STATE OF MAINE
DEPARTMENT OF MARINE RESOURCES
21 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0021

JANET T. MILLS
GOVERNOR

CARL J. WILSON
COMMISSIONER

March 2, 2026

Debbie-Anne Reese, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington D.C. 20426

Re: MDMR Comments on Initial Study Report (ISR) for the Brunswick Hydroelectric Project (P-2284)

Dear Secretary Reese:

On December 31, 2025, Brookfield White Pine Hydro LLC (Licensee) filed their Initial Study Report with the Federal Energy Regulatory Commission.

MDMR looks forward to continued collaboration with the Licensee on diadromous fish passage at the Brunswick project. Please contact Casey Clark (casey.clark@maine.gov; 207-350-9791) or Lars Hammer (lars.hammer@maine.gov; 207-557-1564) if you have any questions.

Sincerely,

Sean Ledwin

Sean Ledwin
Director, Bureau of Sea Run Fisheries and Habitat

Cc: DEP. Laura Paye, Rob Wood
MDIFW, Jim Pellerin, Nicholas Kalejs
MOCA: Erin Wilson
NMFS, Matt Buhyoff, Don Dow
USFWS, Patrick Dockens, Kimberly Spiller

Executive Summary

Brookfield White Pine Hydro (Licensee) submitted an Initial Study Report (ISR) for the Brunswick Hydroelectric Project (P-2284) on December 31, 2025. The ISR reported on study progress for 13 studies conducted at the project during 2025. The licensee also held an ISR meeting on January 15, 2026, and additional follow-up meetings to discuss downstream passage alternatives at the project (January 27, 2026) and the diadromous fish movement, behavior, and interaction study (January 28, 2026). Enclosed are specific comments from the Maine Department of Marine Resources (MDMR) related to five of the studies conducted by the Licensee.

Computational Fluid Dynamics Study (page 87)

MDMR looks forward to reviewing additional data and results from the tasks identified for this study as they are completed.

Upstream and Downstream Fish Passage Alternatives Study (page 92)

The licensee provided a draft downstream alternatives matrix to MDMR on January 20, 2026 and a draft upstream alternatives matrix on March 2, 2026 (today's date). Given the dates these documents were provided in relation to the ISR comment deadline (March 2, 2026), MDMR has only been able to review the downstream alternatives matrix. Thus, our comments focus solely on downstream passage at this time.

Downstream Alternative D1: Angled Bar Rack with New Downstream Bypass

The current conceptual sketches of the angled bar racks include an isolation wall that separates Unit 1 and Unit 2/3 because the Unit 1 intake is deeper. Please describe why this isolation wall is required at the project and whether it could have windows or gaps in it to allow for equalization of velocities between the two intakes.

During the call, engineers from Kleinschmidt indicated that there may be issues with high velocity hot spots in certain areas where the racks are close to the powerhouse. If this is the case, turbine turndowns could be one potential solution to address this issue. Another option for reducing velocities could be to extend the length of the racks such that a larger rack area interacts with the flow.

Downstream Alternative D2: Inclined Bar Rack with New Downstream Bypass

The current conceptual sketch includes surface and low-level bypasses on the river side of the Unit 2/3 racks. Unlike the angled rack alternative, the inclined racks do not provide lateral guidance for fish to find a bypass location in that area and MDMR has concerns that the current design would not effectively attract fish. MDMR would recommend designing multiple surface and low level bypasses along the face of the racks so that turbine flow through the units serves as additional far field attraction.

During the call, the licensee posited that fish would utilize the upstream fish passage as a downstream bypass. While some fish may use the upstream fishway, in MDMR's experience route of passage studies rarely report fish using the upstream fishway for downstream passage. Thus, MDMR would not recommend the upstream fishway to take the place of a dedicated downstream bypass unless there is guidance to the upstream fishway and the upstream fishway meets attraction flow and other criteria for a downstream bypass.

Downstream Alternative D3: Floating Guidance Boom with New Downstream Surface Bypass Structure

MDMR agrees with the licensee's assessment that this alternative would have low effectiveness. In our experience, even surface oriented migrants (i.e., Atlantic salmon, river herring) often sound below guidance booms, making them ineffective at preventing fish from becoming entrained in the turbines. Entrainment is even more likely for fish that approach at depth (i.e., American eel and American shad), hence the need for additional measures to protect American shad and nighttime shutdowns to protect American eel. However, nighttime shutdowns have their own shortcomings, namely in diel and seasonal operation timelines and the need for adequate bypass flows while the turbines are shut down. In addition, the current alternative does not include a bypass structure that MDMR would consider adequate for attracting and conveying fish safely downstream in a timely and effective manner. For these reasons, MDMR is not supportive of this alternative in its current form.

