

REVIEW OF APPLICATION FOR LIHI CERTIFICATION OF THE SOUTH BERWICK HYDROELECTRIC PROJECT

**FERC Project No. 11163
Salmon Falls River, Towns of South Berwick, ME and Rollinsford, NH**



Source: GMP 2022

February 6, 2023
Nuria Holmes, LIHI Reviewer

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FINAL REVIEW OF APPLICATION FOR LIHI CERTIFICATION OF THE SOUTH BERWICK HYDROELECTRIC PROJECT

This report provides final review findings and recommendations related to the certification application submitted to the Low Impact Hydropower Institute (LIHI) by Green Mountain Power (GMP) for certification of the South Berwick Hydroelectric Project (FERC Project No. 11163) (South Berwick Project or Project). The final certification application package was filed on December 8, 2022 and is subject to review under the current 2nd edition LIHI Handbook (Revision 2.05, January 1, 2022).

I. INTRODUCTION

The 1.2-megawatt (MW) South Berwick Project is located in Maine and New Hampshire on the Salmon Falls River, and lies at the intersection of the Town of South Berwick in York County, Maine and the Town of Rollinsford in Strafford County, New Hampshire. The majority of the Project's infrastructure including the intake, penstocks, and powerhouse are located in South Berwick, Maine. The right abutment of the dam is located in the Town of Rollinsford, New Hampshire (GMP 2022).

The South Berwick dam was originally constructed in 1831. In 1923, the existing powerhouse was constructed. In the late 1990s the Project was redeveloped into its current configuration and operation (GMP 2022).

II. PROJECT LOCATION

The Project is located at approximately river mile (RM) 0.0 and is the first dam on the main stem of the Salmon Falls River (Figure 1). The river reach below the Project from RM 0.0 to the coast is tidally influenced. There are no dams or structures downstream between the Project to the mouth of the river. Upstream of the Project, there were historically 24 dams, but some have been removed, breached, or are in ruins (GMP 2022) (Figure 2).

Approximately 3.9 miles downstream, the Salmon Falls River joins the Cocheco River to form the confluence of the Piscataqua River. The Project is located in watershed unit area 01060003. The watershed at the dam covers 235 square miles.

