United States Department of the Interior

FISH AND WILDLIFE SERVICE
646 Cajundome Blvd.
Suite 400
Lafayette, Louisiana 70506

August 29, 2018

Mr. Benjamin Beasley
Division of License Renewal
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Dear Mr. Beasley:

Please reference your June 5, 2018, letter and Biological Evaluation (BE), received by this office on June 6, 2018, with subsequent additional information requests and extensions, requesting our concurrence with your determination that the proposed license renewal for Entergy Louisiana, LLC and Entergy Operations, Inc.'s (collectively referred to as Entergy) River Bend Station, Unit 1 (RBS) located in West Feliciana Parish, Louisiana, is "not likely to adversely affect" the endangered pallid sturgeon (*Scaphirhynchus albus*). Because of the complexity of the project, the Fish and Wildlife Service (Service) requested additional information and extensions for the project and the NRC agreed to grant the extensions. The Service has reviewed the BE and other information you provided and offers the following comments in accordance with the provisions of the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

RBS is currently licensed to operate through August 29, 2025, while the proposed license renewal would allow Entergy to operate RBS for an additional 20 years, through August 29, 2045. RBS uses a closed-cycle (cooling-tower based) heat dissipation system to dissipate waste heat. Cooling water for the system is withdrawn and discharged directly from and to the Mississippi River. The RBS cooling tower makeup system is composed of three subsytems: 1) two river intake screens and suction pipelines, 2) the makeup water pump house, and 3) piping from the pump house to the clarifiers at the plant site. Water is withdrawn from the Lower Mississippi River (LMR) through two 36-inch diameter suction pipelines and associated intake screens. The submerged intakes are located in a man-made recession (embayment) on the east bank of the LMR near River Mile (RM) 262. The intake screens are sized so that an average intake flow velocity is less than 0.5 feet per second (fps). The velocy of the water flowing by the intake structure is approximately 0.1, 0.2, and 0.7 fps at low, average, and high water, respectively. The WF3 withdraws a maximum of approximately 0.48 percent of the flow in the MR. Should fouling of the screens occur, they are cleaned by back-flushing.

In the BE, staff from the Nuclear Regulatory Commission (NRC) evaluated impacts on the pallid sturgeon during the proposed RBS License renewal term. Although pallid sturgeons are known to occur within the main river channel, they are not currently known to spawn in the main channel of the Mississippi River. The spawning period is typically between March and July, with fish in lower latitudes spawning earlier than fish in higher latitudes. Although juvenile pallid sturgeons have slower swim speeds than adults, they also exhibit a variety of complex swim behaviors increasing their ability to resist strong flows making it unlikely that they would be subject entrainment at RBS (Service 2014). Studies have shown that burst swim speeds for juvenile pallid sturgeon were measured to be between 16 to 28 in/sec (1.3 to 2.3 fps). Based on the swim speeds and the water velocity at the intake structure, pallid sturgeon juvenilles and adults would be able to avoid impingement in the RBS cooling-water intake system even at high river water flows. The RBS water cooling intake system has a Louisiana Pollutant Discharge Elimination System (LPDES) permit from the Louisiana Department of Environmental Quality (LDEQ), reviewed by the Service, that complies with the Clean Water Act 316(b) Rule for Existing Facilities. This rule stipulates the requirements that cooling water intake facilities must comply with to minimize entrainment and impingement impacts to species. In accordance with this rule, the structure is the best technology available (BTA) which meets the requirements to reduce impingement due to the location and technology of the structure.

The RBS thermal plume varies with season and generally increases as flow decreases such that the thermal plume is largest under low flow conditions. Entergy estimates that the Mississippi River would experience temperatures elevated above 90ºF over a surface area of about 54 ft by 5 ft during the summer months at worst-case scenario operational conditions. The subject BE indicates that pallid sturgeons are more tolerant of higher water temperatures than other sturgeon species and would be able to avoid the plume by swimming around it. In 2013, the NRC determined that exposure to radionuclides would be of small significance for aquatic resources during the license renewal for all nuclear power plants because exposure would be well below U.S. Environmental Protection Agency guidelines developed to protect aquatic biota, due to best management practices and discharge limitations. Based on consideration of all information provided to us, the Service concurs with your determination that RBS license renewal is not likely to adversely affect the pallid sturgeon.

We appreciate the opportunity to consult on the proposed project. If you have any questions regarding this letter, please contact Amy Trahan (337/291-3126) of this office.

Sincerely,

Joseph A. Ranson
Field Supervisor
Louisiana Ecological Services Office

cc: LDWF, Natural Heritage Program, Baton Rouge, LA

Literature Cited

U.S. Fish and Wildlife Service. 2014. Pallid sturgeon revised recovery plan. U.S. Fish and Wildlife Service, Denver, Colorado. 9, 29-30pp.