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**To:** WEC\_CFFF\_EIS Resource  
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**Attachments:** Columbia Fuel Fabrication Facility for an additional 40 years in Hopkins County South Carolina - ER 21-0318.docx  
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Attached are comments from the US Department of the Interior for the Draft Environmental Impact Statement (EIS) for the License Renewal of Westinghouse Electric Company's Columbia Fuel Fabrication Facility in Richland County, South Carolina (NUREG-2248).

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# United States Department of the Interior

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ER 21/0318  
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September 17, 2021

Diana Diaz-Toro  
Office of Administration,  
Mail Stop: TWFN-7-A60M,  
U.S. Nuclear Regulatory Commission,  
Washington, DC 20555-0001

ATTN: Program Management, Announcements and Editing Staff

Re: Comments and Recommendations for the Draft Environmental Impact Statement (EIS)  
for the License Renewal of Westinghouse Electric Company's Columbia Fuel Fabrication  
Facility in Richland County, South Carolina (NUREG-2248)

Dear Ms. Diaz-Toro :

The U.S. Department of the Interior (Department) has reviewed the Draft Environmental Impact Statement (DEIS) for Westinghouse Electric Company (WEC), LLC's license renewal application to continue to operate its Columbia Fuel Fabrication Facility (CFFF) for an additional 40 years. We offer the following general and specific comments for consideration in the development of the final EIS.

## **General Comments**

The Department is concerned that an existing subsurface contamination plume from the CFFF could have potential impacts to Congaree National Park (CONG) and the Congaree River as it migrates through a highly interconnected hydrogeologic system within the park. The CFFF is located approximately four miles upstream of CONG, and the CFFF discharge point is located approximately seven river miles upstream from the CONG West Boundary Road boat ramp. We recommend several strategies to address this concern as part of any renewal decision by Nuclear Regulatory Commission (NRC) for a WEC operating license.

*Alternatives:* We support selection of the 20-year license alternative, which would allow "for an examination for potential relicensing and evaluation of environmental impacts over a shorter span of time." (page 3-140, line 36). The rationale for consideration of this alternative is based on the effects on the environment from the 2015 historic flooding event; the multiple leaks or

spills that have resulted in subsurface contamination at the CFFF site since the last license renewal; and the ongoing remedial investigations with South Carolina Department of Health and Environmental Control. Selection of this alternative would ensure a systematic, in-depth update given all of the current uncertainties regarding contaminant plume source, transport, and fate as well as re-evaluation in the face of anticipated development and climate change impacts.

*Monitoring Design:* The current monitoring program needs more specificity to detect and understand contaminant behavior in a dynamic, heterogeneous floodplain ecosystem. This is especially true given that the WEC and NRC acknowledge lingering uncertainties in contaminant source, transport, and fate from the CFFF. Long-term average rates of aquifer flow and transport, for example, may overlook the impact from rarer—but significant—events like the 2015 flood that can significantly flush and alter the system. The Department requests that NRC include a monitoring protocol that follows event-based sampling. The biological monitoring design also should be expanded in scope and detail to meaningfully detect and monitor potential bioaccumulation. The current approach, for example, does not account for important differences in biogeochemical cycling in the floodplain/Mill Creek area as opposed to the Congaree River and does not account for the potential use of tree tissue to map and monitor VOC plumes. Specifically, we request expansion of the frequency, density, sites, (event) triggers, and specific targets outlined by the monitoring program (see details below); and timely, transparent reporting of all monitoring data to National Park Service (NPS) at [cong\\_resource\\_management@nps.gov](mailto:cong_resource_management@nps.gov).

*Long-term Development, Climate Change, and Flood Forecasts:* The current framework underestimates ongoing development pressures and climate change impacts to the watershed, floodplain, and surrounding community. Local development pressures are particularly intense in the area, which will likely continue to increase over the next 20 to 40 years. All of this has significant bearing on potential: (a) flood risks from increased impervious surfaces in the Mill Creek Watershed, (b) increased transportation and traffic impacts associated with new development, and (c) public health impacts. These changes are compounded by climate change, which is already showing trends towards increased precipitation events in the Congaree River watershed and across the southeast.

