



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Southeast Regional Office  
263 13<sup>th</sup> Avenue South  
St. Petersburg, Florida 33701-5505  
<https://www.fisheries.noaa.gov/region/southeast>

10/22/2019

F/SER31:SF  
SER-2019-00173

Briana A. Grange, Conservation Biologist  
Division of Materials and License Renewal  
Office of Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dear Ms. Grange:

This letter responds to your request for consultation with us, the National Marine Fisheries Service (NMFS), pursuant to Section 7 of the Endangered Species Act (ESA) for the following action.

Applicant	SER Number	Project Type
Florida Power and Light Company (FPL)	SERO-2019-00173	License Renewal for Turkey Point Nuclear Generating Unit Numbers 3 and 4

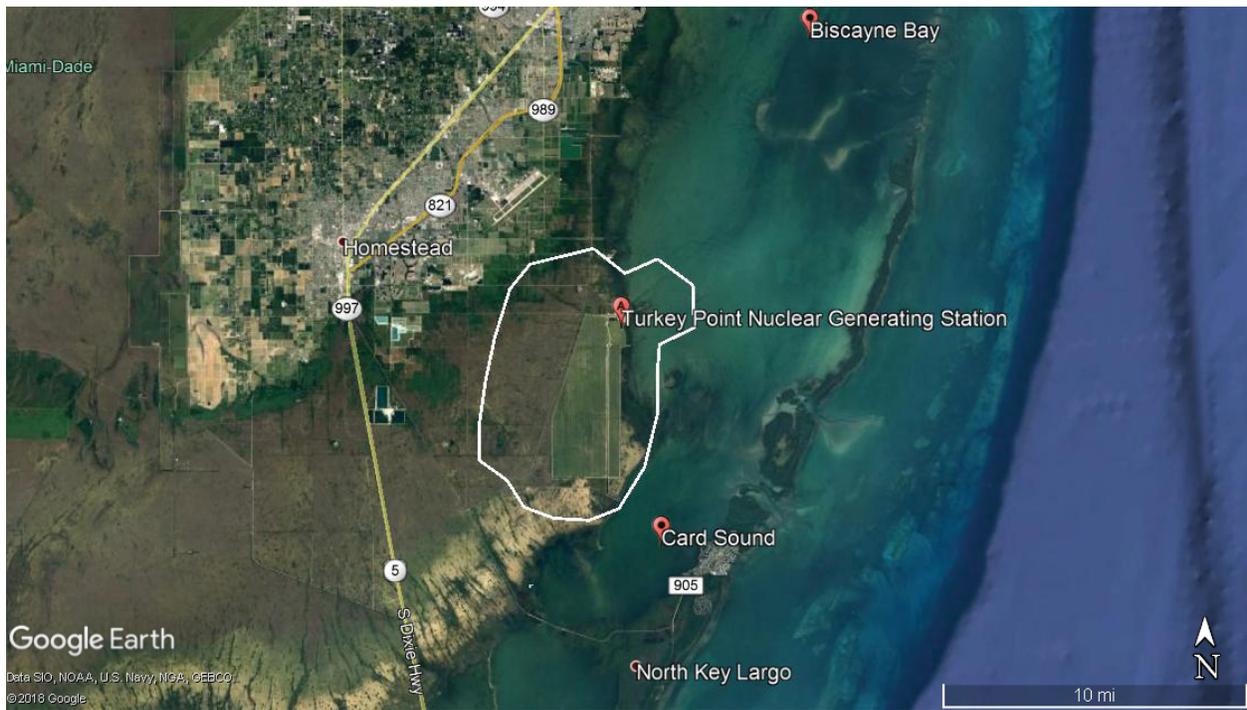
### Consultation History

We received your letter requesting consultation on April 1, 2019. We requested additional information on May 3, 2019. We received a response on June 7, 2019, and additional information August 14, 2019, following Nuclear Regulatory Commission's (NRC's) call to us that day (B. Grange, NRC, pers. comm. to S. Furtak, NMFS Protected Resources Division, August 14, 2019). We initiated consultation on August 14, 2019. During our internal quality control and review process, NMFS requested additional information on October 3, 2019. We received responses on October 4, 2019.

