AMERICAN CROCODILE DESIGNATED CRITICAL HABITAT BOUNDARY		
	FILE No.	08387584P003	FIGURE 3
	REV.	0	
	PLOT DATE	6/14/2009	




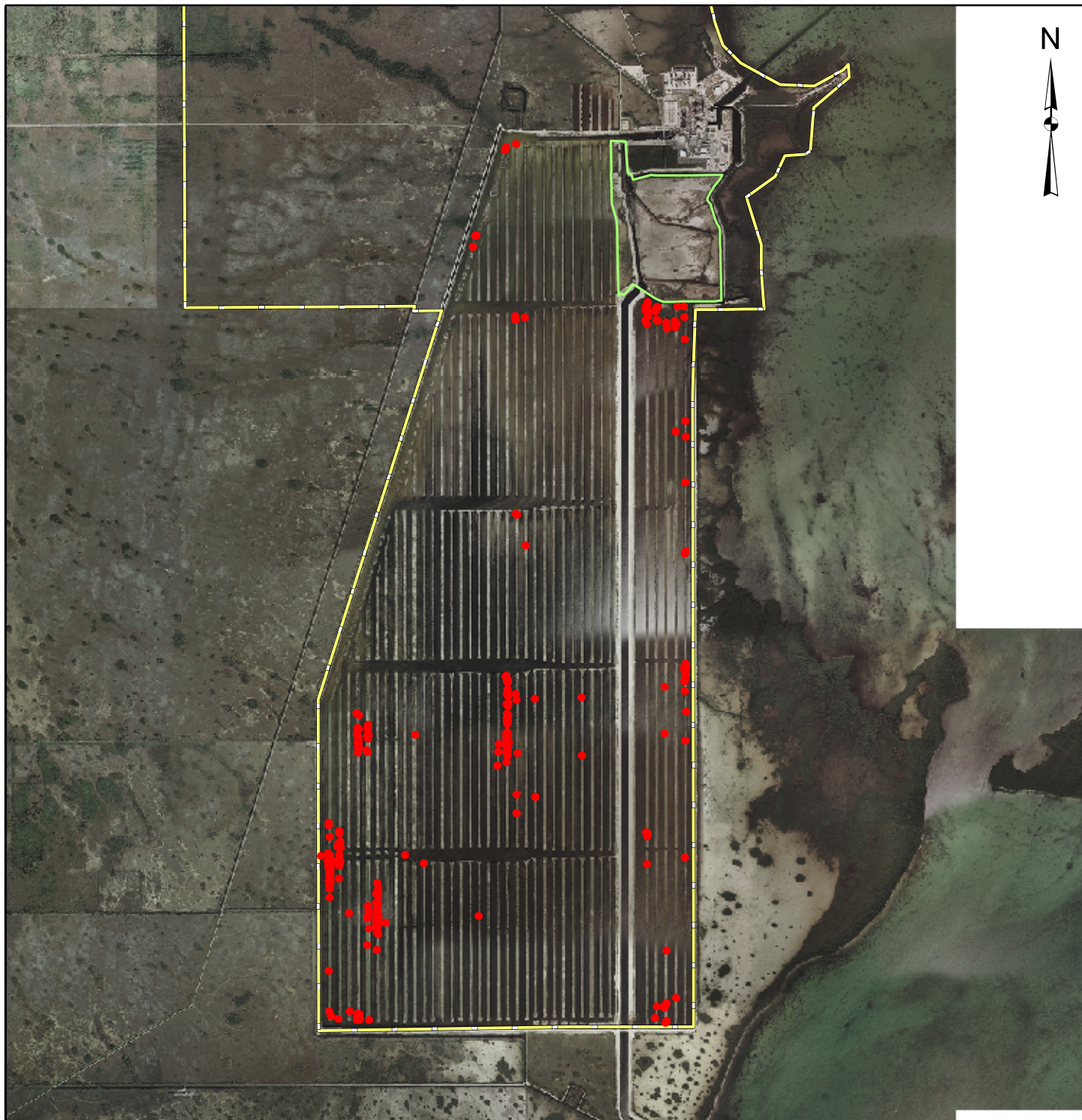
LEGEND

- Proposed Fence Line
- Proposed Water Line
- Proposed Parking Roads
- Turkey Point Units 6 & 7 Plant Area
- Turkey Point Units 6 & 7 Site
- Proposed Storage Areas
- Proposed Parking Area
- Substation Areas
- Bridges

