



Stage II Review for North Gorham Hydroelectric Project (LIHI #129) Recertification by the Low Impact Hydropower Institute

Prepared by Gary M. Franc December 16, 2021

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I. INTRODUCTION

The North Gorham Hydroelectric Project (Project), LIHI #129, is licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2519 to Brookfield White Pine Hydro (BWPH), a subsidiary of Brookfield Renewable Partners (BRP). BRP's direct contact is Kelly Maloney, Compliance Manager of the Northeast Region.¹ The 2.25-MW Project is located in the state of Maine between river miles (RM) 19.5 and 20.6² on the Presumpscot River in Cumberland County in the Towns of Gorham, North Windham, Windham, and Standish. The Project was initially constructed in 1900-1901.

The latest FERC license was issued on November 22, 1993 to Central Maine Power (CMP) with an expiration date of December 31, 2034³. The Project was acquired by Florida Power and Light, now NextEra Energy Resources LLC (NER), in late 1999. On December 21, 2012, BRP purchased the Project from NER.

A Section 401 Water Quality Certificate (WQC)⁴ was issued by the Maine Department of Environmental Protection (MDEP) on September 28, 1992. The MDEP issued an amended WQC on February 26, 1996. On May 7, 2021, the MDEP confirmed the 1996 WQC is still valid.

The Project has an installed capacity of 2.25 megawatts (MW) and operates in a run-of-river (ROR) mode. As stated in the LIHI recertification application, the average annual generation (AAG) for the Project from calendar year 2015 through 2020 was 10,553 megawatt-hours (MWh), corresponding to a plant factor of 53.5%.

The Project was conditionally certified by LIHI on April 27, 2016, for a 5-year term expiring on April 27, 2021:

- Condition 1 required BWPH to initiate discussions with Maine Department of Marine Resources (MDMR) and US Fish and Wildlife Service (USFWS) regarding construction of an upstream fish passage facility for American eel at the site and implementation of appropriate measures to facilitate safe downstream passage for American eel.
- Condition 2 requires BWPH to contact the Maine Inland Fisheries and Wildlife (MDIFW) and USFWS prior to any construction activities affecting lands not already developed or structures that may provide roosting habitat for the Northern Long-eared Bat and in the event of impoundment drawdowns that would expose a significant portion of the river bottom, to avoid impacts to the state-threatened brook Floater mussel.

Condition 1 was partially satisfied in 2021 with completed construction of the upstream eel passage in 2020. Consultation with resource agencies on downstream passage is ongoing. Condition 2 remains open at this time.

On April 27, 2021, the current LIHI certification term was extended to August 31, 2021, and later extended to December 31, 2021 and again to January 31, 2022. A recertification application was submitted on August 23, 2021. The Stage I recertification review was completed on September 15,

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² Information from the other LIHI Certified projects on the river indicate that the upstream Eel Weir dam (LIHI #137) is at river mile 25 and the North Gorham dam is located just downstream at RM 23.6.

³ License - https://elibrary.ferc.gov/eLibrary/filedownload?fileid=11983025

⁴ WQC - <u>http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13618142</u>



2021. Given that the review was processed under the new, Second Edition LIHI Certification Handbook, the need for a Stage II review was necessary. The Stage I review deemed it unnecessary to submit a new revised application. BWPH submitted additional documentation on October 14, 2021. The application states that BWPH is applying for LIHI recertification to continue to participate in the Renewable Portfolio Standard (RPS) program within Massachusetts.

II. PROJECT GEOGRAPHIC LOCATION

The Presumpscot River is 25.8 miles long and located in Cumberland County, Maine (See Figure 1) and is the main outlet for Sebago Lake. Sebago Lake's drainage basin includes the Crooked River draining Songo Pond south of Bethel, and the Bear River from Waterford through Long Lake. The basin is between the Saco River drainage basin to the west and the Androscoggin River drainage basin to the north and east. Sebago Lake's total contributing drainage area is 440 square miles (SQMI).

The Presumpscot River flows through the communities of Standish, Windham, Gorham, Westbrook, Portland, and Falmouth before emptying into Casco Bay at Falmouth. In addition to Sebago Lake being its primary source, four significant tributaries of the river are the Pleasant River from Gray through Windham, the Little River from Buxton through Gorham, Mill Brook in Westbrook, an outlet of Highland Lake in Windham, and the Piscataqua River in Falmouth, an outlet of Forest Lake in Cumberland. The East Branch of the Piscataqua River flows separately into the Presumpscot main stem. The Presumpscot River drainage basin south of Sebago Lake is between the Royal River drainage basin to the east, and the Saco River and Stroudwater River drainage basins to the west and south, respectively. The total drainage area of the Presumpscot River at Casco Bay is 648 SQMI.

The Project is located just downstream of Sebago Lake and the Eel Weir Project (LIHI #137). The dam (latitude - 43°48'09.00" N, longitude 70°26'59.81" W) and generating station are located in the Towns of Gorham and Windham, with the impoundment extending into the Towns of Standish and North Windham.

