

Grange, Briana

From: Grange, Briana
Sent: Tuesday, August 15, 2017 2:14 PM
To: 'nmfs.ser.esa.consultations@noaa.gov'
Cc: Quintero, Jessie
Subject: Request for Concurrence with NLAA Determination for Columbia Fuel Fabrication Facility License Renewal
Attachments: CFFF LR Biological Evaluation.pdf

To whom it may concern:

With this email, I am forwarding you the U.S. Nuclear Regulatory Commission (NRC) staff's biological evaluation prepared to comply with the provisions of Section 7 of the Endangered Species Act of 1973, as amended (ESA), in support of the staff's review of Westinghouse Electric Company, LLC's (WEC) application for renewal of Special Nuclear Material License No. SNM-1107 for the Columbia Fuel Fabrication Facility (CFFF). The purpose of this email is to request the National Marine Fisheries Service's (NMFS) concurrence with the NRC staff's ESA effect determination for shortnose sturgeon (*Acipenser brevirostrum*), as described below.

Proposed Action

The NRC's Federal action is the decision whether to renew the CFFF license for an additional 40-year period. CFFF is a fuel cycle facility located in Richland, South Carolina, approximately 13 kilometers (8 miles) southeast of the city of Columbia. WEC is currently licensed to receive, acquire, possess, and transfer byproduct, source, and special nuclear material at CFFF through September 30, 2027. If NRC grants WEC a renewed license, WEC could continue to operate CFFF for an additional 40 years from the dated the renewed license is granted.

ESA Effect Determination

In the enclosed biological evaluation, the NRC staff evaluated the impacts of effluent discharges to the Congaree River on shortnose sturgeon and found that these impacts would be insignificant. Accordingly, the NRC staff concludes that the proposed CFFF license renewal may affect, but is not likely to adversely affect (NLAA) the shortnose sturgeon. The NRC staff did not identify any other federally listed species under the NMFS's jurisdiction as potentially occurring in the action area.

Request for Concurrence

The NRC staff submits the enclosed biological evaluation for your review and requests your concurrence with its NLAA determination within 30 days of receipt of this letter in accordance with Title 50 of the *Code of Federal Regulation* (50 CFR) 402.12(j). I respectfully request that if you are unable to make such a determination within this timeframe that you contact me to discuss an alternate review timeline. My contact information appears below.

Thank you,

Briana

Briana A. Grange

Aquatic Biologist

Division of License Renewal

Office of Nuclear Reactor Regulation

U.S. Nuclear Regulatory Commission

301-415-1042
briana.grange@nrc.gov

Biological Evaluation of Impacts to Shortnose Sturgeon

Westinghouse Columbia Fuel Fabrication Facility

Proposed 40-Year License Renewal

August 2017

Docket No. 70-1151

**U.S. Nuclear Regulatory Commission
Rockville, Maryland**

Prepared by:

Briana Grange
Division of License Renewal
Office of Nuclear Reactor Regulation

Table of Contents

1.0 Introduction	1
2.0 Description of the Proposed Action.....	1
2.1 Proposed Action	1
2.1.1 CFFF Operations	1
2.1.2 Gaseous Effluents.....	2
2.1.3 Liquid Wastes	2
2.1.4 Solid Wastes.....	3
3.0 Proposed Action Area	3
3.1 Terrestrial Action Area.....	4
3.2 Aquatic Action Area	4
4.0 Federally Listed Species and Critical Habitats Considered	5
4.1 Shortnose Sturgeon.....	5
5.0 Proposed Action Effects Analysis	6
5.1.1 Direct Effects.....	7
5.1.2 Indirect Effects	7
5.1.3 Interrelated and Interdependent Effects.....	7
5.2 Cumulative Effects.....	8
6.0 Determination of Effects.....	8
7.0 References.....	8

