


RETURN TO REGULATORY CENTRAL FILES
ROOM 016
Final

NRC-047
Submitted Nov. 10, 2015

	
United States Nuclear Regulatory Commission Official Hearing Exhibit	
In the Matter of: FLORIDA POWER & LIGHT COMPANY (Turkey Point Nuclear Generating, Units 3 and 4)	
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Docket #:	05000250 & 05000251
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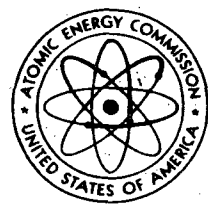
environmental statement

related to operation of

TURKEY POINT PLANT

FLORIDA POWER AND LIGHT COMPANY

DOCKETS NO. 50-250 AND 50-251



July 1972

RETURN TO REGULATORY CENTRAL FILES
ROOM 016

UNITED STATES ATOMIC ENERGY COMMISSION
DIRECTORATE OF LICENSING

SUMMARY AND CONCLUSIONS

This Final Environmental Statement was prepared by the U.S. Atomic Energy Commission, Directorate of Licensing.

1. This action is administrative.
2. The proposed action is the issuance of an operating license to the Florida Power and Light Company for the operation of the Turkey Point Plant Units 3 and 4 in the State of Florida, in Dade County, at a site about 25 miles south of Miami. The Turkey Point Units 3 and 4 employ pressurized water reactors, each with initial and ultimate thermal generating capacities of 2200 MWt and 2300 MWt. The gross electrical power output of each unit is to be 760 MW. The units' steam turbines are to be cooled with salt water. Initially, a once-through cooling system will be used. This is planned to be supplemented and finally replaced in stages as a recirculating cooling system is built. Unit 3 is now due to be ready for fuel loading in July 1972; Unit 4 is expected to be ready in October 1972.
3. Summary of environmental impacts, including beneficial and adverse effects:
 - a. The major benefits of this project will be the annual production of 10 billion kilowatt-hours of electricity and the addition of 760 MW gross generating capacity per unit to the Applicant's system. The latter benefit will help relieve a serious power shortage in the Florida area and lessen threats of adverse effects on the public from this shortage. Some minor benefits are expected from enhancement of recreational uses of the area adjacent to the Plant.
 - b. Construction of the planned cooling channel system will destroy about 7,000 acres of salt-marsh habitat for wildlife. Some, but as yet unknown, recovery of the area is expected. About 50 acres of former marsh has been used for the part of the site where the reactor buildings and related structures are located.
 - c. There is no adverse impact related to transmission lines for the nuclear units, since the right-of-way already in use for the fossil-fueled units will be used for the nuclear units with no additional construction.
 - d. The impact will be negligible for releases of radioactive materials and radiation to the environment from routine operations. The estimated dose from operation of the plant to the population living

within 50 miles is about 12 man-rem per year. A very low probability risk of accidental exposure to radiation will be created.

- e. Interim cooling system operation may temporarily cause minor damage to marine life near the mouths of the canals in Biscayne Bay and Card Sound, particularly if temperature restrictions are relaxed under emergency conditions.
- f. Loss of plankton by entrainment in the interim once-through or in the proposed channel cooling systems will have a minor, probably immeasurable, impact on the productivity of Card Sound and Biscayne Bay.
- g. Benthic marine life in a small, but undefinable, area of Card Sound may be affected by an accumulation of water with salinities 5 to 10% above normal as a result of operation of the proposed channel cooling system.
- h. Seepage of warm saline water from the proposed cooling channel system may have a minor impact on benthic organisms in shallow areas along several miles of shoreline.
- i. Residual chlorine in the purge water from the proposed cooling channel system will be at most a minor hazard to marine life near the mouth of the Card Sound Canal. There may be a slightly greater hazard during operation of the interim once-through cooling system, but this should be adequately controlled by appropriate effluent monitoring.
- j. There is a potential for minor damage to marine life in Biscayne Bay during interim cooling system operation through impingement and killing of biota on intake screens.

4. Alternatives considered were as follows:

- Other sites, at this stage, would be uneconomical and might have similar environmental impacts.
- Fossil fuels would be less desirable and uneconomical at this stage.
- Brackish water mechanical-draft cooling towers would be competitive in costs, but would have potential vapor plume and salt-deposition impacts.
- Two systems for once-through cooling with dilution water are cost competitive and appear environmentally attractive from the aspect of balancing terrestrial impacts against marine impacts.

