Brookfield
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VIA EMAIL

December 20, 2023

Sheila Eyler US Fish and Wildlife Service Mid-Atlantic Fish and Wildlife Conservation Office 177 Admiral Cochrane Drive Annapolis, MD 21401	Scott Williamson PA Dept. of Environmental Protection Waterways & Wetlands Program 909 Elmerton Avenue Harrisburg, PA 17110-8200

RE: BIF III HOLTWOOD LLC – 2023 FISH PASSAGE REPORT

Dear PADEP and USFWS:

Pursuant to Articles 47 and 53 of its License, the Prescription for Fishways, and Conditions VI.A.2 and III.B.1 of the Water Quality Certificate (WQC) for the Holtwood Hydroelectric Station, BIF III Holtwood LLC (Brookfield), licensee of the Project, hereby submits the 2023 Holtwood Fishways Operations Report.

Should any additional information be required, please contact me by phone at 717-284-6218, by e-mail at Adam.Slowik@brookfieldrenewable.com, or by mail at Brookfield Renewable, 482 Old Holtwood Rd., Holtwood, PA 17532.

Sincerely,

Adam C. Slowik
Compliance Specialist

Enclosure – Holtwood 2023 Fishways Operations Report

cc: Cale Benard (Brookfield)
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Holtwood 2023 Fishways Operations Report

History:
The Holtwood Project was built in 1910 and is located at River Mile 24 on the Susquehanna River. It is the second upstream hydroelectric facility on the river, with Conowingo Dam being located below and Safe Harbor Dam and York Haven Dam being located above.

In 1993, the Susquehanna River Fish Passage Settlement Agreement was signed, requiring the licensee of the Holtwood Project to provide migratory fish passage at their facility. The licensee began construction in 1995 and the fishway was placed into operation in April of 1997. The Holtwood fish lift has operated each spring since 1997, as well as fall of 2014, 2015, 2017, 2018 and 2019. 2023 marks the 27th year of operation.

Fishway Design:
The Holtwood fish lift design incorporates numerous criteria established by the USFWS and state resource agencies. Physical design parameters for the fishway are given in the 1998 Fishway Report (Normandeau Associates, Inc. 1998. Summary of the operation at the Holtwood Fish Passage Facility in 1997. Report prepared for PPL, Inc., Allentown, PA.) The fishway is designed to pass a population of 2.7 million American Shad and 10 million River Herring.

There are 2 lifts on the fishway, tailrace and spillway (see figure in Normandeau Associates, Inc. 1998). The tailrace lift has two entrances (gates A and B) and the spillway lift has one entrance (gate C). Each lift contains a mechanically operated crowder, picket screen(s), hopper, and hopper trough gate. Fish captured in the lifts are sluiced into one trough, which then leads into Lake Aldred. Attraction flows to the two fish lifts at Holtwood Dam are supplied via an attraction water piping system leading to five separate flow diffusers, with the flow distribution controlled by eight motor operated valves (MOVs). Generally, flows are introduced upstream of crowder in each lift and upstream of the three entrance gates. Entrance gates at the three lift entrances control the depth of flow within the lift channels. Fish that enter the tailrace and/or spillway entrances are attracted by water flow into the mechanically operated crowder chambers. Once inside, fish are crowded into the hoppers, lifted, and then sluiced into the trough. Fish swim upstream through the trough, past a counting window, and into the forebay through a 14 ft wide fish lift exit gate.

For more information on the design and operation of the lift, please reference the Fishways Operations Plan. This plan includes operating protocols and guidelines that are flexible and utilize experience gained during previous years of fish lift operation.

Regulatory Dates:
Resident spring fish passage season at the Holtwood fish lift is from April 1 through June 30. Migratory fish passage season timing is based on the passage of fish at the Conowingo Dam, located downstream. Resident fall fish passage season is from September 1 to October 15.

2023 Fish Passage:
PADEP, US Fish and Wildlife Service (USFWS), and PFBC submitted written requests to Brookfield on December 14, 15, 21, 2022 asking that the Holtwood fish lift not be operated in 2023 based on the recommendation from multiple resource agencies due to the potential spread of invasive species. USFWS and PADEP also noted that the Tier II radio telemetry study would then be deferred. By letter dated January 9, 2023, Brookfield submitted a request to FERC to suspend fish passage and the Tier II radio telemetry study for the 2023 fish passage season at the Holtwood fish lifts based on the agencies request.

Upstream Shad Passage – Tier II Radio Telemetry:
2023 could have been year 3 of the study, but it was deferred due to the request to suspend of fish passage.

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Maintenance/Upgrades:

- The Flow Matrix was updated from the CFD model. In 2024, the lift will be operated (without the use of the hoppers) to confirm the flows are correct.
- A complete shaft re-alignment was performed on MOV5 to ensure proper functionality.
- Repairs were made to the roof above the switchgear to ensure weather will not affect the instrumentation.
- When safe river conditions allow, Brookfield will be repairing the C gate due to the damages caused by the removal of the cross braces (as requested by Agencies).

Invasive Species:

In 2020, PADEP recommended that Brookfield evaluate the ability and/or mechanisms to manage invasive species in preparation for the 2022 fish passage season. A site visit to Conowingo Dam was conducted to see how the East Fish Lift (EFL), the West Fish Lift (WFL), and trap and transport operate at Conowingo. The Holtwood fish lift is engineered differently than the Conowingo EFL, WFL, and is designed as a true passage facility with no current method or means of sorting. With no safe or viable scope to guide invasive removal or regulatory requirement, Brookfield has not pursued this topic further.

During a call with resource agencies on September 20, 2022, PADEP recommended that Brookfield continue to evaluate ways to manage invasive species in preparation for when traditional fish passage season resumes.

On September 27, 2023, agencies and hydropower facilities attending a call to discuss invasives. The meeting detailed the beginning of a collaborative effort involving resource agencies and hydro dam owners working together in effort to reduce the spread, movement, and population of aquatic invasive species in the Susquehanna River basin. Discussions are ongoing.

On December 5, 2023, during the annual Susquehanna River Anadromous Fish Restoration Cooperative (SRAFRC) meeting, the group discussed the draft action plan outline. A draft plan is expected to be circulated for review in early 2024.

CFD Model Update:

Brookfield contracted with Gomez & Sullivan to complete a CFD model of the Holtwood fish lift, develop a new operating matrix, and intended to field test for verification in 2021. Since the request to stop operation of the fish lifts, the flows have not be verified. Brookfield intends to verify the attraction flows coming from the entrance gates in 2024. Once the operating matrix is updated, the Fishways Operating Plan will be updated. Brookfield considers this an operational change, therefore pursuant to approved study plan, Tier II radio telemetry data prior to the next operating season will not be included in our catch average moving forward.

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