The Project is one of eight dams located along on the river. Moving from upstream to downstream, these other seven hydroelectric projects are:

- Eel Weir (RM 22.1) including the dam at Sebago Lake's outlet, owned by Sappi North America Inc. (SAPPI) and licensed with FERC as P-2984 (LIHI #137) located upstream of North Gorham;
- Dundee, (RM 18.1), owned by SAPPI and licensed with FERC as P-2942 (LIHI #138);
- Gambo, (RM 15.0), owned by SAPPI and licensed with FERC as P-2931 (LIHI #139);
- Little Falls, (RM 13.2), owned by SAPPI and licensed with FERC as P-2941 (LIHI #140);
- Mallison Falls, (RM 12.8), owned by SAPPI and licensed with FERC as P-2932 (LIHI #141);
- Saccarappa, (RM 7.7) owned by SAPPI, and licensed with FERC as P-2897, dam removed in 2021;
- Cumberland Mills Dam, (RM 6.5), owned by SAPPI, breached and not FERC licensed; and
- The former Smelt Hill Dam, (at head of tide) removed in 2002, former FERC exemption P-7118.

Upstream and downstream eel passage measures are currently in place at all of the dams both



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upstream and downstream of the Project. Anadromous fish passage was installed in 2021 at the Saccarappa Project, currently the first barrier on the river, in conjunction with dam removal. The next two projects upstream of Saccarappa, Mallison Falls and Little Falls, are on a schedule to complete fish passage based on passage metrics at Saccarappa.

The Project has a contributing drainage area of 444 SQMI. The USGS gage 01063995 – Sebago Lake near North Windham with a contributing drainage area of 440 SQMI and the USGS gage 01064118 – Presumpscot River at Westbrook with a contributing drainage area of 577 SQMI are available to estimate Project inflows. The application states that available flows are measured at the site.



Figure 1 - Location Map



III. PROJECT SITE CHARACTERISTICS

An overview of the Project is shown in Figure 2.



Figure 2 - Project Overview

The Project's stone masonry and concrete dam was built in 1915 and is about 1,009 feet long, consisting of:

- A non-overflow masonry wall section about 600 feet long (See Figure 3);
- An intake section about 51.5 feet long and 28 feet high with four gates, each 9.5 feet wide by 9.5 feet high, protected by 3/8-inch steel bar trashracks with 1.25-inch clear spacing;
- A sluice gate section about 47 feet long with four submerged sliding gates 4 feet wide by 5 feet high;
- A spillway section about 256 feet long by 24 feet high with a permanent crest elevation at 221.8 feet mean sea level (FTMSL) and a hydraulic discharge capacity of 2,153 cubic feet per second (CFS) (See Figure 4);
- A sluice section about 15.5 feet long;
- A cutoff wall section about 38 feet long.

The dam has no flashboards and creates an impoundment with a gross storage capacity of about 1,300 acre-feet (ACFT) and a surface area of 98 acres at elevation 221.8 FTMSL. Useable storage is negligible.

Water is fed through the trashracks to the powerhouse via four 8-foot-diameter steel penstocks extending approximately 50 to 70 feet downstream to two surge chambers (See Figure 5). The powerhouse is about 58 feet wide and 71 feet long (See Figure 6). It contains two 1,460 horsepower (HP) double-runner Francis turbines connected to two generating units each having an output of 1,125 kilowatts (kW) at a power factor of 0.75. Each turbine is rated to pass a maximum flow of 475 CFS. However, tailwater rise limits the maximum flow of each turbine to 417 CFS. BWPH is not proposing any changes to the power generation equipment at this time.





Figure 3 - Non Overflow Section



Figure 4 -Spillway



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Figure 5 - Penstocks



Figure 6 - Powerhouse

The Project has a downstream fish passage facility and an upstream eel passage facility. BWPH operates the Project in ROR mode with a minimum flow of 222 CFS provided via the powerhouse and/or spillway. During normal operations, flows are discharged from the powerhouse into the tailrace depending on electrical demand and river flow. During high flow periods, both generator units may be run 24 hours a day, with flows in excess of 833 CFS being passed as spillage over the spillway or through the deep gates into the bypass reach.



Inflows are significantly affected by the Eel Weir Project's management of Sebago Lake, which has a surface area of 45 SQMI and controls nearly 99 percent of flows from the upstream drainage. In addition, the downstream fish passage facility at North Gorham includes the use of the Project's deep flood gates in conjunction with a man-made plunge pool and an overflow outlet weir designed to pass resident fish safely. The deep floodgates are typically opened in the spring for a 2-week period to pass excess spring runoff and then used intermittently during the remainder of the year to pass high flows.

IV. ZONES OF EFFECT (ZOEs)

The Project has three ZOEs defined from upstream to downstream on the Presumpscot River. An overview of all ZOEs is shown in Figure 7.

The three ZOEs are:

- ZOE 1, the impoundment which extends from the dam about 1.1 miles to the tailrace of the Eel Weir dam;
- ZOE 2, the bypass reach which extends from the spillway and sluice gates approximately 470 feet to the confluence with the tailrace channel, and;
- ZOE 3, the bifurcated tailrace, formed by intake structure and powerhouse. The tailwater extends from the powerhouse down 360 feet to join the bypass reach which rejoins the mainstem river channel. The normal tailwater elevation at the powerhouse is 187.4 FTMSL. The tailwater is partially backwatered by the downstream Dundee Project impoundment approximately 0.62 miles downstream.

The alternative standards selected to satisfy the LIHI certification criteria in each of these ZOEs are identified in Table 1. As part of my review process, I checked and agreed with their selection as shown in Table 1 with the exception of standards shown in RED.