5. The Federal, State, and local agencies listed below and the Applicant have commented on the Draft Environmental Statement and their comments have been considered in the preparation of the Final Environmental Statement.

Advisory Council on Historic Preservation
Department of Agriculture
Department of the Army, Corps of Engineers
Department of Commerce
Environmental Protection Agency
Federal Power Commission
Department of the Interior
Department of Transportation
Department of Housing and Urban Development
Florida Department of Air and Water Pollution Control
Florida Department of Administration

6. This Final Environmental Statement is being made available to the public, to the Council on Environmental Quality, and to other agencies in July 1972.
7. On the basis of the evaluation and analysis set forth in this Final Statement, and after weighing the environmental, economic, technical, and other benefits against environmental costs and considering available alternatives, it is concluded that from the standpoint of environmental effects the action called for is the issuance of an operating license for Turkey Point Unit 3, as well as for Unit 4 when it is completed, subject to the following conditions for protection of the environment:
 - a. Initial operation shall be with once-through cooling of the turbine condensers as proposed by the Applicant.
 - b. Since the available information regarding the environmental impacts from construction and operation of the proposed cooling channel system is extremely limited in a number of areas, continuing detailed evaluations of the environmental impacts of construction and operation of this part of the channel system shall be conducted by the Applicant. The information obtained shall be in sufficient detail to enable a confident assessment of the overall impact of the proposed cooling channel system. The additional monitoring and evaluation programs as set forth in Section V.F. of this Final Statement shall be performed. Specific areas covered shall include:

- (1) Completion of survey and evaluation of impacts on terrestrial environment and the rate and extent of recovery which may be achieved by (a) natural regrowth and (b) specific efforts to promote revegetation. The results of such survey and evaluation shall be submitted to the AEC not later than October 1, 1972.
 - (2) Impacts from continuing operation on the water quality and biota in the receiving waters of Card Sound and Biscayne Bay, including determination of chlorine residuals at points of discharge to the Bay and Sound and any effects.
 - (3) Completion of design and analysis of operation of control structure for cooling channel discharges and intakes, as well as the discharge leg and mouth of the Card Sound Canal.
 - (4) Susceptibility of cooling channel system to damage from storms or other acts of nature and capability for rapid restoration of the system to operation.
- c. The Applicant shall pursue evaluations of alternatives to the proposed cooling channel system during construction, interim operation, and evaluation of the channel system. These evaluations shall include at least the following:
- (1) Study of availability of groundwater or other alternative sources of surface water to use in the cooling system.
 - (2) Study of applicability of mechanical cooling devices, including powered spray modules and cooling towers.
 - (3) Study of marine environmental impacts of the once-through cooling alternatives described in Section X of this statement.
- d. The Applicant shall take appropriate corrective action on any adverse effects determined as a result of monitoring and study programs. To the fullest extent practicable, the Applicant shall utilize results of study programs in

improving and modifying the operation of the Plant and its cooling system so as to achieve a minimal adverse environmental impact.

- e. Technical specifications will be prepared as part of the licenses to address the following matters, considering both once-through and cooling channel operation.
 - (1) Operating limits for the cooling water to cover:
 - (a) temperature, including maximum temperature, changes, and rates of change
 - (b) salinity
 - (c) velocity
 - (d) flow rates
 - (e) residual chlorine
 - (2) Monitoring and surveillance programs to cover:
 - (a) operating limits for the above items
 - (b) a groundwater monitoring system
 - (c) impingement of aquatic organisms on intake structures
 - (d) entrainment of aquatic organisms in the cooling system
 - (3) Study and evaluation programs to determine:
 - (a) impact on aquatic and terrestrial flora and fauna
 - i. initial operating conditions
 - ii. cooling channel operating conditions
 - (b) recovery from adverse impacts

- (c) trends in environmental impacts as may develop in the future
- (d) ways to modify operations so as to further reduce such adverse impacts as do occur

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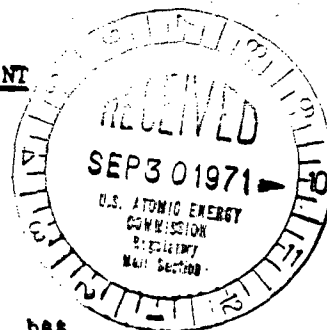
IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF FLORIDA