Abbreviations, Acronyms, and Symbols

°C	degrees Celsius
°F	degrees Fahrenheit
ac	acre(s)
ADAMS	Agencywide Documents Access and Management System
CFFF	Columbia Fuel Fabrication Facility
CFR	<i>Code of Federal Regulations</i>
cm	centimeter(s)
DOT	U.S. Department of Transportation
ECOS	Environmental Conservation Online System
ESA	Endangered Species Act of 1973, as amended
ft	foot (feet)
FWS	U.S. Fish and Wildlife Service
gal/d	gallons per day
ha	hectare(s)
HEPA	High Efficiency Particulate Air
kg	kilogram(s)
km	kilometer(s)
IPaC	Information for Planning and Conservation
in.	inch(es)
kg/d	kilograms per day
km	kilometer(s)
lb(s)	pound(s)
m	meter(s)
m ³	cubic meter(s)
m ³ /d	cubic meters per day
mi	mile(s)
mm	millimeter
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRC	U.S. Nuclear Regulatory Commission
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SNM	Special Nuclear Material
μCi	microcurie(s)
WEC	Westinghouse Electric Company, LLC
YOY	young-of-the-year

1.0 Introduction

The U.S. Nuclear Regulatory Commission (NRC) staff has prepared this evaluation to comply with the provisions of Section 7 of the Endangered Species Act of 1973, as amended (ESA), in support of the NRC staff's review of Westinghouse Electric Company, LLC's (WEC) application for renewal of Special Nuclear Material (SNM) License 1107 (SNM-1107). The proposed license renewal would allow Westinghouse to receive, acquire, possess, and transfer byproduct, source, and special nuclear material at the Columbia Fuel Fabrication Facility (CFFF) for an additional 40 years. This document examines the potential impacts of the proposed CFFF license renewal on federally listed species under the jurisdiction of the National Marine Fisheries Service (NMFS).

2.0 Description of the Proposed Action

2.1 Proposed Action

The proposed action is the continued operation of CFFF under the terms of a renewed license, if granted by the NRC. CFFF is located in Richland, South Carolina, approximately 13 kilometers (km) (8 miles (mi)) southeast of the city of Columbia and 6.4 km (4 mi) northeast of the Congaree River. CFFF is a Category 3¹ fuel cycle facility that has been operating since 1969. At the facility, WEC fabricates low-enriched uranium oxide fuel assemblies for commercial nuclear power plants and produces other fuel-related products, such as control rods and mechanical components. If granted as proposed, the renewed license would allow WEC to continue authorized operations and activities at the CFFF site for an additional 40 years from the date the renewed license is granted.

2.1.1 CFFF Operations

CFFF produces fuel assemblies as follows. Uranium hexafluoride is converted to uranium oxide through a chemical reaction using water and ammonium hydroxide. The uranium oxide is then granulated, mixed with a binder-lubricant, and pressed by a machine to form ceramic fuel pellets. The fuel pellets are heated to create the appropriate density and then processed through a grinder to create the appropriate dimensions. The fuel pellets are then loaded and sealed into metal fuel rods, which are assembled into bundles that form nuclear fuel assemblies. Completed assemblies are either stored onsite or immediately shipped in NRC-approved containers to customers for irradiation in commercial nuclear power plants.

CFFF operations generate gaseous, liquid, and solid waste and effluents, as described briefly below. CFFF operations are further described in WEC's environmental report (Tetra Tech 2014) submitted as part of its license renewal application, as well as in NRC's (2007) environmental assessment dated April 19, 2007, which was prepared for the previous CFFF renewed license. Unless otherwise cited, the information below is derived from WEC's environmental report (Tetra Tech 2014).

¹ The NRC classifies special nuclear materials and the facilities that possess them into three categories based upon the materials' potential for use in nuclear weapons, or their "strategic significance." The three categories are: Category I: High strategic significance; Category II: Moderate strategic significance; and Category III: Low strategic significance. The NRC's physical security requirements differ by category, with Category I facilities subject to more stringent requirements.

