



December 12, 2005

L-2005-249

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Biological Assessment Regarding Smalltooth Sawfish Event

By Florida Power & Light Company (FPL) letter L-2005-146 dated July 1, 2005, FPL submitted a report providing a description of a reportable capture of a smalltooth sawfish in the intake canal at the St. Lucie Plant.

By NRC letter dated July 19, 2005, NRC informed FPL of its plans to prepare a biological assessment (BA) for this species. In this letter, NRC requested FPL to provide records of endangered sea turtles captures, details of recent dredging activities in the intake canal, and information on research and conservation efforts.

As part of the requested information, the attached report provides details related to the St. Lucie Plant and to the protected species of smalltooth sawfish.

Very truly yours,

A handwritten signature in black ink, appearing to read 'WJ', is written over the closing text.

William Jefferson, Jr.
Vice President
St. Lucie Plant

WJ/spt

Attachment

IE23

BIOLOGICAL ASSESSMENT
UNDER SECTION 7 OF THE FEDERAL ENDANGERED
SPECIES ACT
AND INFORMATION RELATED TO THE PROTECTED
SPECIES
OF
SMALLTOOTH SAWFISH
Pristis pectinata

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1.0 Introduction

1.1 Section 7 Consultation

The Nuclear Regulatory Commission (NRC) is undertaking a Section 7 Consultation under the Federal Endangered Species Act (ESA) with the National Oceanic and Atmospheric Administration (NOAA) Fisheries, formerly National Marine Fisheries Service (NMFS). This Section 7 will evaluate the effect of the operation and/or maintenance of the Florida Power & Light Company (FPL), St. Lucie Nuclear Plant cooling canal system, on the endangered smalltooth sawfish (*Pristis pectinata*).

On April 1, 2003, the NOAA Fisheries listed the smalltooth sawfish (*Pristis pectinata*) as an endangered species (68 FR 15674) under the Endangered Species Act (ESA). After review of the scientific and commercial information available, the status review team determined the U.S. population segment of the smalltooth sawfish was in danger of extinction throughout all or a significant portion of its range.

The St. Lucie Plant is an electric generating station on Hutchinson Island in St. Lucie County, Florida. The plant consists of two nuclear-fueled 850 net MWe units; Unit 1 was placed in service in March 1976 and Unit 2 in April 1983. St. Lucie Units 1 and 2 use the Atlantic Ocean as a source of water for once-through condenser cooling.

The ESA requires federal agencies, such as the NRC, to consult with the secretaries of the U.S. Department of Interior and/or Commerce to ensure that their actions are not likely to jeopardize the existence of a listed species or adversely modify or destroy critical habitat. The NRC will consult with the NOAA Fisheries to determine if the St. Lucie Plant cooling canal system activities may impact the smalltooth sawfish, which is managed by the NOAA Fisheries. There has been one known entrapment of a smalltooth sawfish in the St. Lucie Plant intake canal since it began operation in 1976.

1.2 Scope of the Biological Assessment

As a part of the Section 7 Consultation, this Biological Assessment (BA) was prepared for NOAA Fisheries to describe the actions subject to the consultation, including the facility, operations, a description of the events that followed the capture of the sawfish on May 16, 2005, current sea turtle monitoring activities and information on sawfish habitat and population. The following Sections are included in this BA.

Section 1, **Introduction**, presents the structure of a Section 7 Consultation, the regulatory history of the smalltooth sawfish and a brief description of the St. Lucie Plant. This section also discusses the scope of the BA.

Section 2, **Sawfish Status**, provides a description of the status of the listed species, their geographic distribution, life history and biology, and habitat requirements.

Section 3, **Facility Description**, provides a description of the St. Lucie Plant and plant operations, current sea turtle monitoring activities and the description techniques used to capture and release the sawfish. This will also include figures of the facility.

Section 4, **Literature Cited**, references sited and personal communications.

2.0 Status of the Smalltooth Sawfish

A large amount of information in this section was found in the "Status Review of the Smalltooth Sawfish (*Pristis pectinata*) December 2000." This document was prepared for the NMFS by a variety of experts and will be noted in the Literature Cited.