APPENDIX C

Civil Action No. 70-328-CA

UNITED STATES OF AMERICA, :
 :
 Plaintiff, :
 :
 v. :
 :
 FLORIDA POWER AND LIGHT COMPANY, :
 :
 Defendant. :

FINAL JUDGMENT



WHEREAS the plaintiff, the United States of America, has filed a complaint and an amended complaint in the above-captioned matter, and the defendant, the Florida Power and Light Company, has appeared and denied the allegations of the complaint, and has filed affirmative defenses and a counterclaim and the plaintiff and the defendant, by their respective attorneys, have each consented to the making and entry of this Final Judgment without further pleading or trial or adjudication of or finding on any issues of fact or law raised by the complaint,

NOW, THEREFORE, without trial or adjudication of any issue of fact or law herein, and without this Final Judgment constituting evidence or an admission by any party with respect to any such issue in the pending action or in any other proceeding, and, upon consent of the parties as aforesaid, it is hereby

ORDERED, ADJUDGED, AND DECREED as follows:

I

This Court has jurisdiction of the subject matter of this action and of the parties thereto.

II

For the purposes of this Final Judgment:

(a) "Florida Power and Light" shall mean the defendant Florida Power and Light Company, a Florida corporation.

(b) "Generating facilities" shall mean Florida Power and Light's fossil fueled electric generating units 1 and 2, and nuclear powered electric generating units 3 and 4, all of which are located (or are under construction) at Turkey Point near Homestead, Florida.

(c) "Intake structures" shall mean all natural or artificial channels, structures, or devices through which Florida Power and Light draws or is able to draw water from Biscayne Bay or Card Sound for use in cooling its generating facilities.

(d) "Cooling system" shall mean any and all waterways, lakes, ponds, canals, dikes, levees, dams, barriers, or other structures, devices, or appurtenant facilities which under the provisions of this Judgment shall be constructed and employed to reduce the temperature of water discharged from Florida Power and Light's generating facilities.

(e) "Discharge canals" shall mean all natural or artificial conduits through which water from Florida Power and Light's generating facilities is discharged to Biscayne Bay or Card Sound.

(f) "A regional emergency" shall mean one of the following occurrences within the State of Florida: (1) a catastrophic natural disaster including hurricanes, floods, and tidal waves; or (2) other emergencies declared by state, county, municipal, or federal authorities during which an uninterrupted supply of electric power is vital to public health and safety.

(g) "National power emergency" shall mean any event causing authorized federal officials to require or

request that Florida Power and Light supply electricity to points within or without the State of Florida.

(h) "Reactor emergency" shall mean an unanticipated equipment malfunction necessitating prompt remedial action to avoid endangering the public health or welfare.

(i) Abbreviations are as follows: (1) cfs = cubic feet per second; (2) °F = degrees fahrenheit; (3) fps = feet per second.

(j) Temperature, salinity, flow rate, and velocity measurements provided herein shall be instantaneous measurements and shall not be average figures.

(k) "Salinity" shall mean the total mass of dissolved solids in a one liter sample of water, referred to the temperature of the receiving water.

III

The provisions of this Final Judgment shall be binding upon Florida Power and Light, its directors, officers, agents, servants, employees, successors and assigns, and all persons, firms, and corporations acting under, through, or for it, and all persons, firms, and corporations in active concert or privity with it, providing they have actual notice of the Final Judgment by personal service or otherwise.

IV

Subject to the provisions of Paragraph VI, and commencing four years after the receipt by Florida Power and Light of all necessary construction permits, and upon receipt of the cooling system operating permits, but in no event later than five years from the date of the entry of this Final Judgment, Florida Power and Light shall not discharge into Biscayne Bay or Card Sound any water used for cooling its condensers at its generating facilities at Turkey Point,

except in accordance with the provisions of Paragraph V of this Final Judgment. With respect to those same generating facilities, immediately subsequent to the entry of this Final Judgment, Florida Power and Light:

1. Shall, upon securing the necessary State and Federal permits, complete the construction of the Card Sound Canal within four years;

2. Shall continue to prosecute its application to the Corps of Engineers for a dredging permit for the Card Sound Canal, and immediately upon entry of this Final Judgment, the Corps of Engineers will commence to process Florida Power and Light's application for a permit pursuant to the regulations of the Corps of Engineers;