### Project Location

Address	Latitude/Longitude	Water body
Homestead, Miami-Dade County, FL 33033	Approximately 25.435330°N, 80.331259°W (North American Datum 1983)	Biscayne Bay





**Figure 1. Image of the project area bordered with a white line (©2019 Google)**



**Figure 2. Image from “Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Units Nos. 3 and 4, Draft Report for Comment” with Biscayne Bay/Card Sound surface water sampling stations shown in yellow (TPBBSW-10, TPBBSW-3, TPBBSW-14, TPBBSW-4, TPBBSW-5). NRC (March 2019). Image is on page 3-43.<sup>1</sup>**

<sup>1</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Draft Report for Comment (NUREG-1437). March 2019. Office of Nuclear Reactor Regulation, Rockville, Maryland. <https://www.nrc.gov/docs/ML1907/ML19078A330.pdf> (accessed October 3, 2019).



**Figure 3. Image from “Turkey Point Plant Annual Monitoring Report” with Biscayne Bay/Card Sound surface water sampling transects shown in blue (BB1-a, BB1-b, BB2-a, BB2-b, BB3-a, BB3-b, BB4-a, BB4-b). NRC (August 2019). Image is on page 1-18.<sup>2</sup>**

### Existing Site Conditions

NRC published a generic environmental impact statement regarding subsequent license renewal for Turkey Point Nuclear Generating Units Numbers 3 and 4 in March 2019. Turkey Point is a two-unit, nuclear-powered, steam-electric generating facility that began commercial operation in December 1972 (Unit 3) and September 1973 (Unit 4). Turkey Point Units 3 and 4 are pressurized-water nuclear reactors located on approximately 9,460 acres (ac) of FPL-owned land. Biscayne Bay and Card Sound are immediately adjacent to the Turkey Point site.

<sup>2</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

The Turkey Point site also houses three fossil fuel power plants: Units 1 and 2 are retired, natural-gas/oil steam-generating units; and Unit 5 is an operating, natural-gas combined-cycle steam generating unit. In addition to these five currently operating and retired units, the Turkey Point site also features a 5,900-ac artificial body of water called the cooling canal system (CCS). The CCS is a recirculating source of water that is used by Units 3 and 4 for reactor heat rejection and used by Unit 5 for stormwater discharge and cooling water blowdown. FPL designed and constructed the CCS, excavating limestone bedrock, to ensure that it had no surface water connection to any outside water body (i.e., Biscayne Bay or Card Sound). Most of the channels within the CCS are about 200 feet (ft) (60 meters [m]) wide and have a water depth of 1 to 3 ft (0.3 to 1 m). The average canal depth is 2.8 ft (0.85 m). A few of the channels within the CCS have a depth of approximately 20 ft (6.1 m). Perimeter berms -- designed to prevent surface water from entering the CCS -- surround the CCS. These berms are constructed on top of the bedrock and do not contact the water in the CCS. They vary in height from 4 to 10 ft (1.2 to 3 m) above the surface of the bedrock. The widths of the perimeter berms vary from 25 ft to well over 100 ft (7.6 m to 30.5 m).

Class 1 structures (e.g., emergency core cooling system<sup>3</sup>) on the Turkey Point site are flood protected up to a minimum elevation of 20 ft (6.1 m) mean sea level (MSL). Components vital to safety, with the exception of the intake cooling water (ICW) pumps, which are protected to 22.5 ft (6.9 m) MSL, are protected against flood tides and waves up to 22 ft (6.7 m) MSL on the east side of Turkey Point.

FPL discharges stormwater and all other discharges from Turkey Point Units 3 and 4 and the other facilities at the Turkey Point site to the CCS. Neither FPL nor the State of Florida considers the CCS “waters of the United States” or “waters of the State.” FPL operates the CCS as an industrial wastewater (IWW) facility under National Pollutant Discharge Elimination System (NPDES)/IWW permit number FL0001562. Water quality parameters monitored by FPL under the Turkey Point NPDES permit include copper, iron, lead, pH, salinity, temperature, specific conductance, total suspended solids, zinc, and oil and grease. The permit authorizes discharges to “waters of the State;” however, while the permit authorizes discharges to “groundwater of the State,” it does not authorize direct discharges to surface waters of the state. The permit authorizes discharges from the CCS into the surficial aquifer, which is the Biscayne aquifer.