Source, NOAA Web Site.

http://www.nmfs.noaa.gov/prot_res/species/fish/Smalltooth_sawfish.html

2.1 Factors Contributing to the Sawfish Status

On April 1, 2003, the NOAA Fisheries listed the smalltooth sawfish (*Pristis pectinata*) as an endangered species (68 FR 15674) under the Endangered Species Act (ESA). After review of the scientific and commercial information available, the status review team determined the U.S. population segment of the smalltooth sawfish was in danger of extinction throughout all or a significant portion of its range. There are four factors contributing to the listing of the sawfish; (1) the present or threatened destruction, modification, or curtailment of its habitat or range; (2) over utilization for commercial, recreational, scientific, or educational purposes; (3) the inadequacy of existing regulatory mechanisms; and (4) other natural or manmade factors affecting its continued existence.

2.2 Life History and Biology

The smalltooth sawfish are in the Suborder Pristoidea, Family Pristidae, Genus *Pristis*, and species *pectinata*. Sawfish belong to a group of fish called elasmobranchs, fishes of the subclass Elasmobranchii such as sharks, rays and skates. All elasmobranchs have a skeleton made of cartilage. Very little is known about the life history of the smalltooth sawfish because they were not an important commercial species. What we do know is that large numbers were caught as bycatch in the early part of this century which contributed to the decline in the population (www.floridasawfish.com).

The smalltooth sawfish have internal fertilization like all elasmobranchs. The eggs of the sawfish hatch in the uterus and the embryos grow in the uterus. The embryos resemble the adults and during development the rostrum, commonly known as the saw, is soft and the teeth are covered by the skin until they are exposed shortly after birth. Some smalltooth sawfish are found to have up to 20 embryos (www.floridasawfish.com). The smalltooth sawfish is approximately 2 feet at birth and can grow up to 18 feet or more. There are not any known formal studies on the growth and age of the sawfish. Also, the size at which the smalltooth sawfish reaches maturity is unknown.

The sawfish are similar to sharks in appearance. They have a long flattened rostrum with teeth along either edge, and a flattened head and trunk. The smalltooth sawfish can have anywhere from 24 to 32 teeth on each side of the rostrum and once a sawfish loses its teeth they do not grow back. These so called teeth are technically dermal denticles (tiny skin teeth) that are common on shark skin. The rostrum of the smalltooth sawfish is approximately one-quarter the total length of the animal.

The sawfish diet consists of schooling fish or crab, shrimp, or other bottom dwellers. The saw can obtain food by disrupting the bottom and makes prey available by dislodging the

animals from the substrate. They can also use their rostrum to slash through schools of small fish wounding or stunning the fish before they consume them. The rostrum on a sawfish can also be used as a defensive mechanism by slashing the saw from side to side. Sawfish will defend themselves when threatened but are not known to aggressively attack humans unless they are provoked.

2.3 Sawfish Habitat

Sawfish inhabit shallow coastal waters of tropical seas and estuaries throughout the world. They are usually found in shallow waters very close to shore over muddy and sandy bottoms. They are often found in sheltered bays, on shallow banks, and in estuaries or river mouths. Certain species of sawfish are known to ascend inland in large river systems, and they are among the few elasmobranchs, that are known in freshwater systems in many parts of the world. In the United States, the smalltooth sawfish can be found on inshore bars, mangrove edges, sea grass beds, and sometimes in deeper coastal waters.

2.4 Sawfish Distribution

Smalltooth sawfish has been reported in both the Pacific and Atlantic Oceans, but the U.S. population is found only in the Atlantic. Historically, the U.S. population was found from New York to the Mexican border (Simpfendorfer and Wiley 2005). The current range of this species is now restricted to the Florida peninsula, and smalltooth sawfish are relatively common only in the Everglades region at the southern tip of the state. No accurate estimates of abundance trends over time are available for this species. However, available records, including museum records and anecdotal fisher observations, indicate that this species was once common throughout its historic range and that smalltooth sawfish have declined dramatically in U.S. waters over the last century.