CRITERION and STANDARD SELECTED										
	A	B	С	D	Ε	F	G	H		
Zone Number and Zone Name	Ecological Flows	Water Quality	Upstream Fish Passage	Downstream Fish Passage	Shoreline and Watershed Protection	Threatened and Endangered Species	Cultural and Historic Resources	Recreational Resources		
1. Impoundment	1, 2	2	1	2	2, 3	2	1, 2	2		
2. Bypassed Reach	2	2	2	2	1 , <mark>3</mark>	2	1, 2	2		
3. Tailrace	2	2	2	1	1, 3	2	1, 2	2		

Table 1: Zones of Effect





Figure 7- Project ZOEs

V. REGULATORY AND COMPLIANCE STATUS

A WQC⁵ was issued by the MDEP on September 28, 1992. The MDEP issued an amended WQC on February 26, 1996⁶. The latest FERC license was issued on November 22, 1993 to CMP, having an expiration date of December 31, 2034⁷. On October 31, 1995, the FERC issued an order modifying license articles 401, 402 and 406. The Project was acquired by NER, in late 1999. On December 21, 2012, BRP purchased the Project from NER.

A. Licensing Requirements

The FERC license includes a number of requirements intended to restore, protect, and enhance natural resources and improve public access and recreation. The FERC license contains nine articles:

• <u>Article 401</u> – Requires a minimum flow of 222 CFS, as measured immediately downstream of the Project tailrace, or inflow whichever is less, for the protection and enhancement of fish

⁵ WQC - <u>http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13618142</u>

⁶ Amended WQC – <u>https://lowimpacthydro.org/wp-content/uploads/2020/07/1996_02_26-Water-Quality-Certification.pdf</u>

⁷ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=11983025



and wildlife resources in the Presumpscot River. This flow may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon agreement between the Licensee and the MDEP. If the flow is so modified, notification to the FERC is required within 30 days after each incident.

- <u>Article 402</u> Minimizes fluctuations of the reservoir surface elevation for the protection of fishery resources in the impoundment. The licensee at all times must maintain the reservoir elevation, as measured immediately upstream of the dam, within one foot of the normal water surface elevation of 221.8 FTMSL. This mode of operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee and for short periods upon mutual agreement with the MDEP. If this mode of operation is so modified, notification to the FERC is required within 30 days after each incident.
- <u>Article 403</u> Required the filing of an Operations and Flow Monitoring Plan (OFMP). The OFMP was filed on March 29, 1994⁸ and approved by the FERC on May 2, 1994⁹.
- <u>Article 404</u> Required downstream fish passage for resident species along with an Operations and Maintenance Plan (OMP) with annual report filings. The OMP was filed with the FERC on September 1, 1995¹⁰ and approved on November 14, 1995¹¹.
- <u>Article 405</u> Grants reserved authority to the FERC to require upstream and/or downstream fishways as may be prescribed by the US Department of the Interior (USDOI) during the license term.
- <u>Article 406</u> Required implementing a Programmatic Agreement between the FERC and the Maine Historic Preservation Officer (SHPO) for managing historic properties that may be affected by a new license for the continued operation of the Project.
- <u>Article 407</u> Required monitoring of recreational use of the Project area to determine whether existing recreation facilities are meeting recreation needs. Every 6 years during the term of the license, a report will be filed with the FERC on monitoring results.
- <u>Article 408</u> Implemented a tailrace access improvement plan for relocating the parking area and constructing a parking lot with spaces for 5-6 cars, improving the tailrace access trail and closing the existing access to vehicle traffic.
- <u>Article 409</u> Authorizes the licenses to grant permission for certain types of use and occupancy of Project lands and waters and to convey certain interests in Project lands and waters for certain types of use and occupancy, without prior FERC approval.

B. Compliance Issues

The Project was conditionally certified as LIHI #129 on April 27, 2016, for a 5-year term, expiring on April 27, 2021, and currently extended to January 31, 2022. Condition 1 required BWPH to initiate discussions with MDMR and USFWS regarding construction of an upstream fish passage facility for American eel and implementation of appropriate measures to facilitate safe downstream passage for American eel. Condition 2 requires BWPH to contact the MDIFW and USFWS prior to any construction activities affecting lands not already developed or structures that may provide roosting habitat for the Northern Long-eared Bat (NLEB).

With regard to LIHI Condition 1, BWPH requested an extension of time from LIHI on December 18,

⁸ OFMP - <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10673476</u>

⁹ <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=3462147</u>

¹⁰ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00B52AE5-66E2-5005-8110-C31FAFC91712

¹¹ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0014BEAD-66E2-5005-8110-C31FAFC91712



2019, to finalize an agreement with the MDMR and USFWS for formal commitment on downstream passage measures within the three years window after the issuance of LIHI certification. Again, on March 31, 2020, BWPH requested and was granted more time on this issue.

On April 16, 2021, in the annual LIHI compliance letter, BWPH stated that upstream eel passage had been installed. Additionally, the downstream measures are still being developed with the MDMR and USFWS. MDMR expressed concerns with approach velocities through the deep gates. A desktop analysis is being developed to address these concerns.

With regard to LIHI Condition 2, there have been no construction activities affecting undeveloped lands or structures that may provide habitat for NLEBs during the certification period.

Throughout the current LIHI certification term, the Project was generally compliant with the WQC and FERC articles. There were no significant planned or unplanned drawdowns at the Project during the certification period. Three notifications of minimum flow deviation were reported to FERC.