According to information provided by NRC, near the Turkey Point site, both Biscayne Bay and Card Sound are shallow bays. Within Biscayne Bay, over most of the distance between the Turkey Point site and the coral keys (wave-resistant limestone that bounds Biscayne Bay and Card Sound on the east), the depth of the water generally ranges from 2 to 6 ft (0.6 to 1.8 m), reaching a maximum depth of about 7 ft (2.1 m). Within Card Sound, over most of the distance between the Turkey Point site and the coral keys, the depth of the water generally ranges from 4 to 9 ft (1.2 to 2.7 m), reaching a maximum depth of about 10 ft (3 m). The average depth of the bay is approximately 5 ft (1.5 m) at mean low water, and its maximum depth is approximately 13

---

<sup>3</sup> Institute of Nuclear Power Operations and NRC. Effect of Hurricane Andrew on Turkey Point Nuclear Generating Station from August 20-30, 1992. March 1993. Washington, DC. <https://www.osti.gov/servlets/purl/10158520> (accessed October 2, 2019).

ft (4.0 m). Salinity is highly influenced by rainfall and ranges from 24 to 44 practical salinity units (PSU). Annual surface water temperatures range from 59 degrees Fahrenheit (°F) to 92°F (15 degrees Celsius [°C] to 33°C).

In response to orders from the State of Florida and Miami-Dade County, FPL conducts a water quality monitoring program that includes the CCS, Biscayne Bay, and Card Sound. This program monitors surface water bodies for numerous water quality parameters, including ammonia and other nutrients, salinity, and temperature.

From June 2010 to September 2010, FPL installed automated surface water stations in Biscayne Bay (numbered TPBBSW-3, TPBBSW-4, TPBBSW-5, TPBBSW-10, and TPBBSW-14; see Figure 2) and in the CCS (TPBBSW-1 to TPBBSW-7; see Figure 2). FPL collects surface water quality data from these stations on a quarterly (salinity, temperature, and tritium) or semi-annual (ammonia, total nitrogen, and phosphorus) basis.

Salinity in the CCS ranged from 57 to 102.2 PSU (with averages spanning 55.2 to 60.4 PSU at each station) from a period spanning June 2018 to May 2018; temperature ranged from 11.5°C to 46.3°C (with averages spanning 28.1°C to 35.6°C).<sup>4</sup>

According to information provided by NRC, ammonia (milligrams per liter [mg/L]) levels sampled from a period spanning June 2010 to March 2019 for the Biscayne Bay stations ranged from 0.026 milligram per liter (mg/L) to 0.915 mg/L. Ammonia levels in the CCS ranged from 0.0552 mg/L to 4.42 mg/L (averaging 0.328 mg/L) from June 2010 to May 2018.<sup>5</sup> Un-ionized ammonia concentrations from Biscayne Bay sampling stations averaged 0.0148 mg/L over a period spanning June 2010-May 2018; concentrations from CCS sampling stations averaged 0.0349 mg/L.<sup>6</sup>

According to a recent annual FPL report (reporting period June 2018- May 2018)<sup>7</sup>, average surface sample dissolved oxygen (DO) values ranged from 4.7 mg/L to 6.0 mg/L in Biscayne Bay/Card Sound transects (Figure 3). By comparison, surface DO values over the historical period of record (i.e., June 2010-May 2018) have ranged from 4.3 mg/L to 8.0 mg/L. Some samples from the September 2018 sampling period (September 19, 2018) showed low DO (e.g.,

---

<sup>4</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

<sup>5</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

<sup>6</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

<sup>7</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

3.84 mg/L) in Biscayne Bay surface water.<sup>8</sup> CCS sampling station DO concentrations have ranged from 0.07 mg/L to 12.30 mg/L (averaging 4.52 mg/L) from June 2010-May 2018.<sup>9</sup>

According to information provided by NRC, total nitrogen levels sampled from a period spanning June 2010-March 2019 for the Biscayne Bay stations ranged from 0.026 mg/L to 1.1 mg/L, averaging about 0.6 mg/L. Total phosphorus levels ranged from 0.002 mg/L to 0.05 mg/L, averaging about 0.01 mg/L. CCS sampling station total nitrogen concentrations have ranged from 0.870 mg/L to 17.7 mg/L (averaging 5.78 mg/L) from June 2010-May 2018; total phosphorus samples have measured 0.00440 mg/L to 0.106 mg/L (averaging 0.0393 mg/L) over the same period.<sup>10</sup>