2.5 Sawfish Abundance

The smalltooth sawfish population has dramatically declined during the middle and later parts of the 20th century. The decline was not realized due to the fact the sawfish was not a species of commercial value. The decline can be documented by using the data from sawfish landing by shrimp trawlers of Louisiana. Several factors contributed to the decline. The most significant cause for the decline was recreational and commercial fishing. The sawfish was regularly taken as bycatch in gill nets, trawls, and seine fisheries (Simpfendorfer 2002).

Information based on encounters with the smalltooth sawfish by fisheries, boaters, divers and researchers from 1998-2004 indicate the majority of the population in Florida can be found from the Caloosahatchee River to Florida Bay. There were a total of 434 smalltooth sawfish encounters reported throughout Florida, from St. Augustine to the Panhandle. In areas that had historical accounts of the smalltooth sawfish such as the Indian River Lagoon and the lower St. Johns River sightings are now rare (Simpfendorfer and Wiley 2005).

3.0 Facility Description

The information in this section was obtained from the Florida Power & Light Company, St. Lucie Plant, Annual Environmental Operating Report 2004.

3.1 St. Lucie Plant

The St. Lucie Plant is located on a 457-hectare site on Hutchinson Island on Florida's east coast (Figures 1 and 2). The plant is approximately midway between Ft. Pierce and St. Lucie Inlets. It is bounded on the east side by the Atlantic Ocean and on the west side by the Indian River Lagoon. Hutchinson Island is a barrier island that extends 36 km (22.4 mi) between inlets and attains its maximum width of 2 km (1.2 mi) at the plant site. Elevations approach 5 m (16.4 ft) atop dunes bordering the beach and decrease to sea level in the mangrove swamps that are common on the western side. The Atlantic shoreline of Hutchinson Island is composed of sand and shell hash with intermittent rocky promontories protruding through the beach face along the southern end of the island. Submerged coquina rock formations parallel much of the island off the ocean beaches. The ocean bottom immediately offshore from the plant site consists primarily of sand and shell sediments. The Florida Current, which flows parallel to the continental shelf margin, begins to diverge from the coastline at West Palm Beach. At Hutchinson Island, the current is approximately 33 km (20.5 mi) offshore. Oceanic water associated with the western boundary of the current periodically meanders over the inner shelf, especially during summer months.

The St. Lucie Plant consists of two 850 net MWe nuclear-fueled electric generating units that use near shore ocean waters for the plant's once-through condenser cooling system. Water for this system enters through three submerged intake structures located about 365 m (1200 ft) offshore (Figure 2). The intake structures are equipped with a velocity cap to minimize fish entrainment. Water passes through these structures and into submerged pipes two 3.7 m (12 ft) and one 4.9 m (16 ft) in diameter) running under the beach. It then passes into a 1500 m (4921 ft) long intake canal, which transports it to the plant. After passing through the plant, the heated water is discharged into a 670 m (2198 ft) long canal that leads to two buried discharge pipelines. These pass underneath the dunes and along the ocean floor to the submerged discharges, the first of which is approximately 365 m (1200 ft) offshore and 730 m (2400 ft) north of the intake.

3.2 Sea Turtle Monitoring Activities

Since plant operation began in 1976, 10,366 sea turtles (including recaptures) representing five different species have been removed from the intake canal. The majority of the turtles captured (57.8 percent) were loggerheads. Variation in the number of turtles found during different months and years, including dramatic increases in green turtle captures in recent years, have been attributed primarily to natural variations in the occurrence of turtles in the vicinity of the plant, rather than to operational influences of the plant itself. Ongoing evaluations and improvements to the canal capture program during recent years have substantially decreased the amount of time of entrapped sea turtles remain in the canal. Turtles confined between the barrier net and intake headwalls

typically reside in the canal for a relatively short period prior to capture, and most are in good to excellent condition when caught.