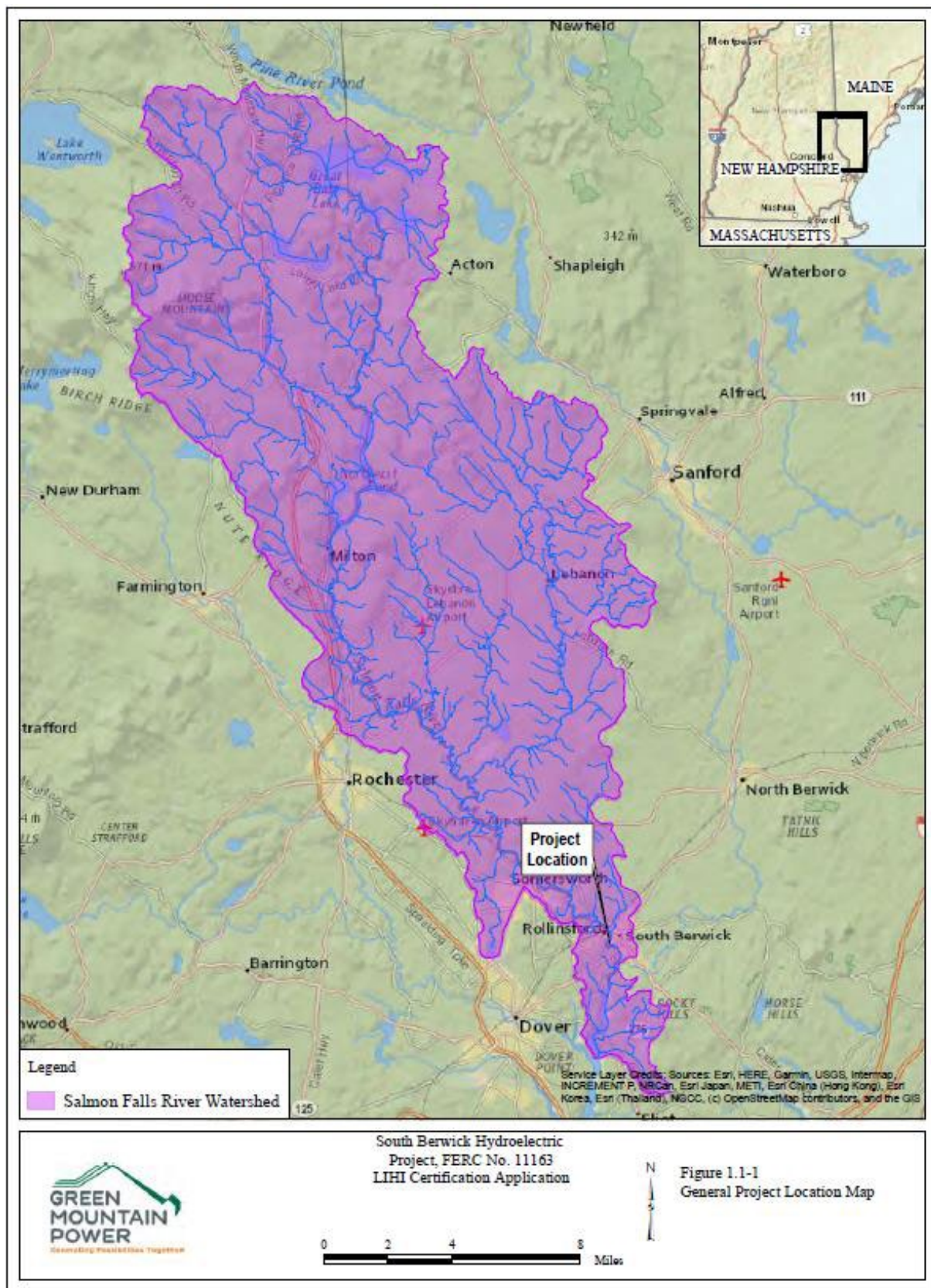


Figure 1 Location of South Berwick Project

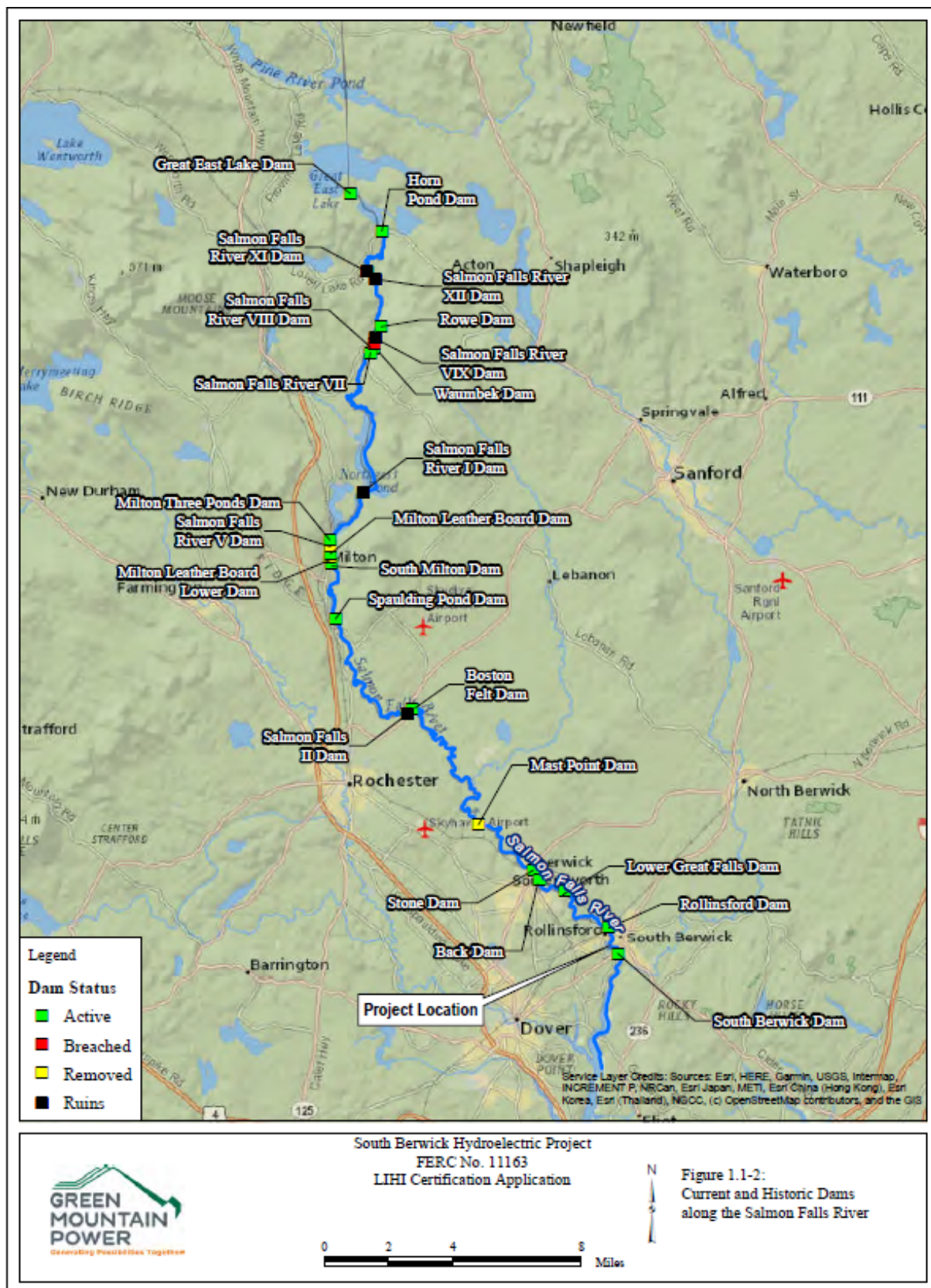


Figure 2 Current and Historic Dams on the Salmon Falls River

III. EXISTING FACILITIES

The Project is a 1.2-MW run-of-river project such that the Project's inflows approximately equal the Project's outflows (Photo 1). The Project's facilities include:

- an 18-foot-high and 290-foot-long concrete gravity dam with a crest elevation of approximately 22.95 feet above mean sea level (msl) and 2-foot-high flashboards, resulting in a normal pond elevation of 24.95 feet msl;
- an integral 220-foot-long spillway section with a flood discharge capacity of 12,950 cubic feet per second (cfs);
- an impoundment with a gross volume of 641 acre-feet with a surface area of 58 acres at the normal pond elevation of 24.95 feet msl and negligible useable storage volume;
- an intake structure on the left (eastern) abutment of the dam;
- three headgates that feed three, 8-foot diameter, 70-foot-long penstocks;
- trashracks with a 1-inch clear space oriented at a 45-degree angle to the river channel and flow;
- an upstream and downstream fish passage facility;
- two 4-foot by 4-foot sluice gates used as flood gates and for lowering the headpond levels;
- an 85-foot-long by 30-foot-wide concrete and brick powerhouse;
- three vertical Francis turbine-generator units with a total installed capacity of 1.2 MW, switch gear, and unit control system; and
- appurtenant facilities.

The Project feeds power into a Central Maine Power Company transmission-distribution line via a 2,400-volt/12,470-volt step-up transformer located adjacent to the powerhouse (GMP 2022).

A fish passage facility was constructed between the left (eastern) abutment of the dam and the intake structure in 2002. The 4-foot wide Denil style fish ladder is constructed of steel and concrete and is designed to operate in either upstream or downstream passage mode (Photo 2). The entrance to the fish ladder is in the Project's tailrace adjacent to the discharge of turbine-generator Unit no. 3. The fish ladder exit, which also serves as the downstream bypass entrance, is located to the right (western) side of the angled trashracks (Photo 3). When operated as a downstream passage facility, the baffles are removed from the upper section of the fish ladder and stoplogs are used to seal off the middle and lower section of the ladder to redirect flow and out-migrating fish into a plunge pool in the tailrace (Photo 4).

There are 7.3 acres of land and 60 acres of water within the FERC Project Boundary. All land within the FERC Project Boundary is fee-owned property, except flowage rights between elevation 27 feet and 24.95 feet msl along the impoundment shoreline. The total acreage of land with flowage rights is approximately 0.5 acres.



Source: GMP 2022

Photo 1 Upstream View of Project Dam and Powerhouse



Source: GMP 2022

Photo 2 Denil Fish Ladder at South Berwick Project



Source: GMP 2022

Photo 3 Fish Ladder Entrance/Exit to Downstream Fish Passage Facility



Source: GMP 2022

Photo 4 Downstream Fish Passage Facility Exit

IV. EXISTING OPERATIONS

The South Berwick Project was issued a minor FERC license on December 9, 1997, with an expiration date of November 30, 2037. A corresponding water quality certificate (#L-17487-33-D-N) was issued on May 25, 1995 by the Maine Department of Environmental Protection (MDEP). The Project's date of initial operation was in 1998.

Pursuant to License Article 402, the Project is operated in automatic mode as a run-of-river facility with no storage or flood control capacity. Water is conveyed through the Project dam and integrated powerhouse, and is released immediately downstream of the dam. There is no bypassed reach.