2.1.2 Gaseous Effluents

Airborne effluents from fabrication and production activities at the main plant facility are emitted from 47 process stacks (short stacks or roof vents). Effluents primarily consist of uranium, ammonia (NH_3), and fluorides. WEC treats gaseous emissions with High Efficiency Particulate Air (HEPA) filters, scrubbers, or both prior to release into the environment. The CFFF ventilation system is designed to remove essentially all uranium prior to release to the atmosphere, which is achieved through use of HEPA filters with 99.97% efficiency for >0.3-micrometer-diameter particles. On average, CFFF emits 470 microcuries (μCi) per year of uranium, 41 kilograms per day (90 pounds per day) of ammonia, and a negligible amount of fluorides. Such releases meet the air quality standards and requirements of Title 40 of the *Code of Federal Regulation* (40 CFR) Part 50, "National Primary and Secondary Ambient Air Quality Standards," 40 CFR Part 60, "Standards of Performance for New Stationary Sources," and 10 CFR Part 20, "Standards for Protection Against Radiation."

Additional airborne pollutants are released from oil-fired boilers, gas-fired calciners, and oil-fired emergency diesel generators. WEC maintains a minor-source Air Permit from the South Carolina Department of Health and Environmental Control (SCDHEC) for these releases.

2.1.3 Liquid Wastes

Liquid wastes are generated from process liquid waste streams and sanitary uses. Process liquids are primarily contaminated by ammonia and fluorides. WEC treats both the process and sanitary liquid waste streams onsite prior to discharge into the Congaree River.

Liquid effluents leaving the main plant area are treated to remove uranium, ammonia, and fluorides through filtration, flocculation, lime addition, distillation, and precipitation in a series of holding lagoons. Three of the lagoons, the north, south, and west lagoons, are used for settling solids from treated process liquid wastes; a fourth lagoon, the sanitary lagoon, is used for polishing sanitary wastes after onsite treatment; and a fifth lagoon, the east lagoon, provides extra capacity for overflow from other lagoons or for containment in the event of a spill or emergency. The lagoons are lined with Hypalon liners and equipped with French Drain systems beneath the liners to detect lagoon leakage. Effluent limits are monitored by electronic systems, manually sampled, or analyzed on a batch-basis.

The main constituents from the process liquid waste streams are ammonium fluoride (NH_4F) and uranium. WEC uses lime and caustic to convert fluoride into insoluble calcium fluoride (CaF_2), which is then removed by centrifugation or by settling in the holding lagoons. Most of the residual ammonia is recovered by distillation and returned as ammonium hydroxide ($(\text{NH}_4)\text{OH}$) to the fabrication process.

All sanitary and domestic liquid wastes, such as those from bathrooms, showers, and the CFFF cafeteria, are processed through the site's sanitary system. WEC treats sanitary and domestic wastes in an extended aeration package plant, which discharges the processed wastes into a biological oxidation/settling-polishing lagoon.

After settling in the holding lagoons, liquid effluent (process and sanitary) is routed offsite to the Congaree River through a 15-centimeter (cm) (6-inch (in.)) pipeline, which meets with and submerges below the river's surface at a point about 5.6 km (3.5 mi) south of the main plant facility. Effluent enters the river from the submerged pipe near the river

bottom and discharges directly into the current approximately 6 meters (m) (20 feet (ft)) from the shoreline. On average, WEC releases 130,000 gallons per day (gal/d) (492 cubic meters per day (m³/d)) of liquid effluent to the Congaree River (WEC 2015). Table 2.1-4 of WEC's Environmental Report (TetraTech 2014) provides the nonradiological water quality of the discharge. All discharged effluents must meet the requirements and limitations set forth in 10 CFR Part 20 and National Pollutant Discharge Elimination System (NPDES) Permit No. SC0001848 issued by the SCDHEC.

WEC also maintains a general NPDES permit issued by the SCDHEC for stormwater runoff. In accordance with the permit, WEC implements a Storm Water Pollution Prevention Plan.

2.1.4 Solid Wastes

CFFF operations generate both combustible and non-combustible solid wastes consisting of the following categories: low-level radioactive waste, hazardous waste, and non-hazardous waste. Generally, combustible wastes are incinerated onsite, and the ash and clinker residue is chemically leached to remove uranium. Non-combustible wastes are decontaminated and placed in storage to await shipment for further treatment, recovery, or disposal.