While a boom would require a flume extension to reduce impacts to upstream passage, that may not be the case if a new upstream passage facility was constructed at the project in a different location.

Downstream Alternative D4A: Multiple Fish Friendly Runner Replacement

Please provide information related to the service life of all three units.

MDMR is supportive of investigating this alternative. However, as the licensee indicates, this technology is still experimental and as such, the licensee must be prepared to implement additional measures in a timely manner should this technology fail at the project.

At this point in the process, it does not make sense to exclude additional downstream protective measures from this alternative. Modeling of similar alternatives at other projects has shown potential for higher injury and mortality for large fish (i.e., Atlantic salmon kelts, American shad). Thus, appropriate exclusion and guidance systems may be needed to ensure safe, timely, and effective passage at this site.

Downstream Alternative D4B: Unit 1 Fish Friendly Turbine with Inclined Bar Rack at Units 2 and 3

In the current configuration, there is no downstream bypass associated with Units 2/3. When those units are operating, it is reasonable to assume that fish will be attracted to the flow through those turbines as opposed to the Unit 1 intake. Once those fish are attracted to that flow they will either be entrained in the units (some juvenile alosines) or will be guided vertically up the rack until at the surface. Without a clear downstream passage route in the vicinity of the Unit 2/3 rack, fish may experience unnecessary delay upstream of the project. Thus, this alternative should include a surface and low level bypass on the river left side of the racks to provide an additional downstream passage route for fish attracted to that location. The same comment from Alternative D4A about additional downstream protections applies to this alternative as well.

Perhaps this should be considered "Downstream Alternative D4C," but constructing an angled rack over Units 2/3 could provide more effective guidance to a downstream bypass than an inclined rack.

It is MDMR's understanding that certain unit prioritization measures are practiced at the project to attempt to improve upstream passage. Please evaluate this alternative and others as appropriate based on existing and proposed operational scenarios at the project.

No Action (Maintain Existing Conditions)
MDMR was pleased to see this alternative excluded from further analysis as it is clear from the information available at this time that existing facilities do not meet USFWS guidelines and do not provide safe, timely, and effective passage for downstream migrants.

Alternatives Not Considered

MDMR supports comments made by NOAA and other meeting participants during the January 27th meeting regarding the need to fully evaluate a comprehensive range of alternatives during this phase of the study. The Brunswick Dam is the first dam on the Androscoggin River and is located at the head of tide. Its position in the watershed means it affects all upstream migrating fish approaching the project, as well as those that successfully pass upstream and must later migrate downstream to the ocean. Given the ecological importance of head of tide locations and lessons learned from other Maine systems, including the Kennebec River, Penobscot River, St. Croix River, and Presumpscot River, MDMR recommends that the alternatives analysis rigorously evaluate the full spectrum of potential structural and operational approaches capable of providing safe, timely, and effective upstream and downstream passage at this critical river location. A comprehensive analysis will ensure that decision makers understand the biological performance, engineering feasibility, cost considerations, and long-term maintenance implications of each option.

Public comments during the January 15th and January 27th meetings referenced the potential construction of a nature-like channel on river left near the existing tainter gates. MDMR supports evaluation of a nature like fishway alternative as part of the broader alternatives analysis for upstream and downstream passage. However, MDMR notes that while a nature like channel may improve upstream passage conditions, it may not alone provide adequate downstream passage, as a substantial portion of river flow, and therefore migrating fish, would continue to pass through the powerhouse. Accordingly, the study should also assess the need for complementary downstream passage measures, such as intake racks, operational curtailments, surface guidance structures, and fish friendly turbine technologies, to ensure a holistic and effective passage solution.

Additional Comments

Please include a flow duration analysis to investigate how often flows exceed the capacity of all three units during the downstream passage season. Given the height and configuration of the dam's spillway, spillway passage may not provide a safe route for downstream migrants. Each alternative should include an approach to 1) study where spill occurs at the project and the impacts of spill passage on injury and mortality of migrating fish or 2) provide a proposal to concentrate spill under most conditions in an area that provides an appropriate receiving water for downstream migrants. This additional flow could be concentrated near the entrance of an upstream fishway to bolster far-field attraction.

<u>Visual Surveys of Upstream American Eel Movements Study (page 95)</u>

PDF Page 106: "The temporary eel ramps were operated once weekly, concurrent with each visual survey. Temporary eel ramps were installed during the daylight hours prior to each nighttime survey and viewed (as allowable from vantage points defined in Section 4.1) during the survey."

MDMR Comment: Deployment and removal of eel ramps/traps required a headpond drawdown. Please describe the changes in operations required to install and remove ramps/traps and how that may have impacted the numbers and locations in which eels were found.