Pursuant to License Article 403, a pond level sensor is installed near the intake to monitor and ensure the Project impoundment is maintained within 0.1 feet of the flashboard crest elevation of 24.95 feet msl, and to regulate the turbine operation from May 1 through October 31 annually. License Article 404 requires GMP to file a plan to provide a stable pond elevation from November 1 through April 30. The average net head at the Project is 22 feet. Article 405 requires GMP to file a plan to monitor Project impoundment level and outflow to document run-of-river operation. Both plans were filed in 1998. The river reach directly below the Project dam is tidal with an average of three feet of daily tidal fluctuation (GMP 2022).

Unit 1 is the primary operating unit and is typically the first unit placed on-line and the last unit taken offline. The Unit 1 load varies from a maximum of 400 kW (approximately 295 cfs) to a low flow loading of approximately 75 kW (approximately 50 cfs). All inflows greater than the Unit 1 capacity are passed through Units 2 and 3, which are sequentially block loaded under manual control at a maximum load of approximately 295 cfs each. All three units are shut down at inflows less than the minimum capacity of Unit 1 such that all inflow less than 50 cfs is passed over the spillway (GMP 2022).

The flashboards on the spillway crest are constructed of wood and held in place with steel pins. Flashboards are typically replaced as needed after high-flow events. During installation/repair of the spillway flashboards, the Project impoundment is temporarily drawn down by increasing generation flows above inflow rates when streamflow conditions allow. The impoundment level is lowered just below the spillway crest to allow operations personnel to safely work on the spillway crest. Flashboards and pins are then inspected and repaired as needed. When restoring the elevation of the impoundment, most of the inflow is passed through the Project turbines, allowing the impoundment to slowly rise and prevent dewatering of the river reach below the dam (GMP 2022).

V. REGULATORY AND COMPLIANCE STATUS

This review included a docket search of the FERC eLibrary. Records for the Project date back to 1991 when Consolidated Hydro Maine, Inc. (predecessor) filed for the original (minor) license. The environmental assessment (EA) was issued by FERC on January 3, 1997.¹ As noted above, the South Berwick Project was issued a minor license on December 9, 1997, with an expiration date of November 30, 2037.² A corresponding water quality certificate (#L-17487-33-D-N) was issued on May 25, 1995 by the MDEP (included in the license document). The Project's date of initial operation was not until 1998. The license includes the following requirements:

License Article	Compliance Point
401	Required the Licensee to file a soil erosion control plan before any soil disturbing activities at the Project. Individual plans were filed for construction activities at each of the recreation sites on February 2, 2000 and July 17, 2000 .
402	Requires the Licensee to operate the Project in a run-of- river mode.
403	Requires the Licensee to control fluctuations of the reservoir elevation within 0.1 feet of elevation 24.95 feet, msl, from May 1 through October 31, each year.
404	Requires the Licensee to file a plan to provide a stable pond elevation from November 1 through April 30. The plan was filed on December 31, 1998 .
405	Requires the Licensee to file a plan to monitor Project impoundment level and outflow to document run-of-river operation. The plan was filed on December 31, 1998 .
406	Requires the Licensee to file a plan to monitor dissolved oxygen and temperature levels in the river. A plan was filed on November 18, 1998 .
407	Requires the Licensee to file detailed design drawings of downstream fish passage facilities. The design drawings were filed on November 12, 1999 .
408	Requires the Licensee to file detailed design drawings of upstream fish passage facilities. The design drawings were filed on November 12, 1999 .
409	Requires the Licensee to file a plan to monitor the effectiveness of the fish passage facilities required in Articles 407 and 408. The monitoring plans were filed on November 12, 1999 .
410	Requires the Licensee to file a proposed agreement with the Town of Rollinsford to improve and maintain the existing boat launch on the pond. The filing was made on August 25, 1999 .
411	Requires the Licensee to file a plan for the construction and maintenance of the Counting House Park facility. The plan was filed on March 9, 2000 .
412	Requires the Licensee to file a final recreation plan to include the parking and boat launch on the pond, development of the Counting House Park facility and installation of directional signs for recreationists. The plan was filed on March 9, 2000 .

¹ Link: <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=0014E675-66E2-5005-8110-C31FAFC91712>

² Link: <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000A052A-66E2-5005-8110-C31FAFC91712>

License Article	Compliance Point
413	Requires the Licensee to consult with the State Historic Preservation Officer (SHPO) and prepare and implement a cultural resources management plan if archeological or historic sites are discovered during construction of the recreation sites or fish passage facilities or during Project operation.

On January 11, 2001, Consolidated Hydro New Hampshire, Inc. (CHNHI) (predecessor owner/operator) submitted a report of two incidents in deviation of License Article 402 that occurred on April 2 and April 17, 2000. Another record of deviation from License Articles 402 and 403 was recorded in the FERC eLibrary which occurred on November 16, 2004. On April 24, 2001 and April 13, 2005, respectively, FERC notified the licensee that the deviations that occurred would not be considered violations of the license.

On May 28, 2005, an individual submitted a letter to FERC with regard to Article 413 of the license. The individual claimed that CHNHI (a subsidiary of Enel North America, Inc.) was preventing members of the public from accessing the Salmon Falls River via a boat dock and stated that this was not in compliance with the intent of Article 413 of the license, and Section 4 of the Federal Power Act. A review of the docket shows that FERC ultimately determined that the dock would not pose a dam safety issue or increase the hazard classification of the dam so allowed it to be constructed. At the 2008 environmental inspection of the site, the dock is in place.³ It is not owned or maintained by GMP.

On April 10, 2007, FERC notified CHNHI that they had failed to file a final water quality report that was due on February 28, 2006 pursuant to Article 406 of the license. This report was filed with FERC on April 19, 2007. No further tailrace water quality monitoring or reports pursuant to Article 406 were due beyond this point (see Water Quality section).

On November 18, 2016, FERC issued a final order approving the transfer of the South Berwick Project license from Enel North America, Inc. to GMP. Since the date of license transfer, no further incidents of non-compliance and/or deviations have occurred.

VI. PUBLIC COMMENTS RECEIVED OR SOLICITED BY LIHI

The application was publicly noticed on December 8, 2022 and notice of the application was forwarded to resource agency and stakeholder representatives listed in the application.

On December 16, 2022, Trout Unlimited (TU) issued a comment letter. TU believes that there are “substantive fish passage issues” at the Project as license conditions were based on studies conducted in 2002 and 2003, which are now over 20 years old. According to TU, this data became outdated after 10 years (see Appendix A).

The reviewer solicited comments from resource agencies on January 24, 2023. Agencies included National Marine Fisheries Service, U.S. Fish and Wildlife Service (USFWS), New Hampshire Fish and Game Department (NHFGD), Maine Department of Inland Fisheries and Wildlife (MDIFW), and Maine Department of Marine Resources (MDMR).

³ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=01D08C75-66E2-5005-8110-C31FAFC91712>

On January 25, 2023, USFWS responded. On January 31, 2023, Bill McDavitt (under contract to NMFS) responded. McDavitt noted that the FERC eLibrary does not speak to fish passage within the last five years, and made several recommendations regarding fish passage and safe, timely, and effective passage. On February 6, 2023, NHFGD responded. Comments are addressed in the upstream and downstream passage sections below and comment letters and resource agency responses are included in Appendix A and B, respectively.

No other public comments were received by LIHI during the 60-day comment period which ended on February 6, 2022.

VII. ZONES OF EFFECT

The Applicant delineated the Project into two Zones of Effect (ZoEs) (Figure 3):

- ZoE 1 is the impoundment. ZoE starts at the most upstream point of the Project Boundary (RM 0.9) on the Salmon Falls River in the Project's impoundment and ends at the Project dam (RM 0.0).
- ZoE 2 is the downstream reach. The Project dam discharges to the Salmon Falls River and extends from the Project dam approximately 0.7 miles to the confluence with the Great Works River.

GMP selected the standards shown in the tables below. The reviewer agrees with these selections.

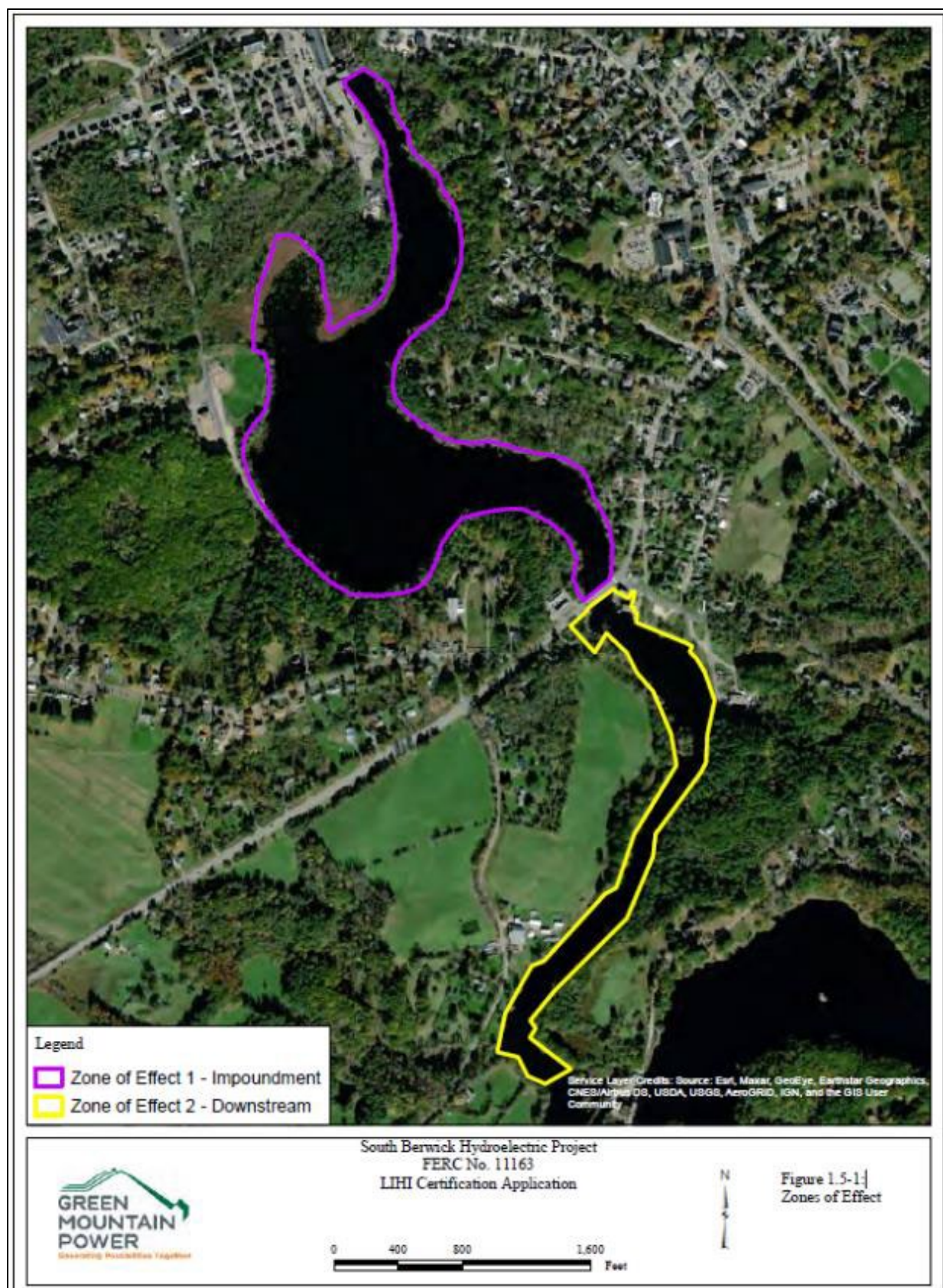


Figure 3 South Berwick Zones of Effect

ZoE 1: Impoundment

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	PLUS
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage	X				
D	Downstream Fish Passage		X			
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

ZoE 2: Downstream

CRITERION		ALTERNATIVE STANDARDS				
		1	2	3	4	PLUS
A	Ecological Flow Regimes		X			
B	Water Quality		X			
C	Upstream Fish Passage		X			
D	Downstream Fish Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species Protection		X			
G	Cultural and Historic Resources Protection	X				
H	Recreational Resources		X			

VIII. DETAILED CRITERIA REVIEW

A: Ecological Flow Regimes

Goal: The flow regimes in riverine reaches that are affected by the facility support habitat and other conditions suitable for healthy fish and wildlife resources.

Assessment of Criterion: GMP selected Standard A-2, Agency Recommendation for both ZOE's. Impoundments can typically qualify for A-1 since this criterion is focused primarily on riverine reaches; however, since GMP is required to maintain specific reservoir elevations, Standard A-2 is more appropriate.

Discussion: The Salmon Falls River is a coastal tributary to the Piscataqua River and drains a watershed of 220 square miles. The South Berwick dam divides the riverine and tidal portions of the river (FERC 1997). The Project is located at approximately river mile (RM) 0.0 and is the first dam on the main stem of the Salmon Falls River. The river reach below the Project from RM 0.0 to the coast is tidally influenced. There are no dams or structures downstream between the Project to the mouth of the river (GMP 2022).