Biscayne Bay surface water sampling stations yielded tritium concentrations ranging from 0.2 picocuries per liter (pCi/L) to 34.5 pCi/L, and averaging about 13 pCi/L, from a period spanning June 2010-March 2019, according to data provided by NRC. CCS surface water sampling yielded tritium concentrations ranging from 358 pCi/L to 16,538 pCi/L, and averaging 6,496 pCi/L from June 2010-May 2018.<sup>11</sup>

### **Project Description**

FPL proposes to continue to operate Turkey Point Nuclear Generating Units Numbers 3 and 4 for an additional 20 years. The current renewed licenses for Turkey Point Unit Numbers 3 and 4 expire at midnight on July 19, 2032, and at midnight April 10, 2033, respectively. NRC is considering whether to issue a renewed license for each unit for an additional 20 years. In addition to that decision on future license term, NRC conducts ongoing evaluations of nuclear power plant operating conditions and physical infrastructure to ensure safe operations under the plant's initial and renewed operating licenses, through NRC's Reactor Oversight Program. If new information about changing environmental conditions (such as rising sea levels that threaten safe operating conditions or challenge compliance with the plant's technical specifications) becomes available, NRC will evaluate the new information to determine if any safety-related changes are needed at licensed nuclear power plants.<sup>12</sup> While NRC considers this to be a separate and distinct process from the subsequent license renewal, we consider the plant's

---

<sup>8</sup> Stations TPBBSW-3B, TPBBSW-4B, TPBBSW-5B yielded samples of 4.30 mg/L, 4.58 mg/L, and 3.84 mg/L, respectively, on September 19, 2018.

<sup>9</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under "Document Date," select 08-30-2019) (accessed September 27, 2019).

<sup>10</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under "Document Date," select 08-30-2019) (accessed September 27, 2019).

<sup>11</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under "Document Date," select 08-30-2019) (accessed September 27, 2019).

<sup>12</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Draft Report for Comment (NUREG-1437). March 2019. Office of Nuclear Reactor Regulation, Rockville, Maryland. <https://www.nrc.gov/docs/ML1907/ML19078A330.pdf> (accessed October 3, 2019).

operation under NRC’s regulatory oversight – including potential future safety-related changes – through the subsequent license renewal period to be the action under review for potential effects to listed species.

**Construction Conditions**

All discharged effluent must meet the requirements and limitations of NPDES permit number/IWW permit number FL0001562 issued by the Florida Department of Environmental Protection (FDEP).

FDEP directed FPL to implement a nutrient management plan and a thermal efficiency plan on July 7, 2017. FDEP also required FPL to submit a salinity management plan with the aim of FPL reducing salinity levels in the CCS and reaching an average salinity at or below 34 PSU.<sup>13</sup>

Under an agreement between FPL and the Florida Department of Health (DOH), the DOH Bureau of Radiation Control conducts the Turkey Point Radiological Environmental Monitoring Program (REMP). Through the REMP, the Bureau of Radiation Control documents the radiological impact, if any, to the public, site employees, and the environment from radioactive effluents released during operations at Turkey Point.

**Effects Determination(s) for Species the Action Agency or NMFS Believes May Be Affected by the Proposed Action**

Species	ESA Listing Status <sup>14</sup>	Action Agency Effect Determination	NMFS Effect Determination
<b>Sea Turtles</b>			
Green (North Atlantic [NA] distinct population segment [DPS])	T	NLAA	NLAA
Green (South Atlantic [SA] DPS)	T	NLAA	NLAA
Kemp’s ridley	E	NLAA	NLAA
Leatherback	E	NLAA	NLAA
Loggerhead (Northwest Atlantic [NWA] DPS)	T	NLAA	NLAA
Hawksbill	E	NLAA	NLAA
<b>Fish</b>			
Smalltooth sawfish (U.S. DPS)	E	NLAA	NLAA
Nassau grouper	T	NE	NLAA

**Critical Habitat**

The project is not located in designated critical habitat, and there are no potential routes of effect to any designated critical habitat.

<sup>13</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Draft Report for Comment (NUREG–1437). March 2019. Office of Nuclear Reactor Regulation, Rockville, Maryland. <https://www.nrc.gov/docs/ML1907/ML19078A330.pdf> (accessed October 3, 2019).