On February, 15, 2018, FERC issued a letter informing BWPH that the reservoir deviation event that occurred on December 17, 2017 would be considered a violation of license.¹² On November 27, 2018, FERC issued letter informing BWPH that the minimum flow deviation event that occurred on July 21, 2018 would not be considered a violation of Article 401 re the license.¹³ On May 14, 2021, FERC issued letter informing BWPH that the minimum flow deviation event that occurred on January 30, 2021 would not be considered a violation of Article 401 for the license.¹⁴ See Section VII.A for additional discussion.

VI. LIHI PUBLIC COMMENTS

A. Public Comment Letters

On October 14, 2021, LIHI filed notice it had received a complete recertification application from Brookfield White Pine Hydro, LLC for the North Gorham Project located on the Presumpscot River in Maine. The notice states, "LIHI is seeking comment on this application. Comments that are directly tied to specific LIHI criteria (flows, water quality, fish passage, etc.) will be most helpful, but all comments will be considered. Comments may be submitted to the Institute by e-mail at comments@lowimpacthydro.org with "North Gorham Project Comments" in the subject line, or by mail addressed to the Low Impact Hydropower Institute, 1167 Massachusetts Avenue, Office 407, Arlington, MA 02476. Comments must be received at the Institute on or before 5 pm Eastern time on December 13, 2021 to be considered. All comments will be posted to the web site and the applicant will have an opportunity to respond. Any response will also be posted. The project description and complete application can be found HERE¹⁵."

¹² https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F2E035-66E2-5005-8110-C31FAFC91712

¹³ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01FB7578-66E2-5005-8110-C31FAFC91712

¹⁴ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020D3A63-66E2-5005-8110-C31FAFC91712

¹⁵ <u>https://lowimpacthydro.org/lihi-certificate-129-north-gorham-project-maine/%20</u>



B. Agency Comment Letters

On October 14, 2021, LIHI¹⁶ emailed contacts¹⁷ listed in the Project application as knowledgeable about the Project stating, "You may have already received this notice if you are on the Low Impact Hydropower Institute (<u>www.lowimpacthydro.org</u>) email list. However, you were also identified as an agency contact on the LIHI recertification application recently submitted by Brookfield White Pine Hydro for the North Gorham Hydroelectric Project located on the Presumpscot River. The application reviewer, Gary Franc (copied here), may be in contact with you if he has questions about these projects or wishes to clarify any aspects of the LIHI applications. You may also provide comments directly to LIHI as indicated below. More information about the projects and their application can be found in the link below. If you would like to receive additional notices about these projects or other hydroelectric projects in your region applying for LIHI certification, please sign up for our mailing list at <u>https://form.jotform.com/202176096857060</u>."

No comment letters were received during the 60-day comment period which ended on December 13, 2021.

VII. DETAILED CRITERIA REVIEW

This section contains my recertification review of the Project with regard to the LIHI Certification criteria. As part of my review, I conducted a FERC e-library search to verify claims in the recertification application. My review concentrated on the current certification period since April 27, 2016.

A. Ecological Flows

The goal of this criterion is to support habitat and other conditions that are suitable for healthy fish and wildlife resources in riverine reaches that are affected by the facility's operation. The application states that the LIHI flows criterion is satisfied in ZOE 2 and ZOE 3 by meeting alternative standard A-2 and in ZOE 1 by meeting alternative standard A-1. My review changed the ZOE 1 alternative standard to A-2 given that FERC's Order dated October 31, 1995 defines how reservoir elevation is maintained, as measured immediately upstream of the dam.

Article 403 required the filing of an Operations and Flow Monitoring Plan (OFMP). The OFMP was filed on March 29, 1994¹⁸ and approved by the FERC on May 2, 1994¹⁹. The Project operates in a ROR mode. There is no licensed high level limit for the impoundment; however, as specified in articles 401 and 402, at all times the impoundment elevation, as measured immediately upstream of the dam, must be maintained within one foot of the normal water surface elevation of 221.8 FTMSL. There is no minimum flow requirement in the short bypass reach; however, a year-round base flow²⁰ of 222 CFS must be released from the dam to the regulated downstream river reach. The minimum flow is calculated as 0.5 CFS per square mile of drainage area in FERC's Environmental Assessment (FEA)

¹⁶ Maryalice Fischer – LIHI Certification Program Director - mfischer@lowimpacthydro.org - 603-664-5097 office - 603-931-9119 cell

¹⁷ Nick.Livesay@maine.gov; Bjorn.Lake@noaa.gov; Kathy.Howatt@maine.gov; james.pellerin@maine.gov; Kathleen.Leyden@maine.gov; gail.wippelhauser@maine.gov; sean.mcdermott@noaa.gov; Kirk.Mohney@maine.gov; kevin_mendik@NPS.gov.

¹⁸ OFMP - <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=10673476</u>

¹⁹ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=3462147

 $^{^{\}rm 20}$ Base flows can be provided by any means including turbine flow.



which is the USFWS regional default summer aquatic base flow. This flow can be provided by the powerhouse and/or spillway flows through the bypassed reach. Any deviations for impoundment elevations or minimum flows at the Project are reported to FERC.

The minimum flow is intended to support and enhance the anadromous fishery downstream in the lower Presumpscot River as well as provide habitat for resident fish directly downstream of the Project; however, all flows into North Gorham are controlled by operations at the Eel Weir Project which has minimum flow requirements sufficient to ensure 222 CFS is available at North Gorham.

Since the minimum hydraulic capacity of each turbine is 190 CFS, all flows less than that amount are passed through the spillway as do downstream fish passage flows.