Articles 402, 403, 404, and 405 of the license set the compliance metrics in terms of ecological flows. As noted above, Article 402 requires GMP to operate the Project in run-of-river mode. Article 403 requires GMP to control fluctuations of the impoundment within 0.1 feet of 24.95 feet msl from May 1 to October 31 every year. Condition 3 of the Project's WQC is less restrictive than the license and required seasonal impoundment fluctuations restricted to 1 foot in the summer months and 2 feet during the rest of the year.

Article 404 required the licensee to file a plan to manage a stable pond elevation from November 1 through April 30. Article 405 required a plan to monitor Project impoundment level and outflow to document run-of-river operation. At the time of development, the Headpond Level and Run-of-River Compliance Monitoring Plans were developed in consultation with Maine DEP, USFWS, and NHFGD.

To maintain compliance with Article 402 and 403, GMP operates Unit 1 with an automatic pond level control to enable it to track the elevation of the impoundment within 0.1 feet of 24.95 feet msl. Units 2 and 3 do not have control devices. A Programmable Logic Controller is utilized to allow specific inputs which direct operational outputs, and thus control the headpond water level as river levels vary. A computerized system enables data collection and storage to support monitoring and reporting requirements (GMP 2022).

Although there are no formal agreements with the next upstream facilities to regulate inflows and outflows from the Project, GMP is the owner and operator of the next upstream facilities, which could allow for coordination of flows (if necessary). All three of these projects are FERC licensed and operate in run-of-river mode. The Project's run-of-river mode allows for a stable impoundment level, and a natural flow below the Project allows for protection of aquatic and riparian habitat (GMP 2022). The Project's WQC provides for minimum flow requirements of 44 cfs or inflow if less for the purposes of addressing water quality issues, and not aquatic habitat, as the river reach below the Project is tidally influenced (FERC 1997); however, the FERC license provides for run-of-river flows that exceed this requirement (50 cfs) based on the minimum hydraulic capacity of Unit 1 of 50 cfs.

As noted above, on January 11, 2001, and November 16, 2004, the licensee reported operational deviations with FERC. In both cases, FERC notified the licensee that the deviations that occurred would not be considered violations of the license. Since the license was transferred to GMP in 2016, no further incidents of non-compliance and/or deviations have occurred.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is in compliance with flow requirements and operates to protect aquatic habitat, and therefore satisfies the ecological flow regimes criterion.

B: Water Quality

***Goal:** Water Quality is protected in waterbodies directly affected by the facility, including downstream reaches, bypassed reaches, and impoundments above dams and diversions.*

Assessment of Criterion: The Applicant selected Standard B-2, Agency Recommendation for both ZoEs. Standard B-2 is appropriate as the facility is in compliance with all water quality conditions contained in their WQC for both ZoEs.

Discussion: The Salmon Falls River forms the boundary between the states of New Hampshire and Maine, but the project tailrace and intake are on the Maine bank of the river. Thus, the MDEP is responsible for issuing the WQC for this Project (FERC 1997). The Salmon Falls River (Assessment Unit ME01060000305_630_R01) is listed in Category 4A⁴ from 2002 to 2022 for Ammonia (Unionized), Nutrient/Eutrophication Biological Indicators, and Dissolved Oxygen. A TMDL was approved by the U.S. Environmental Protection Agency on November 22, 1999 for Category 4A for Biological Oxygen Demand (BOD), ammonia and phosphorus. In Category 5-D, fish tissue monitoring shows legacy PCBs and Dioxin (MDEP 2022). On July 9, 1991, MDEP received Consolidated Hydro's original application for a WQC, which was subsequently withdrawn and refiled on July 6, 1992; June 23, 1993, and June 8, 1994. On May 25, 1995, MDEP officially issued an order granting a WQC for the Project. The WQC was incorporated in FERC's 1997 license issuance. The WQC contains eight conditions.

The FERC EA recommended modifications to the proposed operations that would enhance water quality and meet state standards for dissolved oxygen (DO) in the tailrace by implementing a minimum flow requirement. The WQC requires that GMP operate in run-of-river mode from June 1 to September 30 if the 3-day average of water temperature times river flow duration is 1,500 at the Great Falls and Rollinsford projects, just upstream, and at South Berwick. The WQC contains seven conditions that are related to maintaining adequate water quality conditions:

1. a year-round minimum flow of 44 cfs or inflow;
2. passage of all non-generation flows as leakage or spillway flow from June 1 to September 30;
3. definitions for operating emergencies beyond GMP's control;
4. requirements for flow and temperature monitoring plans;
5. an impoundment fluctuation restriction of 1 foot for the June 1 through September 30 period, and a 2-foot restriction at all other times except that full pond level is required when the product of the 3-day average of temperature times flow duration is greater than 1,500;
6. requirements for a water level monitoring plan; and
7. design and installation of upstream and downstream passage.

Pursuant to license Article 406 of the license, on November 17, 1998, CHNHI filed the Tailwater DO Monitoring Plan in consultation with USFWS, NHFGD, and MDEP. The plan was approved January 7, 1999. Monitoring was scheduled to begin in 2000 but was delayed due to construction of the fish ladder.⁵ The deadline to begin monitoring was extended by FERC order to May 15, 2002, with the first report due on February 28, 2003. The final of the three reports would be due February 28, 2006.⁶ In the final report, CHNHI stated in their report findings that operation of the South Berwick Project do not appear to cause or contribute to non-attainment of applicable water quality standards (MDEP supported this conclusion; no

⁴ Category 4: Estuarine and marine waters that are impaired or threatened for one or more designated uses, but do not require development of a TMDL (MDEP 2022).

⁵ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000F7B5F-66E2-5005-8110-C31FAFC91712>

⁶ <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=000607C6-66E2-5005-8110-C31FAFC91712>

other agencies commented). An eLibrary review showed that no further water quality monitoring has been required at the Project.

On April 19, 2022, GMP reached out to MDEP to discuss the WQC for the Project. MDEP confirmed that the WQC for the Project is still valid and in effect for the facility (GMP 2022; Appendix D).

Based on the application, supporting documentation, and review of FERC eLibrary documents, this review finds that the Project does not appear to adversely impact water quality. Therefore, the Project satisfies the water quality Standard B-2.

C: Upstream Fish Passage

Goal: *The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.*

Assessment of Criterion: The Applicant selected Standard C-1, Not Applicable/De Minimis Effect in Zone 1 and Standard C-2, Agency Recommendation for Zone 2. Standard C-1 is appropriate for the impoundment zone since once fish pass the dam there is no further Project-related barrier to continued migration.