Low-level radioactive wastes are packaged in U.S. Department of Transportation (DOT)-approved metal drums or metal boxes and shipped to a licensed disposal facility in compliance with all applicable NRC, DOT, U.S. Environmental Protection Agency, and State regulations and in conformance with disposal site criteria.

Hazardous chemical wastes, such as degreasing solvents, lubricating and cutting oils, and spent plating solutions, are regulated under 40 CFR Part 261, 40 CFR Part 262, and South Carolina Hazardous Waste Management Regulations 61–79 (R.61–79). WEC disposes of hazardous wastes through offsite permitted contractors, and hazardous waste generation rates are reported to the State on a quarterly basis.

Non-hazardous waste is generated through routine office and industrial activities and is disposed of locally at an offsite State-permitted landfill. WEC recycles certain non-hazardous wastes, including wood, corrugated cardboard, and rigid plastics.

3.0 Proposed Action Area

The implementing regulations for Section 7(a)(2) of the ESA define “action area” to mean all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR 402.02). The action area effectively bounds the analysis of federally listed species and critical habitats because only species and habitats that occur within the action area may be affected by the Federal action.

For the purposes of this ESA analysis, the NRC staff considers the action area to be the 469-hectare (ha) (1,158-acre (ac)) CFFF site and the bankfull width of the Congaree River from the point at which CFFF discharges liquid effluents at NPDES-permitted Outfall 001 and continuing downstream 3.2 km (2 mi).

The NRC staff recognizes that while the action area is stationary, federally listed species can move in and out of the action area. For instance, a migratory fish species could occur in the action area seasonally as it travels up or down the Congaree River past CFFF. Similarly, a flowering plant known to occur near, but outside, of the action area could appear within the action area over time if its seeds are carried into the action area by wind, water, or animals. Thus, in its analysis, the NRC staff considers not only those

species known to occur directly within the action area, but those species that may passively or actively move into the action area. The staff then considers whether the life history of each species makes the species likely to move into the action area where it could be affected by the proposed CFFF license renewal.

The terrestrial and aquatic environments within the action area are described below. The descriptions below are derived from WEC's environmental report (Tetra Tech 2014) unless otherwise cited. Because this evaluation focuses on federally listed species under the NMFS's jurisdiction, the aquatic portion of the action area is described in more detail than the terrestrial portion.

3.1 Terrestrial Action Area

As previously described, CFFF lies on a 469-hectare (ha) (1,158-acre (ac)) site in Richland, South Carolina. The site coordinates are 33° 52' 52" north latitude and 80° 55' 24" west longitude. CFFF operations occupy about 24 ha (60 ac), or five percent, of the entire site. Undeveloped areas are composed of wetlands, swamps, and forested areas. Water tupelo (*Nyssa aquatica*)-sweetgum (*Liquidambar styraciflua*) forest dominates more well-drained areas, and drier areas are dominated by loblolly pine (*Pinus taeda*), oak (*Quercus* spp.), red maple (*Acer rubrum*), yellow poplar (*Liriodendron tulipifera*), and other hardwood species. The Congaree National Park lies 8 km (5 mi) southeast of the CFFF site. The park is designated as an International Biosphere, a designated Globally Important Bird Area, and a National Natural Landmark. The park contains important high-quality habitats, including unique bottomland hardwood forests and well-preserved, species-rich, and dynamic floodplains (NPS 2015). These protected floodplains provide a unique ecosystem when the Congaree and Wateree Rivers flood the area, bringing nutrients and sediments to help contribute to the productivity of the area (NPS 2015).