During the current certification period, three notifications of minimum flow or impoundment level deviations were reported to FERC with one on December 17, 2017 being be considered a violation of license due to inaccurate staff communications in addition to equipment malfunction. Therefore, the violation of Article 402 was made part of the compliance history of the Project.²¹ That deviation was the result of failure of a Programmable Logic Controller and subsequent operator error related to setting the spill gate opening resulting in the overnight impoundment level dropping to 2.5 feet below crest. Agencies were notified and BWPH reviewed their procedures with operations staff to avoid recurrence. Two minimum flow deviations that occurred in 2018 and 2021 were not deemed violations. Both were due to unit trips, each lasted less than one hour, and resource agencies were notified in both cases.

My review indicates that throughout the current certification period BWPH has proactively operated the Project impoundment and has provided adequate impoundment levels and minimum flows in accordance with the FERC license with the minor exceptions noted above. It is my recommendation the Project continues to satisfy the ecological flows criterion.

B. Water Quality

The goal of this criterion is to ensure that water quality is protected in water bodies directly affected by facility operations, including downstream reaches, bypassed reaches, and impoundments above dams and diversions. The application states that the Project satisfies the LIHI water quality criterion in all ZOEs by meeting alternative standard B-2.

A WQC²² was issued by the MDEP on September 28, 1992. The MDEP issued an amended WQC on February 26, 1996. On May 7, 2021, the MDEP confirmed the 1996 amended WQC is still valid²³.

The 2021 MDEP letter, contained within the recertification application states, ".... based on its review, the Department confirms that the North Gorham Hydro Facility is in compliance with minimum flow and impoundment water level fluctuation requirements pursuant to the WQC The Department confirms that the WQC issued on September 24, 1992 and subsequently modified on February 26, 1996 is still valid and is the most recent WQC issued by the Department for the North Gorham Hydro Project The Department reviewed its file on the North Gorham Hydro Project and confirms that the facility is in compliance with all other conditions pursuant to the WQC."

²¹ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F2E035-66E2-5005-8110-C31FAFC91712

²² WQC - <u>http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13618142</u>

²³ See page 85 of recertification application.



The Project is not within waters that are identified on the MDEP 303(d) 2016 Integrated Water Quality Monitoring and Assessment Report (IWQMAR) list of impaired waters²⁴. The Project meets all water quality standards for Class A waters pursuant to the WQC (See page 52 of IWQMAR).

A review of the FERC docket found no issues associated with the Project's operation pertaining to water quality. It is my recommendation that the Project continues to satisfy the water quality criterion.

C. Upstream Fish Passage

The goal of this criterion is to ensure safe, timely and effective upstream passage of migratory fish so that the migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by Project facilities. The application states that the Project satisfies the LIHI upstream fish passage criterion in ZOE 1 by meeting alternative standard C-1 and in ZOE 2 and ZOE 3 by meeting alternative standard C-2.

There are no anadromous fish in the Project vicinity due to downstream barriers. Both upstream and downstream American eel passage facilities are currently in place at all dams downstream of the Project as well as at the upstream Eel Weir Project. The North Gorham Project's current license and WQC does not require upstream fish passage; however, upstream eel passage is a condition of the current LIHI certification.

The Project upstream eel passage (Figure 8) is located in the bypass reach. It was installed in 2020 and is being refined based on monitoring during 2021. Once upstream of the dam there is unimpeded movement of resident fish and eels within the impoundment.



Figure 8- Upstream Eel Ramp

²⁴ https://www.maine.gov/dep/water/monitoring/305b/2016/28-Feb-2018_2016-ME-IntegratedRptLIST.pdf



On January 4, 2018, Friends of Sebago Lake (FOSL) and Friends of Merrymeeting Bay (FOMB) submitted comments to FERC.²⁵ The letter stated:

- FOSL was told by a BWPH representative they had no plans to provide eel passage at the North Gorham Dam although upstream eel passage had been installed at the upstream and downstream projects;
- LIHI's certification Condition 1 requires BWPH to resolve any outstanding issues pertaining to eel passage with the MDMR and USFWS such that construction and operation are completed no later than the end of the 5-year certification period;
- The FERC docket shows no filed correspondence between BWPH and MDMR, USFWS or other parties which would begin to fulfill Condition 1; and
- Requested the FERC to exercise its discretionary authority to require effective upstream and downstream passage at the Project for American eel by December 31, 2018.

On March 6, 2018, FOSL filed additional comments with FERC, again noting that the Project was the only dam on the river without effective upstream eel passage and requesting the FERC to take action²⁶.

On July 3, 2018, FERC issued a letter to BWPH.²⁷ The letter stated the Project license currently does not require eel passage measures and that review of the Project record indicates that the USDOI had not exercised its reservation of authority under Article 405 to prescribe fishways. However, a letter had been filed by the USFWS on May 16, 2005, identifying the need for eel passage at the Project and asking for discussions to begin with the MDMR, MDIFW, MDEP, the National Marine Fisheries Service (NMFS) and USFWS, regarding the implementation of eel passage measures at the Project. The FERC record does not contain any response or follow-up filings for this USFWS request beyond a July 6, 2005 response letter from the then Project owner agreeing to discuss passage needs with USFWS.

The 2018 FERC letter requested a response assessing the status of eel passage measures within 60 days. The response should:

- State whether any additional consultation was conducted in response to the USFWS May 16, 2005 letter and the results of that consultation;
- State whether any eel passage measures were developed with the resource agencies and implemented at the Project, or;
- Detail all undocumented consultation, if any, regarding eel passage; and
- Include a detailed description of any facility or measures, how and when those measures are operated, and when operation began for the first time, if any.