*Congaree River and the Nationwide Rivers Inventory:* A section of the Congaree River downgradient of the facility, from its confluence with Congaree Creek below Cayce to its confluence with the Wateree and Santee rivers, a reach of 45 miles that includes its entire course through Congaree National Park, is listed on the Nationwide Rivers Inventory (NRI). We have concerns regarding the outstandingly remarkable values (ORVs) of the river in the face of continued project operations and contaminant releases to the river. We administer the NRI as part of its legal obligations under the Wild and Scenic Rivers Act (WSRA). NRI-listed streams and rivers are considered potential candidates for inclusion in the Wild and Scenic Rivers System given the existence of ORVs such as scenery, geology, wildlife, and recreational potential. Pursuant to Section 5(d)(1) of the WSRA and related guidance, all federal agencies must seek to avoid or mitigate actions that would adversely affect NRI rivers.

The Congaree River is a nationally significant waterbody, noted for its outstandingly remarkable scenic, recreational, geologic, fish, wildlife, historic, and cultural values. For this reason, the Department requests that the NRC address in the final EIS any potential impacts to the Congaree River's ORVs associated with the release of radiological or other contaminants. This should include characterizing fate and transport of water-borne contaminants and their potential cumulative ecological and human health risks in the downstream environment.

### **Specific Comments**

Land Use: The Department disagrees with the statements in the draft EIS that, "The use of the land in the surrounding area is not expected to change from its current uses, including the CFFF's operations," (page 3-4, line 10) and "that land use around the CFFF site will not change during the assessed upcoming 20 years." (page 3-3, line 38). Several large infrastructure projects (including a major sanitary sewer expansion) and regional planning initiatives (including the lower Richland Strategic Community Master Plan - <http://richlandcountysc.gov/Portals/0/Departments/Planning/NeighborhoodPlanning/MasterPlans/LowerRichlandFinal.pdf>) suggest that significant urbanization and population increases within the study area are reasonably foreseeable. This would likely coincide with increased area of impervious surfaces in the local watershed, which when compounded with climate change impacts, would lead to increased frequency and intensity of flooding events, as well as traffic (risk) increases and population densities at risk for public health impacts.

Geology, Seismology, and Soils: The Department recommends sediment sampling along the West Boundary Road, closest to the WEC, and event-based sampling after major floods such as the 2015 event.

Surface Water Resources: Surface water resources are hard to separate from groundwater resources due to the hyporheic exchange. We understand why this distinction is made in the document, but evidence abounds for complex, dynamic relationships that are not adequately addressed. Examples include: (a) the observation that "Gator Pond is fed by a natural spring, the source of which is likely the shallow groundwater directly beneath the plant site," (page 3-18, line 6); (b) NPS staff observations of shallow wells at CONG that can become artesian with no nearby surficial flooding and no apparent relationship to nearby wells; and (c) the United States Geologic Survey (USGS) study that noted significant differences in well behavior and classification with respect to surface water connectivity (<https://pubs.usgs.gov/sir/2008/5170>).

While it may be true that "groundwater generally flows southwestward from the site, toward the Congaree River," (page 3-48, line 20), Mill Creek at that point is flowing SE, so wells further to the SW may fail to detect contaminants deflected SE in the surficial system.

While it is true that the area has historically experienced large floods from tropical systems (i.e., page 3-16, line 35), NPS and USGS data dispute the assertion that, "Flooding... on the Congaree River is most likely to occur from June through October..." Rather, these data (including 20+ years of data from gauges) clearly show patterns of increasing water levels and flood frequency during winter and spring.

Additionally, while the acknowledgement of climate change (Section 3.7.1.6) is appreciated, especially the note that “Extreme rainfall events have increased in frequency and intensity in the Southeast and will continue to increase in the future.” (page 3-67, line 11), a 20- or 40-year license renewal should acknowledge such models that may—in concert with both local (Mill Creek watershed) and larger (Congaree River watershed) development trends in increased area of impervious surfaces—increase the likelihood of the 2015 flood, which was associated with unplanned releases at the site (i.e., page 3-23).

We would also welcome another sampling point on the Congaree River downstream from the Mill Creek discharge. This could be co-located along the park’s West Boundary Road, which is the site for the USGS gage and South Carolina Department of Natural Resources (SCDNR) radio transponder for short-nosed sturgeon.