3.2 Aquatic Action Area

The CFFF site lies within the flood basin of the Congaree River, which flows approximately 6.4 km (4 mi) southwest of the main plant facility. Aquatic habitats on the site include Sunset Lake, Mill Creek, as well as other small creeks, drainage ditches, and floodplains. Surveys completed within the Congaree National Park's river mainstem, floodplain waters, and tributaries indicate that the Congaree River provides habitat to approximately 56 species of fish, 16 species of mussels, and 7 species of crayfish (Congaree Riverkeeper 2017). Common recreationally fished species include black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), bowfin (*Amia calva*), channel catfish (*Ictalurus punctatus*), largemouth bass (*Micropterus salmoides*), redbreast sunfish (*Lepomis auritus*), striped bass (*Morone saxatilis*), and yellow perch (*Perca flavescens*) (NPS undated). In order to gather additional data regarding fish populations near CFFF, the NRC staff reviewed survey data that was recorded within FishNet (2014), an online database that is the collaborative effort of natural history museums and biodiversity institutions to compile fish survey data. The database included one fish survey within the vicinity of CFFF that was conducted in June 2002 on the Congaree River from 1.6 to 2.4 km (1.0 to 1.5 mi) south of Interstate-77 and about 8.0 air kilometers (5.0 air miles) south of the City of Columbia. The survey collected the following species:

- river carpsucker (*Carpionodes* spp.) (20 individuals),
- shorthead redhorse (*Moxostoma macrolepidotum*) (6 individuals),
- whitefin shiner (*Cyprinella nivea*) (2 individuals),

- northern hogsucker (*Hypentelium nigricans*) (1 individual),
- American shad (*Alosa sapidissima*) (1 individual), and
- white perch (*Morone americana*) (1 individual).

The NRC staff notes that FishNet (2014) does not specify the methodology, sampling protocols, or equipment used during the survey, and, therefore, additional species may occur near CFFF that were not captured in the survey due to survey methods or sampling effort.

4.0 Federally Listed Species and Critical Habitats Considered

The NRC staff used the FWS's Environmental Conservation Online System (ECOS) Information for Planning and Conservation (IPaC) tool to determine species that may be present in the CFFF action area. The ECOS IPaC tool identified one species under the NMFS's (2017) jurisdiction as potentially occurring in the action area: the shortnose sturgeon (*Acipenser brevirostrum*) (FWS 2017). No proposed species, candidate species, or proposed or designated critical habitat occur within the action area (FWS 2017). The following sections briefly describe the shortnose sturgeon's life history and evaluate the potential for the species to occur within the action area.

4.1 Shortnose Sturgeon

On March 11, 1967, the shortnose sturgeon was listed as an "endangered species threatened with extinction" under the Endangered Species Preservation Act, and the species remained on the list of endangered species with the enactment of the ESA in 1973. Construction of dams during the period of United States industrial growth, pollution of many large northeastern river systems, habitat alterations from discharges, dredging or disposal of material into rivers, and development activities involving estuarine and riverine mudflats and marshes are the primary factors that have contributed to this species' decline (NMFS 2015). Unless otherwise noted, life history and distribution information described below is derived from the Shortnose Sturgeon Review Team's (SSSRT) (2010) biological assessment and the NMFS's (2014) biological opinion for continued operation of Salem Nuclear Generating Station, Units 1 and 2, and Hope Creek Generating Station, Unit 1.

Shortnose sturgeon are primitive benthic bony fish with cylindrical bodies that taper at the head and a protective armor of bony plates called "scutes" extending longitudinally from the base of the skull to the caudal peduncle. The species is anadromous and inhabits a great diversity of habitats, including coastal rivers, estuaries, nearshore marine waters, and offshore marine waters along the continental shelf. Shortnose sturgeon occur in most major river systems along the United States eastern seaboard. In the southern portion of its range, the species is found in the St. Johns River in Florida; Altamaha, Ogeechee, and Savannah Rivers in Georgia; and in South Carolina river systems that empty into Winyah Bay and the Santee/Cooper River complex that forms Lake Marion.

The shortnose sturgeon is the smallest of the three North American sturgeon species. The species is long-lived; females can live up to 67 years, while males seldom exceed 30 years of age. Adults mature at 45 to 55 cm (17 to 22 in.) fork length throughout their range with sturgeon in southern rivers maturing at a younger age due to accelerated growth rates. In South Carolina waters, males mature around age 4, and females mature around age 7. Females spawn every three to five years, while males spawn every two

years. In southern rivers, the spawning period begins from late winter/early spring when freshwater temperatures increase to 8 to 9 degrees Celsius (°C) (46.4 to 48.2 degrees Fahrenheit (°F)) and lasts from a few days to several weeks. Because females do not spawn every year, estimates of annual egg production are difficult to calculate and may range greatly from 27,000 to 208,000 eggs per female. Females spawn at discrete sites within their natal river adjacent to or over coarse substrate such as gravel, rubble, or cobble or in bedrock within deeper, moderate-flowing water. At hatching, shortnose sturgeon are blackish in color, 7 to 11 millimeters (mm) (0.3 to 0.4 in.) in length. The yolk sac is absorbed in 9 to 12 days, and larvae begin downstream migrations at about 20 mm (0.8 in.) total length. Larvae transform into juveniles at around 57 mm (2.2 in.) total length and an age of 40 days.