Discussion: As outlined in GMP's LIHI application, diadromous fish historically present in the Project tailwater include American shad (*Alosa sapidissima*), American eel (*Anguilla rostrata*), as well as blueback herring (*Alosa aestivalis*) and alewife (*Alosa pseudoharengus*) (hereafter collectively referred to as river herring). Atlantic salmon (*Salmo salar*) runs were heavily impacted such that by 1750 (prior to the dam's construction), these runs were sufficiently disrupted by older upstream dams, overfishing, and sawdust pollution that salmon no longer returned to the Salmon Falls River for spawning.⁷ The Project tailrace is heavily fished in the spring when diadromous fish are present.

During the relicensing of the South Berwick Project, FERC's EA determined that fish passage would be necessary at the Project within 3 years of license issuance following the adoption of a formal anadromous fish restoration plan by MDEP. Article 408 required the development of upstream fish passage (FERC 1997).

In 2001, in accordance with Article 408 of the FERC license, the Licensee installed an upstream Denil fish ladder to facilitate anadromous fish migration through the Project area. Targeted species were American shad and river herring. A separate eel ladder was installed in 2001 to facilitate upstream movement of juvenile American eel. All fish passage structures were designed in consultation with the USFWS, NHFGD, and the MDMR and serve as the permanent upstream fish passage facilities at the Project. Observations of river herring using the fish passage facilities were made during two years

⁷ Federal and state agencies reported no plans to restore Atlantic salmon to the Salmon Falls River during the FERC licensing of the South Berwick Hydroelectric Project (FERC 1996).

of qualitative studies conducted by the licensee in 2002 and 2003. In accordance with Article 409 of the FERC license, the licensee undertook a quantitative study in 2004 to demonstrate the effectiveness of the installed Denil fish ladder at passing targeted fish species. Based on the results, agencies requested an additional year of study in 2006. Both years of study yielded similar results showing approximately 86% upstream fishway effectiveness, although detection rates of tagged fish were low in both years. A variety of environmental factors served to influence detection rates including diurnal tidal influences in relation to diurnal fish movement, water temperatures, flooding in 2006, angling pressure in the tailrace, and observations of fish and avian predation. No additional studies or fishway modifications were recommended and Section 18 reservation of authority has not been exercised by USFWS.

During the 2011 passage season, NHFGD installed an electronic fish counter at the Denil fish ladder to better quantify anadromous fish species ascending the facility. Annual counts have occurred intermittently since that time.

Upstream passage for American eel is also provided at the Project, via an eel ramp located at the base of the dam. No efficiency testing of the ramp has been required by resource agencies and eel ramps are typically shown to be effective. Juvenile American eel typically utilize the Project's eel ladder from late spring to early fall.

Operation of the fish passage facilities is coordinated annually with NHFGD. The licensee assists with installation of fish counting equipment at the fish ladder, as well as manual counts at the eel ladder. There are currently no passage performance standards required at the Project.

On December 16, 2022, Trout Unlimited (TU) submitted a comment letter to LIHI (Appendix A) stating that fish passage studies done at the time of relicensing were too old to be considered valid, based on a 2018 court case⁸. It is not clear if FERC has adopted that perspective, but regardless, post-licensing studies were conducted in 2004, 2006 and 2007. While still more than 10 years old, no agencies have requested additional studies. TU's letter goes into detail about a potential trap and truck facility at South Berwick that was proposed as a temporary alternative to installing a Denil style fishway at the upstream Rollinsford Project which recently received a new FERC license. TU may not be aware that the South Berwick Project already has its own operational upstream and downstream passage facilities, although the trap and truck facility may also be constructed at a later date to facilitate fish passage above the Rollinsford Project.

On January 25, 2023, USFWS responded to the request for comments on the LIHI application. USFWS stated that their understanding is that upstream and downstream fish passage at the Project are still taking place, and discussions have not taken place with regard to passage since the 2007 study report. USFWS recommended consultation with the NHFGD. NHFGD did not respond to a request for comments.

NHFGD responded on February 6, 2023. NHFGD noted that upstream and downstream

⁸ American Rivers and Alabama Rivers Alliance v. FERC, No. 16-1195 (D.C. Cir. 2018)

passage at the project is “really good.” NHFGD stated that for the last several years, with GMP’s permission and support, it has “installed an electronic fish counter at the fishway to monitor upstream river herring migrations” as well as performed “calibration counts daily from late April through early June.” GMP is willing to support NHFGD should issues arrive with the fishway, and that GMP sets up and takes down “the fish counting equipment for [NHFGD] and provide power to run the fish counting box.” NHFGD does not believe there are any major issues with fish passage effectiveness and notes that “since [NHFGD] have been monitoring the herring run there, the numbers [of herring] have been increasing.” NHFGD note that in 2021 and 2022, approximately 60,000 herring migrated upstream through the fish passage facility.

On January 31, 2023, Bill McDavitt, a contractor to NOAA made general recommendations for upstream and downstream passage including information on passage effectiveness through a range of operational flows and a fishway operations and maintenance plan to ensure facilities are in good repair and to remove large woody debris if needed to keep the fishway functional. See Appendix B for the email. The studies conducted post-relicensing demonstrated passage during varying operational and environmental conditions. While no fishway operations and maintenance plan is required under the license, this review recommends a condition to report annually to LIHI on fish passage inspections and maintenance activities.

Based on the application, supporting documentation, and FERC eLibrary documents, and correspondence from the Applicant, this review finds that GMP is in compliance with the agency recommendation for upstream passage at the South Berwick Project, as well as the conditions set forth in the original FERC license. The most recent NHFGD monitoring indicates that the fishway appears to be reasonably effective, and therefore, the Project satisfies the upstream passage criterion with the recommended condition.

D: Downstream Fish Passage

Goal: *The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, 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 to maintain healthy populations in the areas affected by the Facility.*

Assessment of Criterion: The Applicant selected Standard D-2 for ZoE 1, and Standard D-1 for ZoE 2. This review finds that Standard D-2 is appropriate in the ZoE 1 the impoundment and Standard D-1, Agency Recommendation is appropriate for ZoE 2 in the bypassed reach tailrace/downstream reach since once below the project there is no further impediment to downstream movement.

Discussion:

As outlined in GMP’s LIHI application, the Salmon Falls River is known to support a variety of resident fish, including yellow perch, largemouth bass, bluegill, golden shiner, brown bullhead, and redbfin pickerel (GMP 2022). Additionally, the habitat can support fluvial-

dependent fish such as white sucker and fallfish. There are several non-native species at the Project, including several species of bass that were introduced via stocking programs.

During the relicensing of the South Berwick Project, FERC's EA determined that downstream fish passage, as recommended by USFWS, MDMR, Maine Division of Inland Fisheries and Wildlife (MDIFW), and NHFGD (FERC 1997) was needed. Article 407 required the development of downstream fish passage measures (FERC 1997).