On August 29, 2018, BWPH submitted to FERC the status of upstream eel passage plans and a study plan.²⁸ The letter stated that BWPH was engaged in upstream eel passage design and installation planning pursuant to the conditions of the current LIHI certification Condition 1, and:

- Siting and design work on the upstream eel passage structures was to be initiated within the first two years of LIHI certification not later than November 2018;
- Construction and operation of the upstream eel passage facility was to begin no later than the end of the five-year LIHI certification period (April 2021), and;

²⁵ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F19B6A-66E2-5005-8110-C31FAFC91712

²⁶ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F33D42-66E2-5005-8110-C31FAFC91712

²⁷ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F75A33-66E2-5005-8110-C31FAFC91712

²⁸ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01F8A9E8-66E2-5005-8110-C31FAFC91712



• A downstream passage measures timeline and formal commitment was to be established within three years of LIHI certification (November 2019).

Additionally, a USFWS, NMFS and MDMR approved Juvenile American Eel Monitoring Plan (JAEMP) was provided.

The upstream eel passage was installed in 2020 and has an attraction flow of approximately 50 gallons per minute (GPM). It was opened on June 1, 2021 and closed on September 30, 2021. Many engineering and structural modifications were required and tested throughout the 2021 "shakedown" season. A total of 203 eels were captured ranging from 90 millimeter (mm) to 209 mm. Several modifications were identified after September 30, 2021 to be implemented in 2022 which may necessitate another year of "shakedown". Results have not been reported to agencies as of yet. Since upstream eel passage has been installed, it is my recommendation the Project continues to satisfy the upstream fish passage criterion with a continuation of the application portion of Condition 1 to ensure that the planned 2022 modifications and shakedown are completed, and passage is determined to be effective.

D. Downstream Fish Passage

The goal of this criterion is to ensure safe, timely and effective downstream passage of migratory fish and for riverine fish such that the facility minimizes loss of fish from reservoirs and upstream river reaches affected by facility operations. Migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility. The application states that the Project satisfies the LIHI downstream fish passage criterion in ZOE 1 and ZOE 2 by meeting alternative standard D-2 and in ZOE 3 by meeting alternative standard D-1.

Downstream fish passage requirements at the Project were originally mandated by the license under Article 404, requiring downstream fish passage for resident species along with an operations and maintenance plan and annual report filings. The plan was filed with the FERC on September 1, 1995²⁹ and approved on November 14, 1995. Article 405 reserved authority to the FERC to require downstream fishways as may be prescribed by the USDOI during the license term.

There are no anadromous fish species above the Project. The impoundment provides approximately 1.1 miles of unimpeded river reach for downstream migrating resident fish and American eel with no obstructions to downstream passage. According to the MDIFW, the pond supports brook trout, brown trout, and landlocked salmon passed downstream through the upstream Eel Weir Project's bypass.

The MDIFW fisheries management plan for the Presumpscot River includes stocking salmon and trout. The Eel Weir bypass is scheduled to receive 1,600 brook trout and 600 salmon annually. The availability of additional fish may increase the number and species of salmonids stocked. These fish eventually enter the North Gorham Project's tailwater where they can be harvested by fishermen below the facility and enhance the salmonid fishery of the downstream Dundee Pond.

The Project's downstream passage facilities direct fish into the bypass reach channel. The downstream fish passage facility includes the use of the Project's deep flood gates in conjunction with

²⁹ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=00B52AE5-66E2-5005-8110-C31FAFC91712



a man-made plunge pool area, approximately 180 feet long by 60 feet wide by 6 feet deep, and an overflow outlet weir designed to safely pass resident fish. The deep floodgates are typically opened in the spring for a 2 week period to pass excess spring runoff and then used intermittently during the remainder of the year to pass high flows. The gates are operated in accordance with the OMP. The deep gates are only used for resident species and operate in sequence to allow for best passage into the plunge pool. Each of the four gates can pass up to 330 CFS with the flow dictated by river flows.

The OMP requires a report be submitted annually by January 31 to FERC and the resource agencies that describes the operation and maintenance activities for downstream fish passage in the previous year. The most recent report for 2020 was submitted on December 29, 2020.³⁰

During consultation on downstream eel passage measures, concerns had been raised by MDMR on velocities in front of the deep gates. A desktop study was conducted comparing velocities and flows at the North Gorham Project to other similar sites. These results will be presented to MDMR shortly for consideration.

In addition to continued coordination with the agencies on a final plan, the proposed gate operations combined with nightly shutdowns were not able to be implemented in 2021 as the spillway was being resurfaced and construction was going on in that area with staging and other equipment present.

With regard to the current LIHI Certification Condition 1, the formal commitment for downstream passage was scheduled for filing with LIHI within three years of LIHI certification with installation as soon as practicable. However, consultation with the agencies on the downstream passage plan is ongoing, as agencies have expressed a concern regarding velocities encountered at the deep sluice gates.

Although the downstream eel passage issues have not yet been finalized with the MDMR and USFWS, BWPH has been proactively working to address outstanding concerns and has adequately communicated with LIHI on condition status. It is my recommendation that the Project continues to satisfy the downstream fish passage criterion with continuation of the applicable portion of Condition 1 until passage is installed and determined to be effective.