Groundwater Resources: We are particularly concerned about these conclusions in the draft EIS, that: (a) “there are significant uncertainties that affect the evaluation of fate and transport of contaminants in groundwater” (page xiv, line 39-40); (b) “Investigations of subsurface contamination from past events have not been definitive in identifying the sources of contaminants, the initiation of contaminant releases, and the total amounts of contaminants released to the environment.” (page 3-43, line 29); and (c) “the methods by which the groundwater quality objectives of the consent agreement will be met are unknown.” (page 3-49, line 14). With this uncertainty, we request clarification of the goals, methods, and thresholds for monitoring—beyond the consent agreement—prior to issuing a new license.

The minimum requirement for three wells per plume is inappropriate for characterizing the site hydrogeology at a meaningful scale and monitoring vertical flow during flood events. A suite of four, widely spaced, nested piezometers is proposed as a minimum requirement. The current distribution of wells is insufficient to detect plume dispersal to the SE of the plant via hyporheic exchange (and subsequent SE flow) with Mill Creek. In Figure 3-16, for example, there are two Tc-99 plume lobes to the ESE (and WSW) that are not well bounded by monitoring sites; this same area is lacking wells in Figure 2-10 (see the area above the number “8”). This is important because, while groundwater pressure gradients may suggest SW flow, hyporheic exchange and flood transport likely deflect contaminant transport to the SE in surface and very near surface environments. In addition to this general area, we recommend inclusion of additional monitoring wells allowing for a longer distance perimeter around the site (perhaps including sampling wells at CONG) to ensure a zero-detection radius.

Ecological Resources (fish): The Department concurs with the NRC finding that “sampling of fish tissue in Mill Creek could potentially further reduce the impacts of the proposed license renewal,” (page 3-29, line 15). Unfortunately, this additional mitigation measure is not a requirement being imposed upon the licensee as described in the EIS. The EIS does identify that, “The NRCs radiation protection regulations...also protect nonhuman biota (page 3-55, line 31).” We request that additional fish sampling should be required, especially with so many questions acknowledged regarding the source, transport, and fate of groundwater contaminants (which are inherently linked to both soil and surface water systems).

Fish sampling needs specific criteria for species, age, and size requirements as well as target tissues for analysis. Analyses should not use a single sample, but geometric mean of multiple samples. Sampling sites should also include Mill Creek. USGS research has shown huge differences in the bioaccumulation of mercury, for example, between the Congaree River and the Edisto River (<https://pubs.usgs.gov/sir/2009/5021/pdf/sir2009-5021.pdf>). The Edisto River is an intra-coastal plain system very akin to Cedar Creek at Congaree National Park and Mill Creek on the WEC CFFF. The differences in bioaccumulation are due to biogeochemical differences between blackwater (high dissolved organic load) and brownwater (high suspended [clay] load) systems. Other USGS studies support these complexities (<https://pubs.usgs.gov/bsr/2001/0009/bsr20010009.pdf>, <https://pubs.usgs.gov/wri/2000/4159/report.pdf>, [https://toxics.usgs.gov/pubs/wri99-4018/Volume2/sectionB/2301\\_Krabbenhof.pdf](https://toxics.usgs.gov/pubs/wri99-4018/Volume2/sectionB/2301_Krabbenhof.pdf)) while providing methodological references.

Sampling frequency and density should also be significantly increased at both CONG and Mill Creek sites; frequency of monthly or quarterly—and at least late summer after typical low flow conditions may confine fish in areas with higher concentrations of contaminants—is suggested. Research at CONG, for example, clearly shows that fish do significantly disperse across the floodplain—to and from features such as Mill Creek—during high water events (<https://onlinelibrary.wiley.com/doi/abs/10.1002/rra.2828>).

As for the discussion that “the species compositions of Sunset Lake and Mill Creek are unknown,” (page 3-52, line 8), we recommend inclusion of a commitment to conduct site-specific fish inventory that would serve as baseline data for subsequent monitoring and decommissioning work.

*Ecological Resources (vegetation/trees):* While not included in the current plan, there is precedent from the Savannah River Site and Naval Weapons Station Charleston and vetted USGS monitoring protocols that can extend monitoring to include vegetation. Tree cores are particularly valuable for mapping and monitoring volatile organic compounds (VOCs) in the shallow, surficial aquifer. VOC monitoring has specifically been identified by both WEC and NRC as a deficiency in the current groundwater sampling scheme (e.g., page 3-44, line 7; page 3-45, line 30), and tree tissue provides a good framework (<https://pubs.usgs.gov/sir/2008/5088/pdf/sir2008-5088.pdf>, [https://www.srs.fs.usda.gov/pubs/ja/ja\\_vroblesky001.pdf](https://www.srs.fs.usda.gov/pubs/ja/ja_vroblesky001.pdf)).