3. Shall not, prior to the completion of the Card Sound Canal, discharge water into Biscayne Bay at a rate in excess of 3000 cfs;

4. After completion of the Card Sound Canal and until October 1, 1973, shall not discharge water at an average 24 hour rate in excess of 2750 cfs into Card Sound and 1500 cfs into Biscayne Bay; thereafter Florida Power and Light shall not discharge water at an average 24 hour rate in excess of 2150 cfs into Card Sound and 2100 cfs into Biscayne Bay;

5. Shall not at any time discharge water into Biscayne Bay or Card Sound at a temperature in excess of 95°F;

6. Shall construct and maintain the outlet into Card Sound so that:

A. No discharge will be allowed to flow over the shallow substrate which is exposed at low tide (retaining structures or berms extending to the 8 foot bathymetric contour of Card Sound may be necessary to accomplish this purpose and are acceptable);

B. The discharge will be directed upward so that a warm water plume will form on top of the water; and

C. The rate of discharge will be controlled so that water will not enter Card Sound at a velocity greater than 1.5 fps;

7. Shall construct no later than July 1, 1972, and thereafter maintain, a ground water monitoring system southward and eastward of the cooling system for the purpose of evaluating the effect of the seepage from the cooling system upon the underlying aquifer. The monitoring system shall consist of a series of observation wells, the number and location of which shall be mutually agreed upon between Florida Power and Light Company and the Environmental Protection Agency, but which will not exceed 23 wells drilled to a depth of not more than 70 feet. From July 1, 1972 to July 1, 1976, transmissivity will be evaluated in each well every three months, while temperature, concentration of biocides, and salinity will be measured in each well each month. Monitored data will be submitted to the Environmental Protection Agency within ten days following collection. Monitoring frequency requirements to be maintained after July 1, 1976, will be determined by the Environmental Protection Agency based on evaluation of the data in consultation with the United States Geological Survey. If in the judgment of the Environmental Protection Agency the monitored data reveals that substantial environmental harm is occurring, Florida Power and Light shall take such necessary remedial action as the Environmental Protection Agency may direct;

8. Shall install and maintain such protective devices at the intake structure and discharge canal as may be required by the Florida Department of Natural Resources in accordance with a reasonable construction schedule;

9. Shall not introduce biocides into the waters used to cool the condensers at its generating facility except in compliance with the specifications set out in Chapters 17-3 and 17-4 Florida Administrative Code and the applicable laws and regulations of the State of Florida;

10. Shall, consistent with good system maintenance and operating practices providing for necessary area protection, operating reserves, and over-all system reliability, provide power to the areas it serves in the State of Florida by drawing upon all sources of power available to it in such combinations as to minimize the discharges of heated water from the Turkey Point plant;

11. Shall immediately arrange with appropriate officials of the United States, the State of Florida, and other appropriate jurisdictions, to commence joint studies of: (a) the availability of groundwater from at least the depth of the Floridan aquifer (this joint study shall be completed within two years after the entry of this Final Judgment); (b) alternate sources of cooling water, particularly from nearby canals such as the Florida City Canal, the Mowry Canal, and the North Canal; (c) mechanical cooling devices such as powered spray modules and other reasonable concepts for reducing adverse environmental effects attributable to the cooling system specified in this Final Judgment; and (d) procedures for restoration of areas affected by discharges from the Turkey Point generating facilities. Florida Power and Light's financial contribution to these studies shall be limited to \$500,000. The studies specified in (a), (b) and (c) above shall be directed toward the determination of the feasibility, practicability, and acceptability of utilization of such alternate sources of water as a substitute or supplement for withdrawals of make-up water from Card Sound for the cooling system described in Paragraph V below;

12. Shall utilize those waters which, as a result of the studies referred to in subparagraph 11 above, the Administrator of the Environmental Protection Agency may identify as being available to provide make-up water for Florida Power and Light's cooling system, to the extent that this can be done feasibly and practicably and at a cost which is not disproportionate to the degree of environmental protection to be achieved and to the extent that the same can be done without violating any lawful local, state, or federal rule, regulation, statute, ordinance, or order. The Administrator shall not identify groundwater as available for use without the written concurrence of the State of Florida or local agencies with jurisdiction recognized by federal or state law. Florida Power and Light shall alter its Card Sound discharge and withdrawal flow regimen based on the less saline water inputs, as directed by the Administrator, so as to achieve the least amount of environmental damage, but at no power production penalty;