Between 2001 and 2002, CHNHI installed a combined upstream/downstream facility (a description of how modifications are made for downstream passage. For downstream use, when operated for downstream passage, baffles in the upstream section of the fish ladder are removed and stoplogs are used to seal off the middle and lower section of the ladder to redirect flow and out-migrating fish into a plunge pool in the tailrace. Downstream passage operational flows are 20 cfs of the Project's minimum flow requirement.

In accordance with Article 409 of the FERC license, CHNHI implemented a qualitative downstream effectiveness study of juvenile and adult alewives in 2002 and 2003 to assess whether alewives were capable of using the downstream bypass. Study results were confounded due to spillage conditions, fish availability, and other variables, however, qualitative observations showed that alewives were successfully passing the Project (CHNHI 2008). Quantitative studies were required in 2004 to determine downstream bypass effectiveness for targeted species. There were no observations of injury or mortality and no evidence of turbine passage based on pre-study mass outmigration events. However, due to low quantifiable passage effectiveness agencies recommended the study be repeated, and in 2007 the licensee undertook a quantitative downstream fish passage monitoring study, which again did not provide conclusive results on downstream effectiveness due to environmental factors including long periods of spill. Agencies cited factors beyond CHNHI's control for the inability to provide quantitative data on fish passage. No further monitoring was required by resource agencies or FERC and as noted above, reservation of authority to prescribe fishway changes has not been exercised.

On January 25, 2023, USFWS responded to the request for comments on the LIHI application. USFWS stated that their understanding is that upstream and downstream fish passage at the Project are still taking place, and discussions have not taken place with regard to passage since the 2007 study report. USFWS recommended consultation with the NHFGD.

NHFGD responded on February 6, 2023. As discussed above for upstream passage, NHFGD noted that upstream and downstream passage at the project is "really good." Also as noted above, Bill McDavitt representing NOAA submitted an email with recommendations.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project appears to provide reasonably sufficient evidence of effective

downstream passage and therefore satisfies the downstream fish passage criterion with the condition regarding annual reporting to LIHI on fish passage operations and maintenance.

E: Shoreline and Watershed Protection

Goal: *The facility has demonstrated that sufficient action has been taken to protect, mitigate or enhance the condition of soils, vegetation and ecosystem functions on shoreline and watershed lands associated with the facility.*

Assessment of Criterion: The Applicant selected Standard E-1, Not Applicable/ De Minimis Effect for both ZoEs.

Discussion: The Project encompasses 7.3 acres of land and 60 acres of water within the FERC Project Boundary. There is no Shoreline Management Plan required or in place to manage the impoundment shoreline.

GMP states in their application that the Project has existed since 1923, and is accepted as part of the natural landscape. The aesthetics of the Project area typically consist of undeveloped forested riverbanks and scattered development (GMP 2022). As with most FERC Projects, the lands within the Project Boundary are for the purpose of operating in compliance with the license. Since the Project has reservoir elevation constraints that are managed through the license, the Project's shoreline is protected by stable pond elevations and the run-of-river operation (GMP 2022).

FERC's EA noted that although the Project is surrounded by primarily upland habitat in or adjacent to the impoundment, there are about 13 acres of wetlands (FERC 1997). The tailrace area is tidally influenced experiencing a two- to three-foot tidal fluctuation and is considered intertidal estuarine habitat (GMP 2022).

GMP does not have a Shoreline Management Plan or Program, and does not permit docks, piers, or other facilities in the Project area, nor do they maintain a buffer zone around the impoundment. There are no such requirements in the FERC license.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project with its run-of-river operation and stable impoundment elevation, has little to no impact on the shoreline and therefore satisfies the shoreland and watershed protection criterion.

F: Threatened and Endangered Species

Goal: *The facility does not negatively impact federal or state listed species.*

Assessment of Criterion Passage: The Applicant selected Standard F-2, Finding of No Negative Effects for both ZoEs. Standard F-2 is appropriate for this Project.

Discussion: The USFWS Information for Planning and Consultation (IPaC) database was accessed to determine federally-listed species that could occur in the Project vicinity. An updated IPaC review was conducted on February 2, 2023. Findings indicate that the

candidate species monarch butterfly (*Danaus plexippus*) and the federally threatened northern long-eared bat (*Myotis septentrionalis*) (NLEB) could occur in the Project vicinity. No critical habitats were identified for these species in the Project vicinity.

The monarch butterfly is a candidate species and not yet listed or proposed for listing. Monarch butterflies are considered imperiled wherever they are found.

NLEBs are vulnerable to white-nose syndrome, which is the predominant threat to this bat species. The Project is located within the white-nose syndrome buffer zone for this species. There is no documentation of NLEB at the Project, and no known NLEB hibernacula sites occur within 0.25 mile of the Project (GMP 2022).

Historically, Atlantic salmon (*Salmo salar*) migrated up the Salmon Falls River, however overfishing, pollution, and dams built prior to South Berwick dam led to severe enough disruption in migration that the salmon no longer return to the Salmon Falls River for spawning (GMP 2022). Regardless, NOAA Fisheries maintains Atlantic salmon as a protected fish, with a Distinct Population Segment (DPS) in the Gulf of Maine. In 2019, NOAA Fisheries filed an updated Recovery Plan for the Gulf of Maine DPS of Atlantic Salmon. Currently, the intent of the plan is to attempt recovery “when conditions have been attained that” would allow for “self-sustaining populations to persist under minimal ongoing management and investment of resources” (NOAA Fisheries 2019).⁹ Being as the Project is currently the first upstream barrier to Atlantic salmon migration on the Salmon Falls River, it is prudent to include discussion on this species, although to date, NOAA has not targeted the river for restoration.

Additionally, Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) has critical habitat downstream of the Project tailrace within the species DPS for the Gulf of Maine (NOAA Fisheries). Atlantic sturgeon is ESA-threatened. The habitat for Atlantic sturgeon includes “the Piscataqua River from its confluence with the Salmon Falls and Cocheco rivers downstream to where the main stem river discharges at its mouth into the Atlantic Ocean as well as the waters of the Cocheco River from its confluence with the Piscataqua River and upstream to the Cocheco Falls Dam, and waters of the Salmon Falls River from its confluence with the Piscataqua River and upstream to the Route 4 Dam”¹⁰ (Route 4 Dam is the South Berwick Dam).

Although not on the Salmon Falls River, federally endangered Shortnose sturgeon (*Acipenser brevirostrum*) is found in the Piscataqua River downstream of the Project. There is no critical habitat in the Project area.