*Ecological Resources and Floods (General):* The Department is particularly concerned that during the 2015 flood “unknown levels of biological oxygen demand, fecal coliform, ammonia, calcium, fluoride, and nitrates could have been released from the lagoon overflow to the surrounding water bodies,” (page 3-23, line 14), and that “no supplemental sampling of environmental mediums was conducted during or immediately after the flooding event,” (page 3-23, line 17). Abundant biogeochemical research in wetlands shows that mobilization of water, sediment, and nutrients is clearly pulsed with flood events. Combined with the present uncertainties (acknowledged by both the NRC and WEC) regarding contaminant source, transport, and fate, we request the addition of event-based sampling as part of the monitoring program. Such a design would automatically trigger sampling of all groundwater, sediment, and

fish (identical in scope and methodology to other, regular samples) when any floods cross into the “moderate” stage on either the NOAA flood forecast points for Carolina Eastman (<https://water.weather.gov/ahps2/hydrograph.php?wfo=cae&gage=ceas1>) or Congaree National Park (<https://water.weather.gov/ahps2/hydrograph.php?wfo=cae&gage=gads1>). Accounting for such extreme events is fundamental to calibrating contaminant behavior models in ways that long-term averages will completely miss (and underestimate). As these models are calibrated, the long-term climate and development impacts to the flooding regime (which are appropriate to consider over a 20- or 40-year license term) will also become increasingly important.

*Historic and Cultural Resources:* While the tribal consultation (i.e., page 1-6, line 1) process appears to have included the Catawba, it does appear incomplete. The following federally recognized tribes also consider Richland County, SC, within their ancestral lands or Area of Interest, and thus should be additionally consulted per Section 106 of the National Historic Preservation Act:

1. Absentee Shawnee Tribe
2. Alabama-Quassarte Tribal Town
3. Catawba Indian Nation
4. Cherokee Nation
5. Eastern Band of Cherokee Indians
6. Eastern Shawnee Tribe of Oklahoma
7. Kialegee Tribal Town
8. Muscogee Creek Nation
9. Poarch Band of Creek Indians
10. Shawnee Tribe
11. Seminole Tribe of Florida
12. Thlopthlocco Tribal Town
13. Tuscarora Nation
14. United Keetoowah Band of Cherokee Indians of Oklahoma

In addition to the Tribal consultation concerns, the descendants of those buried in the Denley Cemetery and the local African American community should also be consulted per Section 106.

*Transportation Resources:* While it is true that, “During operation there would be no increase in local traffic counts associated with project-related traffic on Highway S 48 or other roadways from the CFFF,” (Table 3-29), the transportation resources assessment does not fully account for significant local development pressures that may significantly increase traffic in the area—including SC Highway 48. We recommend updating this in the final EIS.

*Environmental Justice:* CONG considers itself to be fairly well networked with the local community through the Congaree Biosphere Region and the Southeast Rural Community Outreach (SERCO; <http://www.sercosc.org>) but is not familiar with current outreach efforts listed in the document. The Department recommends additional engagement with these other organizations.

Minor copy edits:

Table 3-4: “Caroline heelsplitter” should be corrected to “Carolina heelsplitter.”

3-74 (line 43) incorrectly identifies the Congaree Indians in the context of the 1541 De Soto (and 1566-1567 Juan Pardo, not mentioned) expeditions. The Spanish expeditions encountered the Paramount Chiefdom of Cofitachequi. The first use of the term “Congaree” is dated to John Lawson’s 1709 publication detailing his 1701 expedition.

Thank you for the opportunity to provide comments on this project. If you have questions regarding these comments, please contact Anita Barnett, Planning and Compliance Division, at (404) 507-5706. I can be reached on (404) 331-4524 or via email at [joyce\\_stanley@ios.doi.gov](mailto:joyce_stanley@ios.doi.gov).

Sincerely,

A handwritten signature in black ink, appearing to read "J Stanley", with a stylized, flowing script.

Joyce Stanley, MPA  
Regional Environmental Officer

cc: Christine Willis - FWS  
Jon Janowicz - USGS  
Anita Barnett – NPS  
OEPC – WASH