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PROJECT			TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE			UNITS 6 & 7 AERIAL PLOT PLAN	
	FILE No.	08387584P004	FIGURE 4	
	REV.	1		
	PLOT DATE	6/14/2009		



LEGEND

- Crocodile Nesting Sites
- Turkey Point Units 6 & 7 Site
- Turkey Point Plant Property

REFERENCES

1. Crocodile Nest Locations, FPL 1978-2008, Turkey Point Plant Annual Crocodile Report Permit # TE092945-1

PROJECT

TURKEY POINT UNITS 6 & 7
PROJECT

TITLE

CROCODILE NEST LOCATIONS
1978 THROUGH 2007



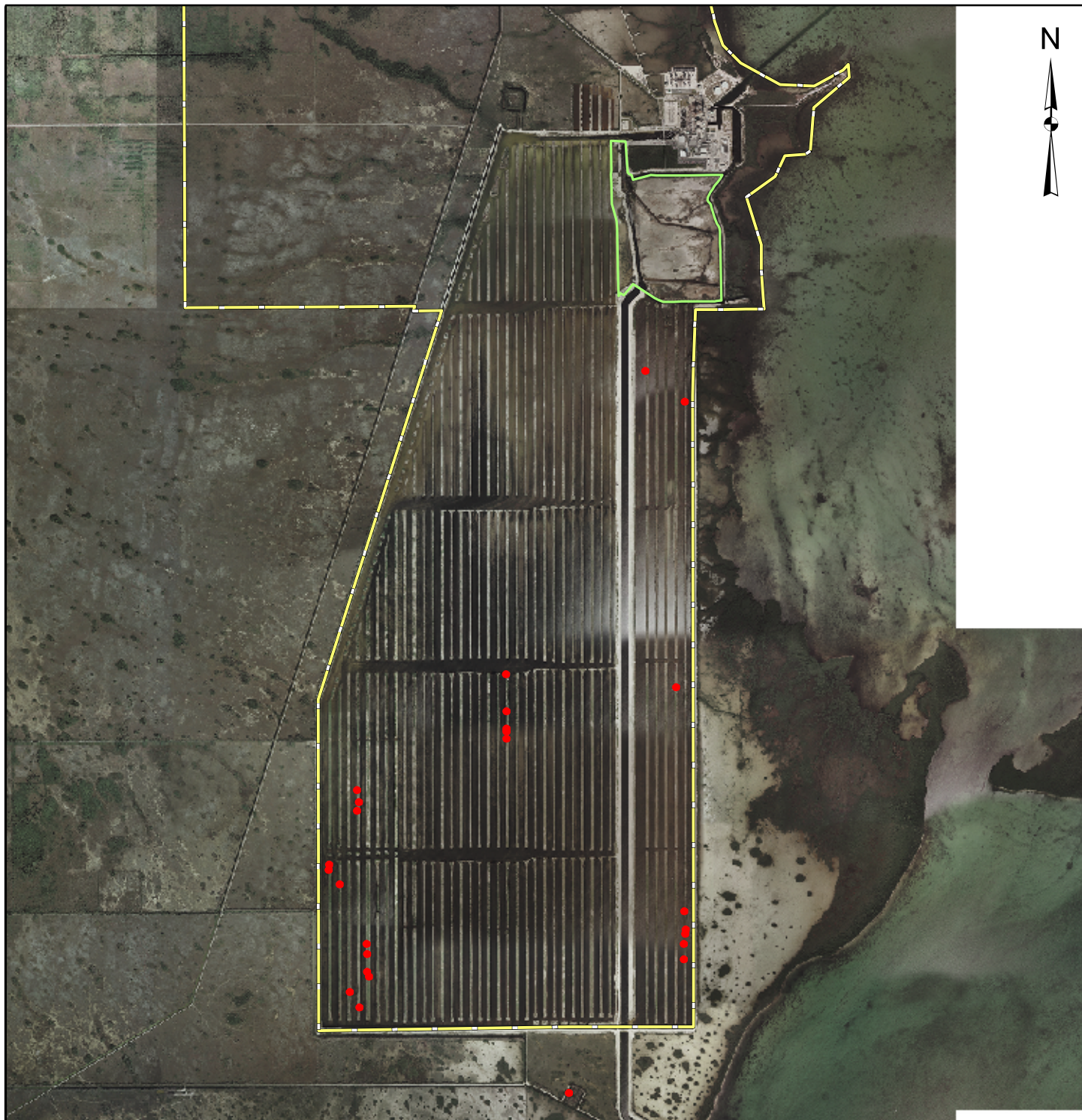
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PLOT DATE 6/14/2009