13. Immediately proceed to acquire land for the construction, operation, and maintenance of a cooling system to reduce the temperature of the water discharged from the Turkey Point generating facilities consistent with the standards for operation required by this Final Judgment, and further shall commence to construct, immediately upon receipt of all necessary construction permits, the structures necessary to comply with Paragraph V of this Final Judgment, and shall submit quarterly progress reports concerning the construction of such cooling system in the four years following receipt of the necessary permits and, no later than April 1 of the fourth year after the date of the entry of this Final Judgment, a report specifying the results of trial operation and testing of the final cooling system; and

14. Shall install and operate monitoring devices at the outlet to Card Sound and at other locations, all of the foregoing to be specified by the Environmental Protection Agency, to measure temperature, salinity, flow rate, and velocity.

V

Except as otherwise provided by Paragraph IV of this Final Judgment, all water used by Florida Power and Light to cool its condensers at its generating facilities at Turkey Point shall be discharged into a cooling system, and no water shall be discharged from this cooling system into Biscayne Bay, or Card Sound, or any other navigable water of the United States or tributary thereof unless required to prevent the excessive concentration of salt in the waters of the cooling system, in which case discharges shall be made only into Card Sound and only under the following conditions:

1. Discharges to and withdrawals from Card Sound shall be made only through the Card Sound Canal;
2. The temperature of the water which is discharged as measured at the control structure (to be constructed at a point approximately one mile north of the outlet of Card Sound Canal) shall not exceed 90° F;
3. Subject to subparagraph 2 of Paragraph V, the temperature of the water which is discharged, as measured at the control structure, shall not be more than 4° F above the ambient temperature of the waters of Card Sound as measured at a station or stations to be designated by the Environmental Protection Agency;
4. Variations in the temperature of the water which is discharged shall not exceed 2° F per hour during times when the temperature is rising, or 1.0° F per hour during times when the temperature is falling;
5. The salinity of the water which is discharged, as measured at the outlet to Card Sound, may not be greater than 1.10 times the salinity of the water of Card Sound and may not exceed 44 parts per thousand;

6. The flow as measured at the control structure shall not exceed 1200 cfs;

7. Discharges and withdrawals shall be limited to a tidal regimen (which approximates a six hour period), except in the event that salinity in the cooling system approaches 1.10 times the salinity of the water of Card Sound, or 44 parts per thousand, whichever is more limiting and an additional time period for discharge is required to avoid exceeding those limits;

8. All man-made canals connecting the intake structures and the cooling system with Biscayne Bay shall be closed;

9. Final operating requirements shall include the interim operating requirements contained in subparagraphs 6, 7, 8, 9, 12 and 14, of Paragraph IV; and

10. Florida Power and Light shall develop and submit to the Environmental Protection Agency within two years from entry of this Final Judgment, a contingency plan for rapid restoration of the cooling facilities in the event of system damage due to storms, hurricanes, and similar extraordinary acts of nature.

VI

During a national power emergency, regional emergency, reactor emergency, or at any time when the health, safety, or welfare of the public may be endangered by the inability of Florida Power and Light to supply electricity from any other sources available to it, the operating limits provided in this Final Judgment shall be inapplicable. However, during such emergencies, the defendant shall not exceed the operating limits except as is necessitated by the emergency. Provided Florida Power and Light shall have made timely and proper application for all necessary licenses, permits, consents, approvals, and certifications required by law for construction or operation of the cooling system and discharge canal required to meet the standards provided for herein and shall have duly prosecuted such applications, this Court may extend the time within which Florida Power and Light is required to do any act herein by the

length of any delay in completion of construction or operation of the cooling system which is shown to have been the exclusive result of physical impossibility, force majeure, or legal prohibition.

VII

In the event Florida Power and Light shall be in substantial violation of the express operating provisions of the cooling system herein, the United States shall give Florida Power and Light written notice describing said violations by certified mail to Florida Power and Light, 4200 West Flagler Street, Miami, Florida 33134, and if at the expiration of 3 days after the giving of said notice, said violation upon which said notice was based shall continue to exist, the United States may apply to this Court for an order requiring Florida Power and Light to perform such obligations and comply with such limitations as are expressly required herein and shall accompany such application with a showing of said violation notice, and noncompliance. The relief which may be granted upon a showing of noncompliance with the operating limitations contained herein shall include but not be limited to an order requiring Florida Power and Light to limit operation of its generating facilities to the extent necessary to achieve compliance with this Final Judgment.