E. Shoreline and Watershed Protection

The shoreline and watershed protection criterion is designed to ensure that sufficient action has been taken to protect, mitigate or enhance environmental conditions of soils, vegetation, and ecosystem functions on shoreline and watershed lands associated with the facility. The application states that the LIHI shoreline and watershed protection criterion in ZOE 1 is satisfied by meeting alternative standard E-2 and in ZOE 2 and ZOE 3 by meeting alternative standard E-1. My review changed the alternative standard to Standard E-3, Enforceable Protection which is more applicable in all three ZOEs.

The Project is not required to have a Shoreline Management Plan (SMP). Project lands are managed under FERC's standard land use Article 409, which gives BWPH the authority to grant permission for certain types of use and occupancy of Project lands and waters and to convey certain interests in Project lands and waters for certain types of use and occupancy, without prior FERC approval.

³⁰ <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=15689008</u>



The Project boundary encompasses 44.6 acres of land around the dam and powerhouse; which is backwatered by the downstream Dundee dam. The Project boundary includes another 98 acres of water and follows the impoundment shoreline up to the 221.8 FTMSL to encompass flowage rights to the normal full pond elevation. There are no ecologically significant shoreline lands or critical habitats along the impoundment, tailrace, or bypassed reach. A small parcel adjacent to the powerhouse includes a day use recreation area.

MDEP's Shoreland Zoning Act and local regulations constitute enforceable protection and are designed to manage land development in the vicinity of the Project area in accordance with certain objectives. Any development or ground disturbance requires the appropriate permits and must adhere to the design and development standards of the appropriate town zoning regulations.

My review found that throughout the current LIHI certification, no new issues have arisen pertaining to the Project's shoreline and watershed protection management. It is my recommendation that the Project continues to satisfy the shoreline and watershed protection criterion.

F. Threatened and Endangered Species Protection

The threatened and endangered species protection criterion is designed to ensure that the facility does not negatively impact state or federally-listed threatened or endangered species. The application states that the LIHI threatened and endangered species criterion is satisfied in all ZOEs by meeting alternative standard F-2.

An Information for Planning and Consultation (IPaC) report and a USFWS Official Species List were developed for the Project and provided in Section 7.0 of the recertification application.

The following federally-listed endangered or threatened species that may be present in the Project vicinity include:

- Northern Long-Eared Bat (NLEB) is threatened. Project operations are not anticipated to affect NLEB or other bat species. There may be periodic vegetation clearing for dam safety, access, and other purposes but the Applicant states these would be conducted in accordance with the Section 4(d) rule for NLEB and would be extremely limited given how little land is located within the Project boundary;
- Small Whorled Pogonia (SWP) is endangered. SWP typically occurs in upland forest with sparse shrub and herb layers and thick leaf litter³¹. It often occurs near areas where a hardpan impedes water percolation into the soil. The described growing conditions for the SWP are not prevalent within the Project lands.

The MDIFW endangered and threatened species report provided in Section 7.0 of the application indicates no state listed species are documented in the Project vicinity though the Little brown bat (endangered), Northern long-eared bat (endangered), and Eastern small-footed bat (threatened) were identified as likely to occur during the migration and/or breeding seasons. Notably, brook floater mussel, a state-threatened species is not identified as being present.

Several state species of special concern are identified as either documented or having the potential to occur in the Project vicinity. Those documented in the Project vicinity are the American eel and

³¹ <u>https://www.maine.gov/dacf/mnap/features/isotmed.htm</u>



creek chubsucker. State special concern species of bats that may occur within the Project area during migration and/or the breeding season include the big brown bat, red bat, hoary bat, silver-haired bat, and tri-colored bat.

Bald eagles have also been documented in the Project area. Until recently, bald eagles were listed as a species of special concern in Maine. However, eagles continue to be protected under the federal Bald Eagle and Golden Eagle Protection Act as well as other federal laws. In addition, vegetation removal within 250 feet of any waterway is regulated by the MDEP's Shoreland Zoning Act. As such, no negative effects are anticipated due to Project operations.

Other state-listed species have the potential to be present within the Project boundary. However, as stated above, routine operations would not be anticipated to affect these species and substantive vegetation removal is regulated by the MDEP's Shoreland Zoning Act.

My review found that throughout the current LIHI certification, no new issues have arisen pertaining to the Project's threatened and endangered species management. It is my recommendation that the Project continues to satisfy the threatened and endangered species protection criterion and that the current LIHI Certificate Condition 2 is no longer needed to ensure compliance with this criterion, as there have been no construction or large impoundment drawdowns during the current LIHI term and BWPH is complying with appropriate bat protection measures and any planned impoundment drawdowns are subject to agency pre-approval under license Article 402.

G. Cultural and Historical Resource Protection

The cultural and historic resource protection criterion is designed to ensure that the facility does not unnecessarily impact cultural and historic resources associated with the facility's lands and waters, including resources important to local indigenous populations. The application states that the LIHI cultural and historic resources criterion in all ZOEs is satisfied by meeting alternative standard G-1. My review changed the alternative standard to G-2 for all ZOEs given that license Article 406 requires a Programmatic Agreement (PA) and Cultural Resources Management Plan (CRMP) be implemented.

A PA was issued on December 9, 1993. On April 18, 2007, an updated PA was issued for a number of hydro projects in Maine including the Project³². This PA contained an amended CRMP for management of historic structures, archaeological site monitoring and data recovery plans, and a description of how site studies will be conducted.