A five-inch mesh barrier net completed in January 1996 substantially reduced sea turtle residence times in the intake canal. However, during major influxes of seaweed and jellyfish, this net experienced design failure and caused mortalities. To prevent this problem, FPL constructed a new improved barrier net with additional structural support. Construction of this net was completed in November 2002. The improved design and net material has withstood the seaweed and jellyfish events that caused previous design failure of the old barrier net. Additionally, dredging of the intake canal (completed in 2002 and in 2005) has reduced current velocities around the new barrier net. These actions have significantly reduced the potential for sea turtle mortalities in the plant's intake canal.

In correspondence relevant to the Incidental Take Statement of the May 2001 Biological Opinion there is language that turtle injury or mortality in the canal shall be counted when "resulting from plant operation." In response to this requirement, a qualified veterinarian is utilized to determine cause of death or injury in cases that are not readily apparent.

The sea turtle biologists deploy tangle nets in daylight hours seven day a week to capture sea turtles. The tangle nets are inspected at least hourly. The biologist also use dip nets and free diving to capture turtles. The five-inch barrier net is also monitored hourly. Underwater inspections on the five and eight-inch barrier nets are conducted quarterly. During these inspections any holes found in the nets are repaired.

3.3 Description on Handling the Sawfish

On May 16, 2005, during the course of normal sea turtle netting activities at the St. Lucie Nuclear Power Plant intake canal a smalltooth sawfish (*Pristis pectinata*) became entangled in the north capture net at approximately 5:20 pm. The biologist on duty determined that the animal was too large to handle himself and called for assistance at approximately 5:30 pm. A crew of four biologists assembled at the intake canal at 6:00 pm and discussed a plan to remove the sawfish from the net and release it back to the ocean safely. The 100-foot net was released from the west end anchor point and was pulled into the boat up to the location of the sawfish. The net was then released from the east end anchor point and the remaining net was pulled into the boat leaving the entangled sawfish in the water along side the boat. The rostrum, or saw, was the only part of the animal that was entangled in the net which left the rest of its body unencumbered. The animal was pulled into the boat ramp area where the remaining net was offloaded. The animal remained in the shallow water of the boat ramp until preparations were made for its removal. A stretcher was laid out on the boat ramp and a winch was attached to the remaining net in order to pull the sawfish onto the stretcher. At approximately 6:30 pm, the animal was pulled from the water up the boat ramp and onto the stretcher. It was then moved into the back of a trailer normally used for transporting large sea turtles. At this point the sawfish was disentangled from the net and measurements were taken. The sawfish measured 415 cm (13.62 feet) from tail to end of

rostrum and the rostrum itself measured 86 cm (2.82 feet) from base to tip. The animal was then transported via an all terrain vehicle (ATV) across the dune and to the ocean, a distance of about 100 meters. Two biologist walked behind the trailer holding up the tail end of the stretcher to ensure the animal would not slide out. The trailer was then filled with ocean water by backing it into the nearshore trough and the animal was able to float out of the trailer and swim away freely at approximately 6:45 pm. The area where the sawfish was released was then monitored for another 25 minutes to make sure that it had acclimated and did not wash ashore.

After the sawfish was released safely by the biologist, FPL contacted NOAA Fisheries to report the incident. NOAA Fisheries requested FPL send photographs and measurement data on the sawfish to Mote Marine Laboratory as a part of Mote's ongoing sawfish research. FPL did so on May 18, 2005. On June 7, 2005, NOAA Fisheries indicated to FPL that a Section 7 Consultation would need to be initiated between the NRC and NOAA Fisheries concerning the event.

4.0 Literature Cited

Anon. 2000. Status Review of Smalltooth Sawfish (*Pristis pectinata*) Unpublished report from the NMFS Sawfish Review Team. Available online at http://www.nmfs.noaa.gov/prot_res/species/fish/Smalltooth_sawfish.html.

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Simpfendorfer, C. A., and T. R. Wiley. 2005. Determination of the Distribution of Florida's Remnant Sawfish Population and Identification of Areas Critical to Their Conservation. Final Report. Florida Fish and Wildlife Conservation Commission.