VIII

This Final Judgment is not and shall not be interpreted to be a permit under 33 U.S.C. §§403, or 407 nor shall it in any way affect Florida Power and Light's obligation, if any, to secure a license or permit from the Corps of Engineers or the Atomic Energy Commission pursuant to 33 U.S.C. §§403, or 407, 33 U.S.C. §§1151 et seq., 42 U.S.C. §2134, and 42 U.S.C. §4321, nor shall it be interpreted to affect or waive any of the conditions or requirements which may be validly imposed by the Corps of Engineers or the Atomic Energy Commission as conditions for the issuance of such a permit. The Department

of the Interior and the Environmental Protection Agency have reviewed and participated in technical studies which have been used to establish the standards for operation of the generating facilities and the cooling system hereinabove set forth, and the Department of the Interior and the Environmental Protection Agency shall recommend to the Corps of Engineers and the Atomic Energy Commission that the necessary permits and/or licenses be issued for the construction and operation of generating facilities, a cooling system, discharge canals, and any structures or work in navigable waters of the United States or for discharges into such waters or tributaries thereof, consistent with the standards for operation set forth in this Final Judgment and with the standards of the Atomic Energy Commission. Also, this Final Judgment does not operate to excuse Florida Power and Light from compliance, as required by law, with any Federal or State water quality requirements now or hereafter applicable to it.

IX

For the purpose of insuring compliance with this Final Judgment, duly authorized representatives of the Department of Justice, the Environmental Protection Agency, the Department of the Interior, the Atomic Energy Commission, and the Corps of Engineers shall be permitted access, at reasonable times, to Florida Power and Light's facilities at Turkey Point for the purpose of: (1) inspecting the cooling facilities, intake structure, discharge canal(s), and monitoring devices; (2) collecting water samples therefrom; (3) conducting testing procedures which are not unduly disruptive of the operation of such facilities; (4) obtaining from Florida Power and Light records of operations and other corporate records, data pertaining to the construction, operation and maintenance of its cooling system, intake

facilities and discharge canals and information concerning the distribution of electric power within the State of Florida. Information concerning the impact of the cooling system on the environment may be freely disclosed. Other information obtained under the provisions of this Paragraph will be divulged by the representatives designated thereunder to any person other than a duly authorized representative of the Department of Justice, Environmental Protection Agency, Department of the Interior, Atomic Energy Commission, or Corps of Engineers only as is provided by federal law or in the course of legal proceedings to which the United States is a party for the purpose of securing compliance with this Final Judgment.

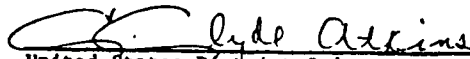
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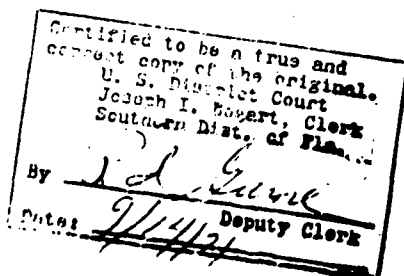
Florida Power and Light agrees that it will dismiss its counterclaim in this action against the plaintiff, United States of America.

XI

Jurisdiction is retained for the purpose of enabling either party to this Final Judgment to apply to this Court at any time for such further orders and directions as may be necessary or appropriate for the construction or carrying out of this Final Judgment, or the modification or termination of any of the provisions thereof or for the enforcement or compliance therewith. In addition copies of all reports, plans and studies required to be prepared by the terms of this Final Judgment shall be promptly filed with this Court. If Florida Power and Light utilizes the provisions of the first sentence of Paragraph VI, then it shall immediately report to this Court and to the Administrator of the Environmental Protection Agency the fact of the emergency and the reasons for utilization of such provisions.

Dated: Miami, Florida
September 10th, 1971


United States District Judge



We hereby consent to the entry of the foregoing Final Judgment without further notice.

THE UNITED STATES OF AMERICA, Plaintiff

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