<sup>14</sup> E = endangered; T = threatened; NLAA = may affect, not likely to adversely affect; NE = no effect

## Analysis of Potential Routes of Effects to Species

Sea turtles and ESA-listed fishes may be impacted by being exposed to effluent containing high levels of ammonia/un-ionized ammonia, total nitrogen, total phosphorus, heat (i.e., effluent of high temperature), salinity, tritium, and inadequate DO. Impacts could include mortality, growth and development impairment, and fitness (i.e., the ability to survive and reproduce) reduction. However, we believe these effects are discountable because there are no surface water connections that allow flow between the CCS (an IWW facility) and waters of Biscayne Bay or Card Sound; it is expected that fish and other organisms are extremely unlikely to encounter the effluent in Biscayne Bay or Card Sound. Data from Biscayne Bay/Card Sound surface water sampling stations indicate ammonia/un-ionized ammonia, total nitrogen, total phosphorus, temperature, salinity, tritium, and DO occur at levels that are not likely to adversely affect sea turtles and ESA-listed fishes, as summarized below:

- Ammonia levels sampled from a period spanning June 2010 to March 2019 for the Biscayne Bay stations ranged from 0.026 mg/L to 0.915 mg/L. Data on harmful levels of ammonia for ESA-listed sea turtles and fish are lacking; however, scientific studies of ammonia in shortnose sturgeon fingerlings<sup>15</sup> point to lethal levels of ammonia in fingerlings starting around 150 mg/L. Un-ionized ammonia concentrations from Biscayne Bay sampling stations averaged 0.0148 mg/L over a period spanning June 2010-March 2019.<sup>16</sup> According to a University of Florida study, un-ionized ammonia levels of 0.05 mg/L have been shown to be damaging to fish, and at 2.0 mg/L, the fish will die.<sup>17</sup>
- Total nitrogen levels sampled from a period spanning June 2010-March 2019 for the Biscayne Bay stations ranged from 0.026 mg/L to 1.1 mg/L, averaging about 0.6 mg/L. Total phosphorus levels ranged from 0.002 mg/L to 0.05 mg/L, averaging about 0.01 mg/L. Data on harmful levels of total nitrogen and total phosphorus for ESA-listed sea turtles and fish are lacking; however, State of Florida water quality standards for total nitrogen and total phosphorus in Card Sound are 0.33 mg/L and 0.008 mg/L, respectively.<sup>18</sup> USEPA indicates an acceptable range (to protect human health and the environment) for total nitrogen is 2 mg/L to 6 mg/L, and 0.01 mg/L to 0.04 mg/L for total phosphorus, respectively.<sup>19</sup>
- Biscayne Bay annual surface water temperatures range from 59°F to 92°F (15°C to 33°C). Salinity is highly influenced by rainfall and ranges from 24 to 44 PSU. Data on harmful temperature and salinity levels for ESA-listed sea turtles and fish are lacking;

---

<sup>15</sup> Isely, J.J., and J. R. Tomasso. 1998. Acute toxicity of ammonia and nitrite to shortnose sturgeon fingerlings. *The Progressive Fish-Culturist* 60(4): 315-318.

<sup>16</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under “Document Date,” select 08-30-2019) (accessed September 27, 2019).

<sup>17</sup> Francis-Floyd, R., and co-authors. 2015. Ammonia in aquatic systems. Fisheries and Aquatic Sciences Department, University of Florida/Institute of Food and Agricultural Sciences Extension.

<sup>18</sup> United States Environmental Protection Agency (USEPA). State Progress Toward Developing Numeric Nutrient Water Quality Criteria for Nitrogen and Phosphorus. <https://www.epa.gov/nutrient-policy-data/state-progress-toward-developing-numeric-nutrient-water-quality-criteria> (accessed September 6, 2019).

<sup>19</sup> USEPA. Total Nitrogen (revised 6/4/2013). <https://www.epa.gov/sites/production/files/2015-09/documents/totalnitrogen.pdf> (accessed September 6, 2019). Total Phosphorus.

<https://www.epa.gov/sites/production/files/2015-09/documents/totalphosphorus.pdf> (accessed September 6, 2019).

however, discharged effluent must meet the requirements and limitations of the NPDES permit number FL0001562 issued by FDEP for temperature and salinity. Consistent with the permit, FPL must take all reasonable steps to minimize or prevent any discharge, reuse of reclaimed water, or residuals use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health and the environment.