PDF Page 106: "BWPH and Normandeau staff met onsite with representatives from the Maine Department of Marine Resources (MDMR) on May 30, 2025. At that time, three prospective locations for the placement of the temporary eel ramps were identified in the portion of the spillway bypass area in the vicinity of the Tainter gate structures."

MDMR Comment: MDMR appreciates the opportunity to participate in the May 30, 2025 site visit in connection with the stranding study demonstration. However, we would like to clarify that MDMR staff were not notified in advance that placement of temporary eel ramps would be discussed during that visit. During a brief conversation onsite with Normandeau staff, three potential locations adjacent to the Tainter gates were identified. Additional areas were also discussed, including locations on both sides of the barrier wall between the dam and Shad Island.

Given the limited and informal nature of that discussion, MDMR does not consider it to have constituted adequate consultation on temporary eel ramp placement. A dedicated meeting, or at minimum prior notice that ramp placement would be discussed, would have allowed for more thorough evaluation and input.

PDF Page 108: "Survey crews noted observations indicating small amounts of observable flow over the spillway structure that was associated with slight overtopping at full pond."
MDMR Comment: Please describe whether overtopping flows were concentrated in particular locations. Also please describe any other sources of flow and variations in those flows in the bypass reach other than minimal flow over the spillway and eelway attraction.

PDF Page 124: "Upon further evaluation in the field, the third location identified during the May 30, 2025 site visit was determined to be too steep and slippery to safely install and maintain a temporary eel ramp (Figure 5-12)."
MDMR Comment: If the licensee had consulted with MDMR, we would have suggested an alternative location for this temporary ramp.

PDF Page 131: "As demonstrated during this 2025 study, juvenile eels are present in significant numbers downstream of the Project during the expected upstream passage period (e.g., June to August)."
MDMR Comment: Given the very high numbers of eels observed at the project (58,272) across 12 survey dates, lack of upstream passage facilities for eels at the project, and availability of temporary eel passage structures, MDMR would request that Brookfield White Pine Hydro voluntarily operate and maintain a temporary eel trap at the project until subsequent license issuance and implementation of permanent upstream eel passage at the site.

<u>Diadromous Fish Behavior, Movement, and Project Interaction Study (page 136)</u>

On January 28, MDMR met with the licensee to further discuss the study plan for Phase II of the Diadromous Fish Behavior, Movement, and Project Interaction study. On February 2, the licensee provided a revised draft of the study plan in response to comments received during the January 28 meeting, and an additional draft on February 10. MDMR provides additional comments below related to the revised study plan.

PDF Page 1: “Transmitters”
MDMR Comment: During the January 28 call, MDMR requested that all fish be tagged with SS300 tags (i.e., pressure tags) to maximize the amount of 3D data collected during the study. The licensee initially agreed to this request, however on February 10, they provided information from the tag manufacturer that indicated many tags detected simultaneously could interfere with accurate data analysis, particularly with the pressure data. The licensee’s updated proposal is to tag 20% of each species with SS300 tags and the rest with SS400 tags. MDMR notes that this approach is consistent with the original study plan. Based on the new information from the manufacturer, MDMR supports this approach.

PDF Page 3: “Lastly, to address agency interest in tagged fish presence in the region downstream of the ledge habitat located at the outlet of the spillway bypass area up to two additional stationary receivers will be installed in that region.”
MDMR Comment: MDMR appreciates the inclusion of these receivers in the study plan. Based on what we heard from the consultant team, it is MDMR’s impression that a minimum of 2 receivers will be needed to adequately cover this area.

Evaluation of Stranding Risk/Bathymetry Study (page 225)

PDF Page 236: “The environmental conditions allowed for a period when the study could be scheduled in May when river herring and other anadromous species would likely be present in the vicinity of the Project.”
MDMR Comment: Please edit this sentence to specify adult river herring as the survey was likely too early to see any juvenile river herring.

PDF Page 239: “One juvenile American Eel and one juvenile Smallmouth Bass were observed in one of the Area 2 pools.”
MDMR Comment: As noted during the call, MDMR staff observed one lamprey ammocoete in Area 2. Please include that observation in this report.

PDF Page 244: “The Shad Falls ledges appear adequate at excluding non-anguillid fish from moving upstream into the river left channel under normal spring/summer flow conditions.”
MDMR Comment: MDMR agrees that it is unlikely for upstream migrating adult alosines to be able to pass the ledges in their current modified configuration. However, it is MDMR’s opinion that Atlantic salmon could potentially leap over the falls, particularly at higher flow conditions than were observed (i.e., no inflow to river left channel) while the field crew was downstream of the dam during the stranding study.