Habitat requirements for larvae, young-of-the-year (YOY), and sub-adults is believed to be a function of salinity tolerances. Although little is known about YOY behavior and habitat use, it is believed that YOY are typically found in channel areas within freshwater habitats upstream of the salt wedge. Sub-adults occupy similar habitats as adults, although they may overwinter in different areas and do not seem to form dense aggregations like adults. Adults in southern rivers forage in estuaries in fall and spring and will often seek refuge in cooler, deeper areas of rivers during the hotter summer months. During winter, adults in southern rivers are found predominantly in slower-moving downstream waters near the salt-wedge. Shortnose sturgeon feed on a variety of benthic and epibenthic invertebrates, including mollusks, crustaceans (amphipods, chironomids, isopods), and oligochaete worms.

Within the Santee-Cooper River System, which includes the Santee, Cooper, Congaree, and Wateree rivers, their tributaries, and three dams that form the reservoirs Lake Marion and Moultrie, shortnose sturgeon are known to occur both above and below the dams. Shortnose sturgeon eggs have been collected on the Congaree River upstream of CFFF in Columbia, South Carolina, at River Kilometer 70 (River Mile 43.5), and a single small juvenile was recorded downstream in Lake Marion during a study conducted in 1998-1999 (Collins et al. 2003). Through telemetry data and egg collections, the South Carolina Department of Natural Resources (SCDNR) has identified spawning sites in both the Cooper River and Congaree River. Data collected by Collins et al. (2003) indicates that individuals can pass the Granby Lock and Dam, so spawning likely also occurs upriver of the City of Columbia. In spring 2007, Kleinschmidt (2007) conducted a survey for adult, juvenile, larvae, and eggs at locations both upstream and downstream of the Granby Lock and Dam. However, no shortnose sturgeon were collected. Kleinschmidt (2007) suggested that the lack of collections may have been linked to temperatures, which were not high enough to support spawning despite survey collections occurring during peak spawning periods. The results of this survey suggest that the Congaree River in the vicinity of Columbia may not provide adequate conditions to support successful spawning each year. Nonetheless, spawning may still occur near the Granby Lock and Dam based on the previously described surveys.

Based on the available information, the NRC staff concludes shortnose sturgeon likely occurs within the CFFF action area.

5.0 Proposed Action Effects Analysis

This section describes the potential direct, indirect, interrelated, and interdependent effects of the proposed action, CFFF license renewal, on shortnose sturgeon.

5.1.1 Direct Effects

CFFF license renewal could result in exposure of shortnose sturgeon individuals to chemicals in liquid effluents discharged to the Congaree River. Because shortnose sturgeon are mobile, individuals could swim around the effluent plume to avoid contact with chemicals and other pollutants. Eggs and larvae, if present, are not as mobile; however, the area and duration of exposure would be limited because the volume of liquid effluent discharged from CFFF represents a very small percentage of the overall flow of the river. Additionally, liquid effluent discharges would continue to be regulated by the State through the CFFF NPDES permit, which limits concentrations and volumes to levels that protect indigenous aquatic populations in the receiving water body. Furthermore, the NRC staff did not identify any documented spawning sites or known congregations of larvae, juveniles, or sub-adults in the action area, which indicates that only a limited number of shortnose sturgeon are likely to interact with the effluent plume for a short period of time during migrations past the CFFF effluent discharge location. Such interactions with the CFFF effluent discharge are unlikely to result in effects to sturgeon fitness or behavior that would be able to be meaningfully measured, detected, or evaluated, and would not reach the scale of a take. Accordingly, the NRC staff concludes that such impacts would be *insignificant*.