FIGURE

5




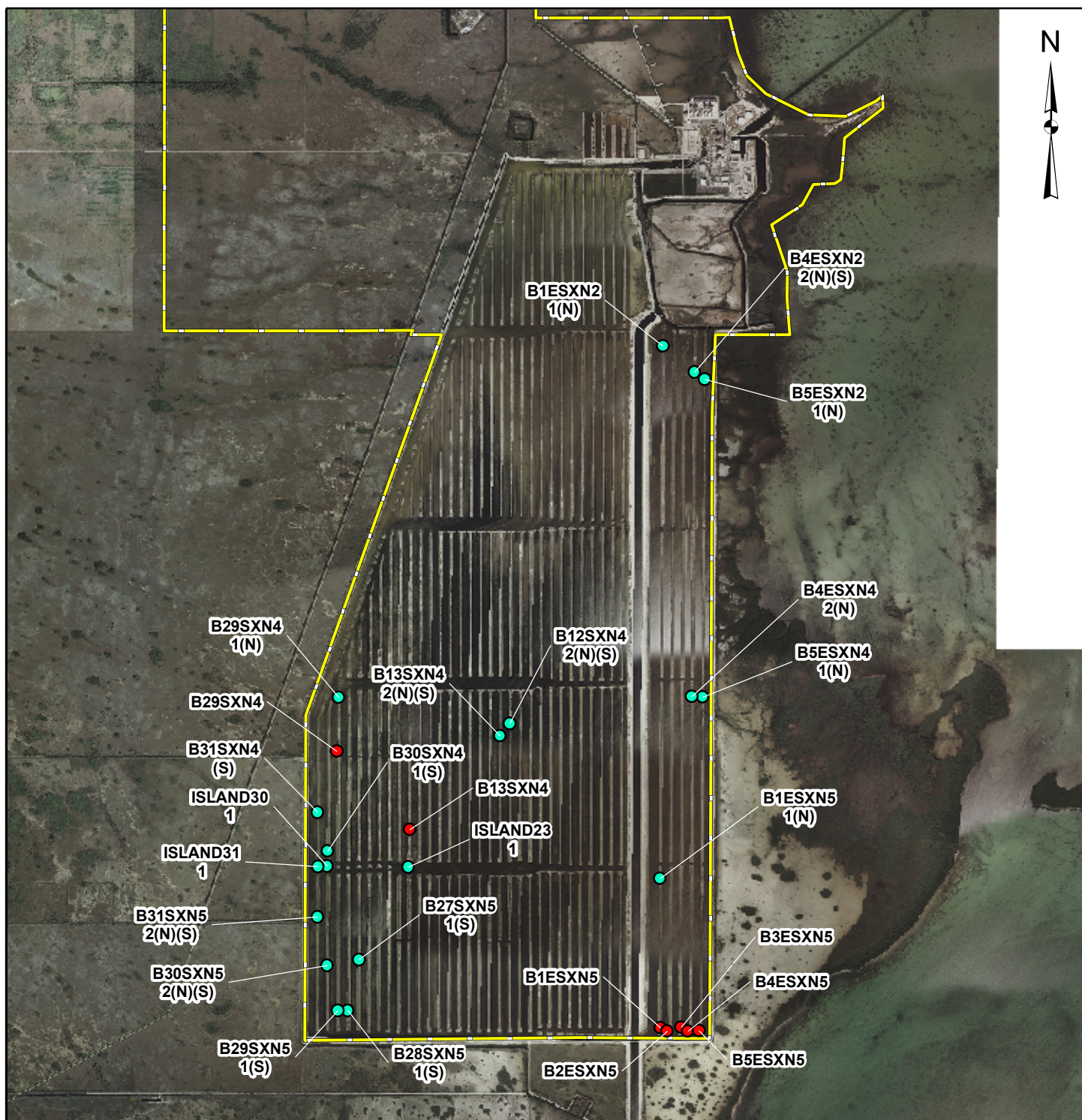
LEGEND

- Crocodile Nesting Sites
- Turkey Point Units 6 & 7 Site
- Turkey Point Plant Property