Additionally, annual reporting is required by February 15 each year to the FERC and SHPO. The most recent report was submitted to FERC on February 16, 2021³³. The report states that no cultural resource activities were conducted in 2020 or are planned at the Project for 2021.

As documented in the FEA, surveys at the Project identified one archaeological site in the area of potential effect that could be eligible for listing on the National Register of Historic Places (NRHP), the Great Falls site (ME 13-34). This area of about 900 square meters would have been well situated for the development of fishing access below the falls. The site is predominantly bedrock at its northern end but is undergoing moderate erosion at its southern end.

³² https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01060867-66E2-5005-8110-C31FAFC91712

³³ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020BCA00-66E2-5005-8110-C31FAFC91712



The SHPO determined that because recreation and recreation development could affect the site, its eligibility should be determined.

Also, license Article 408 required that a Tailrace Access Improvement Plan (TAIP)³⁴ include an evaluation of the Great Falls archeological site and if eligible, include adequate provisions to mitigate the effects of the recreational development in consultation with the SHPO. MAAR Associates³⁵ was contracted to conduct an archeological study at the site and provided a complete summary of the excavation and findings. The consultant concluded that the site is not considered eligible for nomination to the NRHP.

To ensure that any cultural resources potentially present at the Project are protected, the PA requires that BWPH consult with the SHPO prior to any Project-related land-clearing or ground-disturbing activities in this area.

BWPH has proactively consulted with resource agencies pertaining to cultural and historical issues. Throughout the current LIHI certification, the Project has been in compliance with all requirements regarding cultural resource protection, mitigation and enhancement included in the FERC license and CRMP. It is my recommendation that the Project continues to satisfy the cultural and historic resources protection criterion.

H. Recreational Resources

The goal of this criterion is to ensure that recreation activities on lands and waters controlled by the facility are accommodated and that the facility provides recreational access to its associated lands and waters without fee or charge. The application states that the LIHI recreation criterion in all ZOEs is satisfied by meeting alternative standard H-2.

License Article 407 requires monitoring recreational use of the Project area to determine whether existing recreation facilities are meeting recreation needs. Article 407 was amended on May 7, 1997 to require filing of the recreation report by June 15 of each year in which FERC Form 80 was due. Article 407 was again amended on August 12, 2003 to change the deadline for filing results of recreation use monitoring to six months after the due date of the Form 80. Every 6 years a report is filed with the FERC on monitoring results. A number of recreation reports, via hyperlinks, filed pursuant to Article 407 are provided in Section 6.5.6 of the rectification application. The most recent 6-year monitoring was to be conducted in 2020 with the report due by April 1, 2021. BWPH requested extensions in both 2020 and 2021 to conduct monitoring and file reports due to the Covid pandemic and concerns over staff safety as well as concerns that monitoring data collected during this period would not be representative. FERC approved the extension requests with the new due date of April 1, 2023 for monitoring to be conducted in 2022³⁶.

License Article 408 required a TAIP for relocating the parking area and constructing a parking lot with spaces for 5-6 cars, improving the tailrace access trail and closing the existing access to vehicle traffic.

³⁴ <u>https://elibrary.ferc.gov/eLibrary/filedownload?fileid=3035287</u>

³⁵ https://www.sbcontract.com/contractor/1671340/MAAR-ASSOCIATES-INC-in-Wilmington-DE.htm

³⁶ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=020C072F-66E2-5005-8110-C31FAFC91712



On February 16, 1996³⁷, FERC approved the TAIP that proposed improvements to the tailrace including construction of a new parking lot and upgrading access trail and carry-in launch below the Dam on the eastern shore. There is no record of FERC having conducted an environmental and recreation inspection at the Project.

Access to the tailrace and bypass reach is provided via the tailrace angling access sites and the carryin boat launch. The eastern shore access site includes a carry-in boat launch installed downstream of the dam in the town of Windham, to provide adequate small boat and canoe access to the tailwater of the Project. This same area is open to bank fishing. The site is leased to the town of Windham and is also maintained by the town.

In 2002, the tailrace angling access site on the western shore was used at 50% capacity and the tailrace angling access and carry-in boat launch on the eastern shore was used at 40% capacity. In 2014, these sites were used at 30% capacity. The day use recreation site provides the public with shoreline access to the impoundment. Picnic facilities are installed, and the public is permitted to use the far southern portion of the dike area as a swim beach. This site was used at 50% capacity in 2002 and at 30% capacity in 2014.

Throughout the current LIHI certification, my review found no issues pertaining to recreational resources compliance. Therefore, it is my recommendation that the Project continues to satisfy the recreational resources criterion.

VIII. RECOMMENDATION

My review comprised a thorough assessment of the certification application and its supporting documentation, a search of the FERC docket during the current certification term, and other publicly available information.

I believe that this Project should be conditionally recertified for a term of five (5) years with Condition 1 from the current certification, updated and modified below into the following two conditions:

- 1. The facility Owner shall report on the status of the currently planned 2022 upstream eel passage modifications and shakedown in the 2022 annual compliance statement; and shall report annually thereafter on any additional activities and consultation until upstream eel passage is determined by resource agencies to be effective.
- 2. The facility Owner shall report on the status of consultation, plans, and schedule for installation of downstream eel passage in annual compliance statements until downstream eel passage is installed and determined by resource agencies to be effective.

³⁷ https://elibrary.ferc.gov/eLibrary/filedownload?fileid=3035287



December 2021

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