Likewise, shortnose sturgeon prey could be exposed to discharged effluents. However, given the small volume of discharged effluent in relation to the overall river flow, the small area of the effluent plume, and the effluent concentration limits imposed by the CFFF NPDES permit, any effects on prey species would be insignificant and unlikely to affect prey availability, quality, or otherwise result in measurable effects on shortnose sturgeon fitness or behavior. Accordingly, the NRC staff concludes that potential impacts to shortnose sturgeon resulting from exposure of prey to liquid effluent discharges would be *insignificant*.

5.1.2 Indirect Effects

Under the ESA, indirect effects are those that are caused by the proposed action that are later in time but are still reasonably certain to occur (50 CFR 402.02). The NRC did not identify any indirect effects associated with the proposed action that could affect the shortnose sturgeon. Termination of CFFF operations and associated decommissioning of the facility would occur eventually regardless of license renewal. While the proposed license renewal would delay the date of facility shutdown, it would not significantly alter decommissioning impacts. Future effects to shortnose sturgeon associated with decommissioning of CFFF at the end of the proposed license renewal term would be addressed through ESA Section 7 consultation, if needed, at the time of decommissioning.

5.1.3 Interrelated and Interdependent Effects

Interrelated actions are those actions that are part of a larger action and depend on the larger action for their justification (50 CFR 402.02). Interdependent actions are those actions having no independent utility apart from the proposed action (50 CFR 402.02). The NRC staff has not identified any information that would indicate that there would be any interrelated or interdependent actions associated with the proposed license renewal that might affect the shortnose sturgeon.

5.2 Cumulative Effects

Cumulative effects are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.02). A Federal agency need only consider cumulative effects under the ESA if listed species would be adversely affected by the proposed action and formal Section 7 consultation is necessary (FWS 2014). Because the NRC staff concluded earlier in this evaluation that the proposed license renewal is not likely to adversely affect the shortnose sturgeon, the NRC staff's consideration of cumulative effects is not necessary. Additionally, the NRC staff did not identify any actions within the action area that meet the definition of cumulative effects under the ESA.

6.0 Determination of Effects

Based on the foregoing analysis in Section 5.0 of this evaluation, the NRC staff finds that all potential impacts on the shortnose sturgeon resulting from CFFF license renewal would be insignificant. Therefore, the NRC staff concludes that the proposed action *may affect, but is not likely to adversely affect* the shortnose sturgeon.

7.0 References

References with Agencywide Documents Access and Management System (ADAMS) accession numbers can be accessed through NRC's web-based ADAMS search engine at <http://adams.nrc.gov/wba/>. Click on the "Advanced Search" tab and choose the following criteria under Document Properties: "Accession Number" in the Property box, "is equal to" in the Operator box, and the ADAMS Accession Number of the document in the "Value" box.

10 CFR Part 20. Code of Federal Regulations, Title 10, Energy, Part 20, "Standards for protection against radiation."

40 CFR Part 50. Code of Federal Regulations, Title 40, Protection of Environment, Part 50, "National primary and secondary ambient air quality standards."

40 CFR Part 60. Code of Federal Regulations, Title 40, Protection of Environment, Part 60, "Standards of performance for new stationary sources."

40 CFR Part 261. Code of Federal Regulations, Title 40, Protection of Environment, Part 261, "Identification and listing of hazardous wastes."

40 CFR Part 261. Code of Federal Regulations, Title 40, Protection of Environment, Part 261, "Standards applicable to generators of hazardous waste."

50 CFR Part 402. Code of Federal Regulations, Title 50, Wildlife and Fisheries, Part 402, "Interagency cooperation—Endangered Species Act of 1973, as amended."

Collins MR, Cooke D, Post B, Crane J, Bulak J, Smith TIJ, Greig TW, Quattro JM. 2003. Shortnose sturgeon in the Santee-Cooper Reservoir System, South Carolina. *Transactions of the American Fisheries Society* 132: 1244-1250.