REFERENCES

1. Crocodile Nest Locations, FPL 1978-2008, Turkey Point Plant Annual Crocodile Report Permit # TE092945-1

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT	
TITLE	CROCODILE NEST LOCATIONS 2008	
	FILE No.	08387584P006
	REV.	0
	PLOT DATE	6/14/2009
FIGURE		6




LEGEND

-  2008 Freshwater Ponds (Approximate)
 Crocodile Enhancement Areas (Approximate)
 Turkey Point Plant Property

REFERENCES

1. Imagery, Miami-Dade County, 2007.

PROJECT			TURKEY POINT UNITS 6 & 7 PROJECT		
TITLE					
CROCODILE SANCTUARIES IN THE COOLING CANAL					
		FILE No. 08387584P007		FIGURE 7	
		REV. 0			
		PLOT DATE 6/14/2009			




LEGEND

■ Proposed Crocodile Underpasses (Approximate Locations)

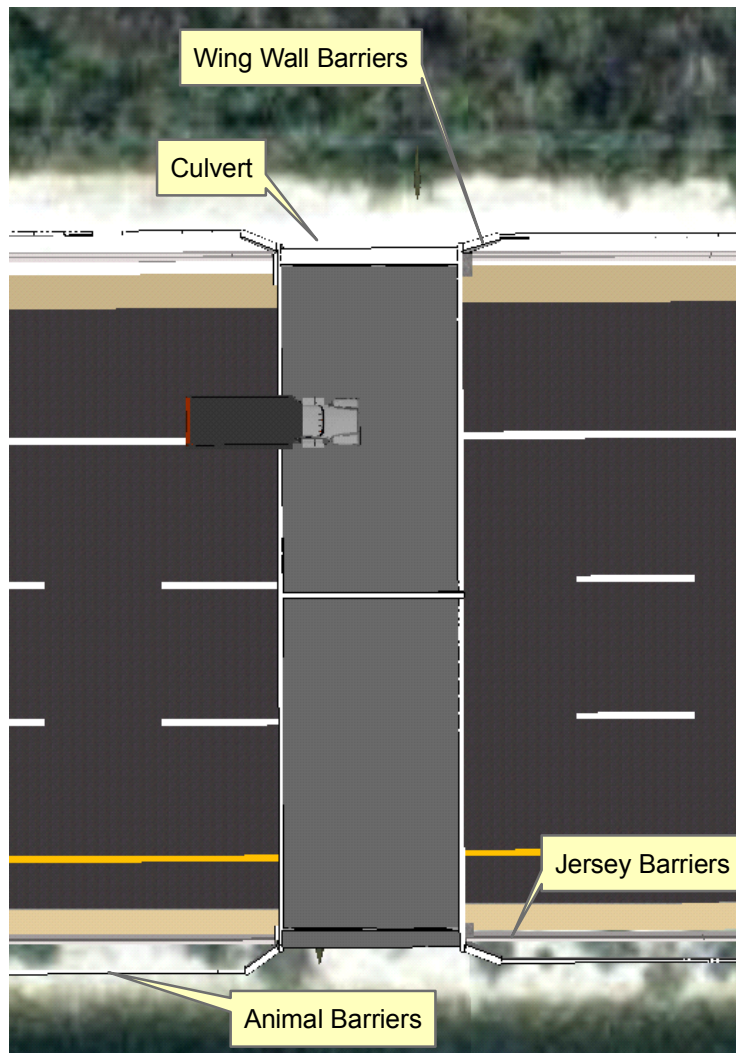


REFERENCES

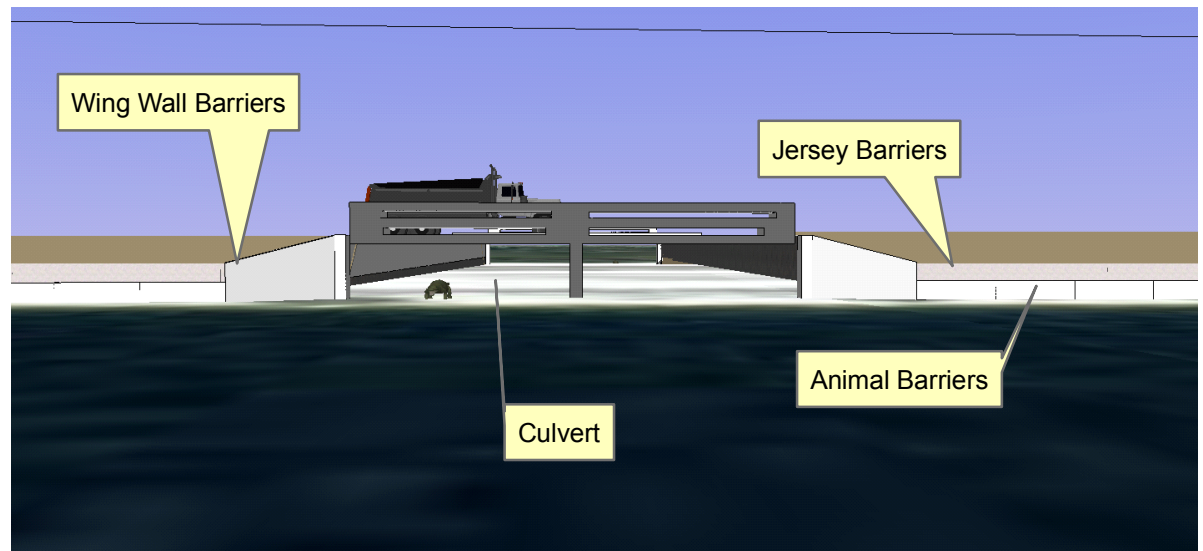
1. Imagery, Miami-Dade County, 2007.

PROJECT	TURKEY POINT UNITS 6 & 7 PROJECT		
TITLE	CONCEPTUAL CROCODILE ACCESS ROAD UNDERPASS LOCATIONS		
	FILE No.	06387584P009	FIGURE 8
	REV.	0	
	PLOT DATE	6/14/2009	