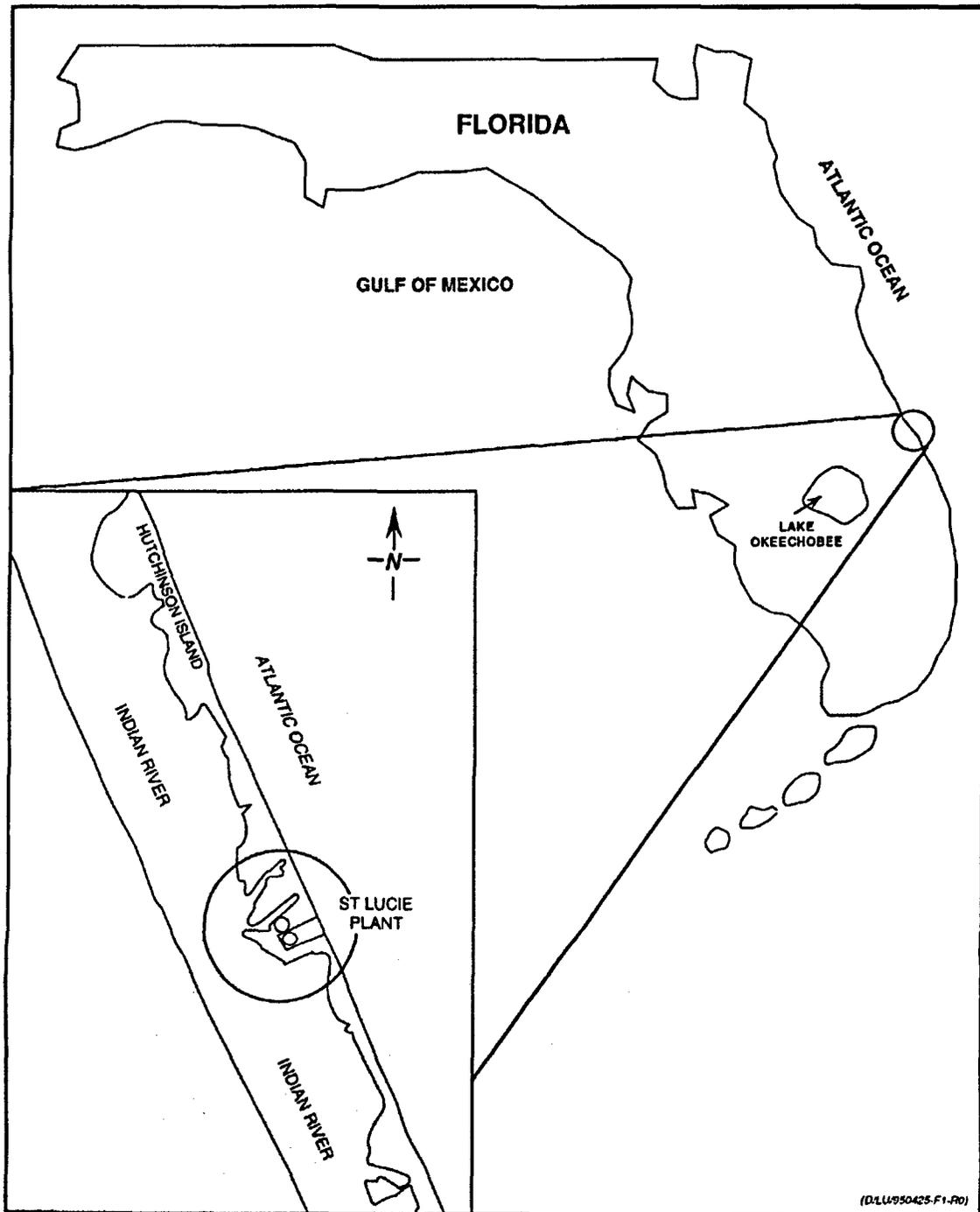


Figure 1. Location of St. Lucie Plant