Congaree Riverkeeper. 2017. "Congaree River." Available at <http://congareriverkeeper.org/congaree-river> (accessed 6 July 2017).

[ESA] Endangered Species Act of 1973, as amended. 16 U.S.C. §1531 et seq.

FishNet. 2014. FishNet2, Search FishNet. Available at <<http://www.fishnet2.net>> (accessed 7 July 2017).

[FWS] U.S. Fish and Wildlife Service. 2014. Guidance for Preparing a Biological Assessment. 6 p. Available at <<http://www.fws.gov/midwest/endangered/section7/pdf/BAGuidance.pdf>> (accessed July 26, 2017).

[FWS] U.S. Fish and Wildlife Service. 2017. Letter from FWS to NRC. Subject: Westinghouse Columbia Fuel Fabrication Facility - Proposed License Renewal, List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project. Consultation Code: 04ES1000-2017-SLI-0761. July 25, 2017. ADAMS Accession No. ML17208A668.

[FWS and NMFS] U.S. Fish and Wildlife Service and National Marine Fisheries Service. 1998. Endangered Species Consultation Handbook: Procedures for Conducting Consultation and Conference Activities Under Section 7 of the Endangered Species Act. March 1998. 315 p. Available at <http://www.fws.gov/endangered/esa-library/pdf/esa_section7_handbook.pdf> (accessed June 7, 2017).

[NMFS] National Marine Fisheries Service. Biological Opinion for Continued Operation of Salem and Hope Creek Nuclear Generating Stations. July 17, 2014. ADAMS Accession No. ML14202A146.

[NMFS] National Marine Fisheries Service. 2015. "Shortnose Sturgeon (*Acipenser brevirostrum*)." Updated October 26, 2015. Available at <<http://www.fisheries.noaa.gov/pr/species/fish/shortnose-sturgeon.html>>.

[NPS] National Park Service. 2015. "Congaree National Park, South Carolina, Nature and Science." Last updated April 14, 2015. Available at <<https://www.nps.gov/cong/learn/nature/index.htm>> (accessed 10 July 2017).

[NPS] National Park Service. Undated. "Congaree National Park Fishing Regulations." Hopkins, SC. Available at <https://www.nps.gov/cong/upload/CONG_Fishing_Regulations.pdf> (accessed 8 July 2017).

[NRC] U.S. Nuclear Regulatory Commission. 2007. Environmental Assessment for the Renewal of U.S. Nuclear Regulatory Commission License No. SNM-1107 for Westinghouse Columbia Fuel Fabrication Facility. April 19, 2007. ADAMS Accession No. ML070510647.

[SCDNR] South Carolina Department of Natural Resources. 2013. "Diadromous Fish Research: Telemetry Studies." Available at <<http://www.dnr.sc.gov/marine/mrri/diadrofish/shortnosesturgtelemetry.html>> (accessed 27 July 2017).

[Kleinschmidt] Kleinschmidt Energy & Water Resource Consultants. Saluda Hydroelectric Project: Status of the Shortnose Sturgeon in the Lower Saluda and Upper Congaree Rivers. 2007 Final Summary Report. Prepared for South Carolina Electric & Gas Company. October 2007. 23 p. Available at <http://www.saludahydrorelicense.com/documents/2007ShortnoseSturgeonFinalReport_JMS_2007-09-28.pdf> (accessed 27 July 2017).

[SSSRT] Shortnose Sturgeon Review Team. 2010. Biological Assessment of Shortnose Sturgeon, *Acipenser brevirostrum*. Prepared for the National Marine Fisheries Service. November 1, 2010. 417 p. Available at <http://www.nmfs.noaa.gov/pr/pdfs/species/shortnosesturgeon_biological_assessment2010.pdf>.

[Tetra Tech] Tetra Tech, Incorporated. 2014. Environmental Report for the Columbia Fuel Fabrication Facility. Prepared for Westinghouse Electric Company, LLC. December 17, 2014. ADAMS Accession No. ML14352A111.

[WEC] Westinghouse Electric Company, LLC. 2015. 40-Year License Renewal Summary of Site Visit on August 18-19, 2015. ADAMS Accession No. ML16173A308.