OVERHEAD VIEW



FRONT VIEW



FIGURE

9

FILE No. 08387584P008
REV. 0
PLOT DATE 6/14/2009

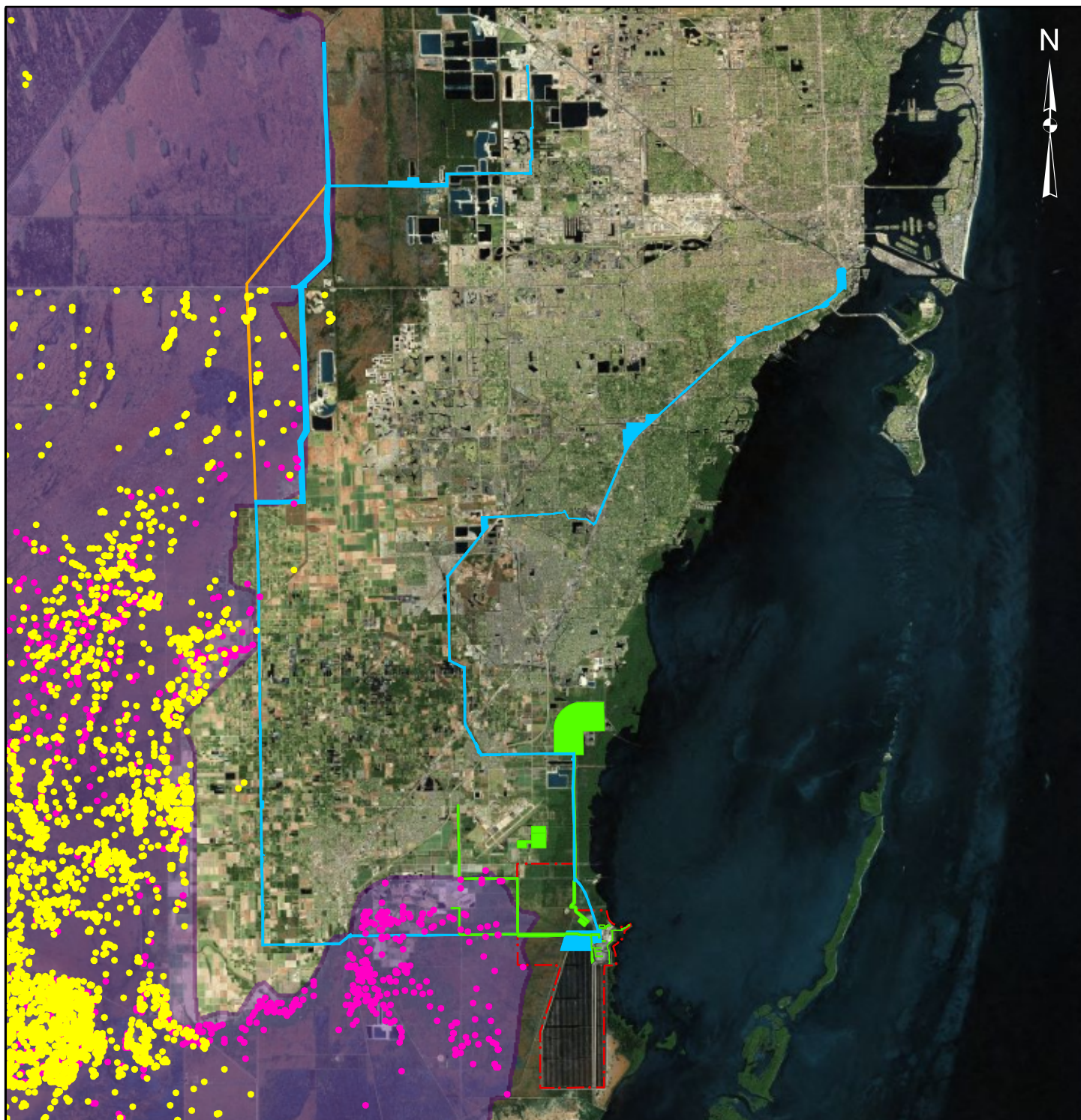
PROJECT

**TURKEY POINT UNITS 6 & 7
PROJECT**

TITLE

**CONCEPTUAL CROCODILE
ACCESS ROAD UNDERPASS**





LEGEND

- 1981 - 1988
- 1989 - 2008
- Florida Panther Consultation Area South
- Associated Linear Facilities - Transmission Lines and Corridors
- Plant and Non-Transmission Facilities
- Secondary Corridor
- Turkey Point Plant Property

REFERENCES

1. Panther Events, FWC, ENP, BCNP, 1981-2008
2. Panther Consultation Area South, USFWS, 2007

PROJECT

TURKEY POINT UNITS 6 & 7
PROJECT

TITLE

PANTHER RADIO TELEMETRY DATA



FILE No. 08387584P010

REV. 0

PLOT DATE 6/14/2009

FIGURE

10

Appendix A

Florida Fish and Wildlife Conservation Commission
Special Purpose Permit WX06467a



Scientific Collecting – Special Purpose

FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

Division of Habitat and Species Conservation, Species Conservation Planning Section

620 South Meridian Street, Mail Station 2A, Tallahassee, Florida 32399-1600

(850) 921-5990, ext. 17310

Permittee Name: Jim Lindsay
Permittee Address: Florida Power & Light Company
Environmental Services
700 Universe Blvd.
Juno Beach, Florida 33408
(561) 691-7032

Permit No.: WX06467a
Effective Date: October 24, 2008
Expiration Date: December 31, 2011

IS AUTHORIZED TO:

Conduct the wildlife scientific collecting or educational activities in Florida, pursuant to Rules 68A-9.002, 68A-27.003 and 68A-27.003, F.A.C.

AUTHORIZED LOCATION(S): Above given address.

Permittee Signature

A handwritten signature in black ink, appearing to read "Jim Lindsay", written over a horizontal line.