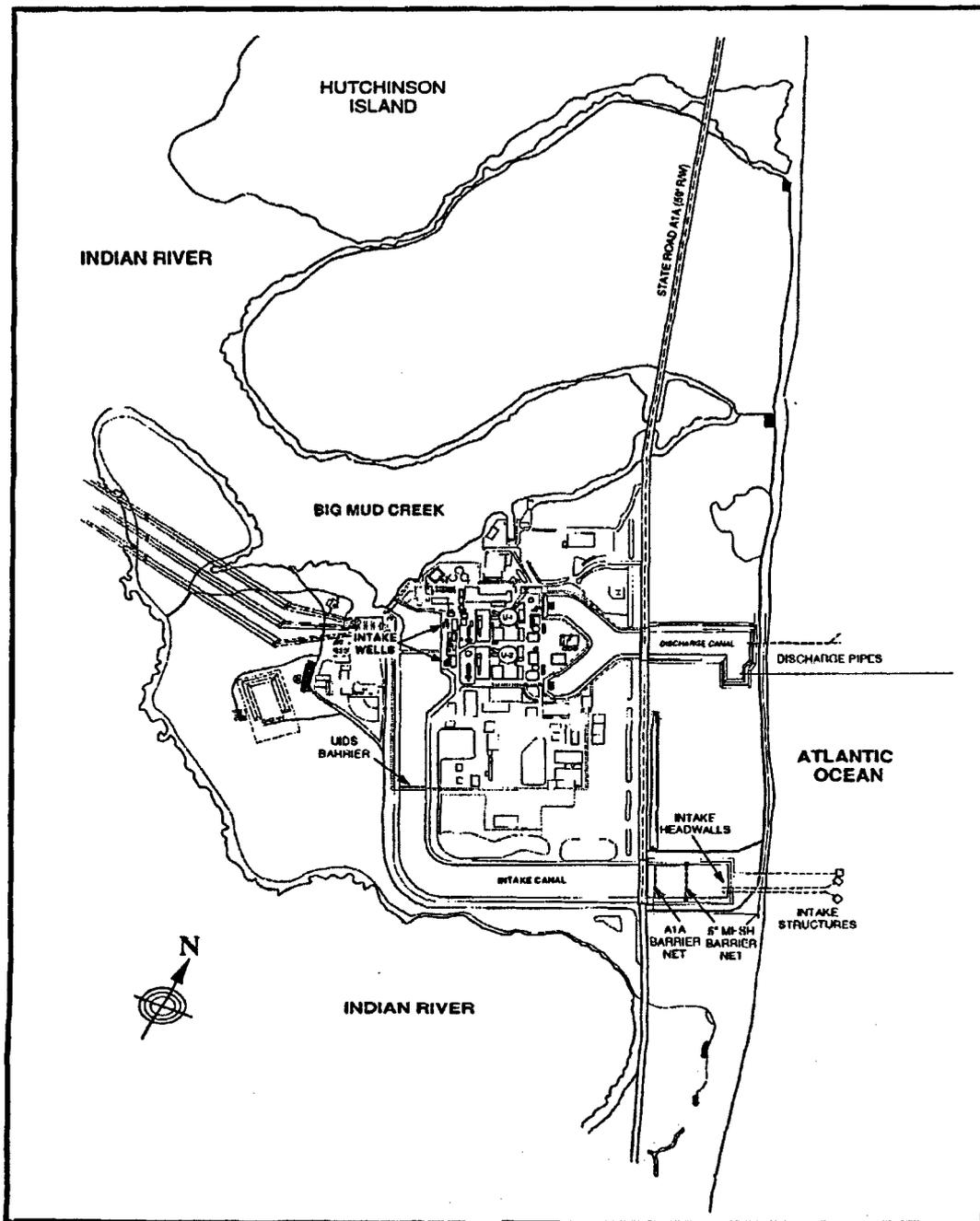


Figure 2. St. Lucie Plant Cooling Water Intake and Discharge System