- Biscayne Bay surface water sampling stations yielded tritium concentrations ranging from 0.2 pCi/L to 34.5 pCi/L, and averaging about 13 pCi/L, from a period spanning June 2010-March 2019. USEPA set the maximum contaminant level (MCL) for tritium in drinking water at 20,000 pCi/L, according to information provided by NRC; thus, samples are several orders of magnitude lower than the drinking water standard. NMFS is using this acceptable level for humans as a proxy for an acceptable level for ESA-listed species in the absence of other information.
- Average surface sample DO values ranged from 4.7 mg/L to 6.0 mg/L in Biscayne Bay/Card Sound transects (Figure 3).<sup>20</sup> By comparison, surface DO values over the historical period of record (i.e., June 2010-May 2018) have ranged from 4.3 mg/L to 8.0 mg/L. These DO levels are consistent with state water quality standards; thus, they are assumed to be protective of aquatic life in marine waters. Some samples from the September 2018 sampling period (September 19, 2018) showed low DO (e.g., 3.84 mg/L) in Biscayne Bay surface water.<sup>21</sup> Florida's DO criteria for Class II and III marine waters specify that DO concentrations "Shall not average less than 5.0 mg/L in a 24-hour period and shall never be less than 4.0 mg/L;" however, Florida water quality standards also recognize the variety of physical, biological, chemical, and climatological factors that are capable of producing waters with naturally low DO conditions.<sup>22</sup>

Sea turtles and ESA-listed fishes may be harmed by ingesting prey that contains high levels of tritium. However, we believe this effect is insignificant because tritium in Biscayne Bay and Card Sound occurs at levels orders of magnitude below the MCL for tritium in drinking water. In addition, these nuclear units have been operation since the 1970s and no available data suggest bioaccumulation of tritium in fish inhabiting Biscayne Bay or Card Sound.

Because the renewed license term extends so far into the future, we also examined whether these findings could be affected by anticipated environmental changes, in particular sea level rise. For example, relative to the year 2000, global mean sea level is projected to rise by 0.3 to 0.6 ft (0.09 to 0.18 m) by 2030 and 0.5 to 1.2 ft (0.15 to 0.38 m) by 2050; relative sea level rise on the East

---

<sup>20</sup> Florida Power & Light Company. 2019. Turkey Point Plant Annual Monitoring Report. Prepared by Ecology and Environment, Inc., Lancaster, New York. August 2019. <http://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/PA03-45/facility!search> (under "Document Date," select 08-30-2019) (accessed September 27, 2019).

<sup>21</sup> Stations TPBBSW-3B, TPBBSW-4B, TPBBSW-5B yielded samples of 4.30 mg/L, 4.58 mg/L, and 3.84 mg/L, respectively, on September 19, 2018.

<sup>22</sup> FDEP. 2013. Technical Support Document: Derivation of Dissolved Oxygen Criteria to Protect Aquatic Life in Florida's Fresh and Marine Waters. March 2013. <https://floridadep.gov/sites/default/files/tsd-do-criteria-aquatic-life.pdf> (accessed September 27, 2019).