Date 11-3-2008

Not valid unless signed. By signature, confirms that all information provided to issue the permit is accurate and complete, and indicates acceptance and understanding of the provisions and conditions listed below. **Any false statements or misrepresentations when applying for this permit may result in felony charges and will result in revocation of this permit.**

Authorized by: Elsa Haubold, Ph.D.,

for Kenneth D. Haddad, Executive Director

Authorizing Signature

A handwritten signature in black ink, appearing to read "Elsa Haubold", written over a horizontal line. Below the signature, the text "Species Conservation Planning Section" is printed.

Date 10/24/08

PERMIT CONDITIONS AND PROVISIONS:

1. American crocodiles (*Crocodylus acutus*) may be live-captured by nonharmful means on Florida Power and Light Company properties for mark/recapture and scientific data collection purposes. AVID microchips may be injected into captured individuals for identification purposes. Captured individuals are to be released at their perspective points of capture immediately upon effecting the marking/data collection operation. Any capture of species designated by the Fish and Wildlife Conservation Commission in Rule 68A-27, F.A.C., as endangered, threatened or species of special concern must be released immediately. Any injury and/or mortality must be reported to this office within 24 hours via fax at (850) 921-1847. Ultimate disposition will be at the discretion of the Commission.

PERMIT CONDITIONS AND PROVISIONS CONTINUED:

2. American alligators (*Alligator mississippiensis*) and Eastern indigo snakes (*Drymarchon corias couperi*) may be live-captured by nonharmful means, relocated short distances and immediately released, but only upon unexpected encounter in the course of Florida Power and Light Company construction and/or maintenance activities, and only as absolutely necessary to avoid their harm in the performance of those activities.
3. The Permittee may insert Hobotemp Dataloggers in the interior and exterior of American Crocodile nests per the Permittee's February 6, 2003 (and February 27, 2003 supplemental) application.
4. Scute samples collected from American Crocodiles may be sent to Dr. Micheal Forstner at Southwest Texas State University and Dr. Lou Densmore at Texas Tech University for DNA analysis per the Permittee's September 19, 2003 request. A copy of this permit must accompany those samples at all times.
5. The Permittee by signature above confirms that representatives of the Florida Fish and Wildlife Conservation Commission (Commission) have his/her permission as the Permittee, and that of the landowner(s) to enter on and inspect the property(ies) described in the application (herein incorporated by reference) for all reasonable purposes pertaining to applicable Commission rules.
6. This permit is in effect a amendment of permit WX06467, which expires December 31, 2009 and supercedes all previous versions does not authorize access to any public or private properties. Any required permission accordingly must be secured from the appropriate landholders prior to undertaking any work on such properties. It is nontransferable, but other qualified personnel may assist in permitted work in the absence of the Permittee's direct supervision, when those assistants are designated via letter from the Permittee to each designee, with this office provided a copy of such letter(s). This permit must be readily available for inspection at all times while engaging in the permitted activities.
7. Formally designated assistants/subpermittees are also to be in possession of your letter of authorization, a copy of this state permit and any required federal authorization/permit when working in your absence.
8. The permitted work may also require federal authorization or permit(s). A copy of such federal authorization/permit(s) must be obtained before embarking upon any of the permitted activities.
9. This permit is subject to revocation at any time pursuant to Chapter 120, Florida Statutes.

PERMIT CONDITIONS AND PROVISIONS CONTINUED:

10. A detailed report of all collecting activities pursuant to this permit must be submitted within 90 days of permit expiration or upon application for permit renewal, whichever is precedent. Copies of any other reports or publications, which result from the work, must also be provided upon their availability. Application for renewal should be made at least 45 days in advance of the date it is needed.

A person whose substantial interests are affected by FWC's action may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. A person seeking a hearing on FWC's action shall file a petition for hearing with the agency within 21 days of receipt of written notice of the decision. The petition must contain the information and otherwise comply with section 120.569, Florida Statutes, and the uniform rules of the Florida Division of Administration, chapter 28-106, Florida Administrative Code. Upon such notification, the Permittee shall cease all work authorized by this permit until the petition is resolved. The enclosed Explanation of Rights statement provides additional information as to the rights of parties whose substantial interests are or may be affected by this action.

AIW/EH/jb
LIC 6-20
WX06467a per
Enclosure

cc: Ms. Carmen Simonton (USFWS)
South Region