and Gulf Coasts of the United States is likely to be higher than the global average.<sup>23</sup> If sea level rise increases the risk of effluent waters reaching Biscayne Bay or Card Sound, then the risk of potential effects could increase. We believe any effects are discountable for two reasons. First, the CCS canals are protected by berms that are 4 to 10 ft high and 25 to 100 ft wide. Even with the predicted rise in sea level, these berms reduce the risk of surface waters coming into contact with the water in the CCS. In addition, according to NRC, operating plants must deal with the effects of climate change (e.g., sea level rise) as required by NRC's regulations in 10 CFR Part 50 and the requirements of their license, including technical specifications, to provide reasonable assurance that the activities authorized by the license can be conducted without endangering the health and safety of the public, and to adequately manage the effects of aging so that structures, systems, and components that are important to safety will continue to perform their intended functions for the period of extended operation, as required in 10 CFR Part 54.<sup>24</sup> Further, the State of Florida's draft NPDES permit and NRC's aging management program will require the monitoring of CCS structural integrity over the duration of the subsequent license renewal term. Special inspections will be performed following major events, such as hurricanes. Therefore, any structural integrity hazards to the CCS would be known before they become critical. Both NRC and the State of Florida could take appropriate regulatory actions to assure that the structural integrity of the CCS is maintained throughout the subsequent license renewal period.<sup>25</sup> Therefore, except in the event of major hurricanes, flooding and overtopping of the CCS is extremely unlikely during the subsequent license renewal period. Second, in the event effluent in the CCS is discharged in Biscayne Bay or Card Sound as a result of a major hurricane, it is extremely unlikely that ESA-listed sea turtles or fish would encounter harmful levels of ammonia/un-ionized ammonia, total nitrogen, total phosphorus, heat (i.e., effluent of high temperature), salinity, tritium, and DO. In the CCS, the average levels of ammonia, nitrogen, phosphorus, and tritium are within the acceptable levels noted above. The temperature of waters in the CCS is, on average, higher than the temperature in the bay, but the high average temperature of 35°C in the CCS is only slightly higher than the 33°C high temperature of the bay, and it is extremely unlikely that an individual ESA-listed turtle or fish would encounter significantly higher temperatures due to flooding as a result of a major hurricane. Salinity and DO in the CCS are generally outside of acceptable levels. However, to adversely affect ESA-listed sea turtles or fishes, the effluent would need to come into contact with these species at these levels. This is extremely unlikely to occur. As explained by NRC, even if CCS waters were released into adjacent surface waters due to a major hurricane, total flooding of the CCS would contribute a large amount of sea water and fresh water to the area occupied by the CCS

---

<sup>23</sup> USGCRP. 2017. Climate Science Special Report: 40 Fourth National Climate Assessment, Volume 1. Washington, DC: USGCRP. [https://science2017.globalchange.gov/downloads/CSSR2017\\_FullReport.pdf](https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf) (accessed August 10, 2018).

<sup>24</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Prepublication Draft for Interagency Review (NUREG-1437) (transmitted to NMFS October 4, 2019). Office of Nuclear Reactor Regulation, Rockville, Maryland.

<sup>25</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Prepublication Draft for Interagency Review (NUREG-1437) (transmitted to NMFS October 4, 2019). Office of Nuclear Reactor Regulation, Rockville, Maryland.

and this would dilute the concentration of salt in the water of the CCS.<sup>26</sup> Similarly, we expect flooding as a result of a major hurricane to alter the average DO concentrations to levels consistent with the surrounding surface waters.

### **Conclusion**

Because all potential project effects to listed species were found to be discountable, insignificant, or beneficial, we conclude that the proposed action is not likely to adversely affect listed species under NMFS's purview. This concludes your consultation responsibilities under the ESA for species under NMFS's purview. Consultation must be reinitiated if a take occurs or new information reveals effects of the action not previously considered, or if the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. NMFS's findings on the project's potential effects are based on the project description in this response. Any changes to the proposed action may negate the findings of this consultation and may require reinitiation of consultation with NMFS.

Updates to the regulations governing interagency consultation (50 CFR part 402) will become effective on October 28, 2019 [84 FR 44976]. Because this consultation was pending and will be completed prior to that time, we are applying the previous regulations to the consultation. However, as the preamble to the final rule adopting the new regulations noted, "[t]his final rule does not lower or raise the bar on section 7 consultations, and it does not alter what is required or analyzed during a consultation. Instead, it improves clarity and consistency, streamlines consultations, and codifies existing practice." Thus, the updated regulations would not be expected to alter our analyses.

We look forward to further cooperation with you on other projects to ensure the conservation of our threatened and endangered marine species and designated critical habitat. If you have any questions on this consultation, please contact Sarah Furtak, Consultation Biologist, at (954) 734-4713, or by email at [sarah.furtak@noaa.gov](mailto:sarah.furtak@noaa.gov).

Sincerely,



BERNHART.DAVID.M.10  
66125889  
2019.10.22 11:01:44  
-04'00'

David Bernhart  
Assistant Regional Administrator  
for Protected Resources

File: 1514-22.M

---

<sup>26</sup> NRC. 2019. Generic Environmental Impact Statement for License Renewal of Nuclear Plants, Supplement 5, Second Renewal, Regarding Subsequent License Renewal for Turkey Point Nuclear Generating Unit Nos. 3 and 4, Prepublication Draft for Interagency Review (NUREG-1437) (transmitted to NMFS October 4, 2019). Office of Nuclear Reactor Regulation, Rockville, Maryland.