The New Hampshire Natural Heritage Bureau (NHNHB) DataCheck Tool was consulted to identify state-listed rare, threatened, and endangered wildlife and botanical species that may occur within the Project area. The Impoundment (Zone 1) ZoE contains an active bald eagle nest approximately 0.2 miles upstream of the Project dam. The Downstream (Zone 2)

⁹ <https://www.fisheries.noaa.gov/resource/document/recovery-plan-2019-gulf-maine-distinct-population-segment-atlantic-salmon-salmo>

¹⁰ <https://www.ecfr.gov/current/title-50/chapter-II/subchapter-C/part-226/section-226.225>

ZoE is considered a brackish riverbank marsh system by NHHB due to its rarity and vulnerability. This system contains known occurrences of five endangered plants species and one wildlife species of concern including Atlantic mudwort, eastern grasswort, great bur-reed, pygmy-weed and seaside brookwood. Publicly available MDIFW GIS data shows one occurrence of an unidentified rare animal (likely northern long-eared bat), with a special concern designation, within the vicinity of the Project boundary (GMP 2022). The Project downstream ZoE is suitable habitat for American eel (a state-listed species of concern).

As noted above, the Project is operated with a stable impoundment and in run-of-river mode, with only periodic drawdowns during which agencies are consulted. GMP states that “normal routine Project operations...are not anticipated to have a negative effect on the known federal and state-listed terrestrial and aquatic species” in either ZoE. GMP routinely conducts vegetation management including mowing and treats weeds with herbicide once per year. String trimmers and handheld cutters are used once a month to manage vegetation. The areas where these activities occur are outside of the ranges of the listed species. This review agrees that no negative effects are anticipated by these maintenance activities.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is unlikely to affect listed species given its small footprint, run-of-river operations, and commitment to follow the 4(d) rule for Northern long-eared bat should tree removal become necessary. Therefore, the Project satisfies the threatened and endangered species protection criterion.

G: Cultural and Historic Resources Protection

Goal: *The Facility does not unnecessarily impact cultural or historic resources that are associated with the facility’s lands and waters, including resources important to local indigenous populations, such as Native Americans.*

Assessment of Criterion: The Applicant selected Standard G-1, for both ZoEs. Based on this review, Standard G-1 is appropriate for this Project.

Discussion: GMP’s LIHI Application and FERC’s license order and EA state that after having conducted a Phase I archeological survey of the Project area, no cultural or historic resources exist within the Project footprint. At the time of the relicensing, the Maine State Historic Preservation Commission stated that “there were no sites of historical, architectural, or archeological significance that would be affected by the continued operation of the South Berwick Project” (FERC 1997). GMP conducted a recent check using the Maine historic resources mapper tool which yielded no sites of cultural or historic significance.

The FERC license, pursuant to Article 413, states that if any archeological or historic sites are discovered at any point during Project operations, GMP is required to consult with the State Historic Preservation Officer and prepare a Cultural Resources Management Plan (CRMP, now referred to as Historic Properties Management Plans). During construction of the recreation sites and fish ladders, no cultural resources were discovered, and as such,

no CRMP has been required.

Although not within the Project Boundary, the historic Counting House sits at the corner of the Salmon Falls River and Liberty Street in South Berwick. The Counting House was listed on the National Register of Historic Places in 1975. The Counting House is not operated or maintained by GMP and is not part of the Project license.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project does not adversely impact cultural or historic resources and the Project satisfies the cultural and historic resources protection criterion.

H: Recreational Resources

Goal: *The facility accommodates recreation activities on lands and waters controlled by the facility and provides recreational access to its associated lands and waters without fee or charge.*

Assessment of Criterion Passage: The Applicant selected Standard H-2, Agency Recommendation for both ZoEs. Based on this review, Standard H-2 is appropriate.

Discussion: According to the FERC license and EA, “recreation activities in the Project area include flatwater boating and fishing on the impoundment; bank fishing along the impoundment at the boat launch, behind the baseball field, and below the project; visits to the historic Counting House; and canoeing on the reach of the Salmon Falls River below South Berwick dam” (1997). The FERC EA noted that the area near the powerhouse (east bank) may be heavily utilized to gain river access.

Articles 410, 411, and 412 of the license address compliance requirements for recreation resources. Article 410 required CHNHI to come to an agreement with the town of Rollinsford to improve and maintain the boat launch in the Project’s impoundment (known as the Foundry Street boat launch). This agreement was approved by FERC on September 28, 1999. Also, within one year, Article 411 required CHNHI to file a plan for the construction and maintenance of the Counting House Park along the east bank, south of the powerhouse. Finally, Article 412 required the licensee to file a Recreation Plan that addressed enhancements such as public parking and a trailered boat launching area at the impoundment (Photo 5), the Counting House Park (Photo 6), and signs pointing recreationists to the boat launch and park (Figure 4). FERC approved the Recreation Plan and plans for Counting House Park on May 4, 2000. Subsequently on May 16, 2000, FERC approved CHNHI’s Erosion Control Plan for the construction of boat launch improvements, pursuant to Article 401 of the license. All Exhibit R drawings (final, as-built) were approved by FERC on June 26, 2003.



Figure 4 South Berwick Boat Launch and Counting House Park Locations



Source: GMP 2022

Photo 5 Foundry Street Boat Launch



Source: GMP 2022

Photo 6 View of Counting House Park

The final FERC Form 80 “Recreation Report” that was filed on the Project docket was submitted May 29, 2015 (they are no longer required by FERC). In 2016, GMP acquired the Project. The most recent Public Safety Plan was filed with FERC on November 23, 2022. There have been no reports of non-compliance since GMP’s acquisition.

Based on the application, supporting documentation, and FERC eLibrary documents, this review finds that the Project is in compliance with its Recreation Plan, provides access free of charge, and therefore satisfies the recreational resources criterion.

IX. CERTIFICATION RECOMMENDATION

This review included evaluation of the application and additional information provided, a review of the FERC eLibrary, and review of other publicly available information. Based on this evaluation, the Reviewer recommends that the South Berwick Project be certified for a term of ten years with one condition.

Condition 1: In annual compliance submittals to LIHI, the facility Owner shall summarize upstream and downstream fish passage operations during the prior passage season, describe any inspections and maintenance that occurred, provide copies of any communications with fishery resource agencies, and provide a plan and schedule for implementation of any modifications that may be required by resource agencies. Should alternative passage methods be implemented at the project, a plan and schedule for such work shall also be provided. LIHI reserves the right to modify this condition based on the information provided.

REFERENCES

- Federal Energy Regulatory Commission (FERC). 1997. Order Issuing License (Minor Project), and Environmental Assessment.
- Green Mountain Power (GMP). 2022. Low Impact Hydropower Institute Intake Application for the South Berwick Hydroelectric Project (FERC No. 11163). Submitted October 12, 2022.
- Maine Department of Environmental Protection (MDEP). 2022. 2018/2020/2022 Integrated Water Quality Monitoring and Assessment Report. May 25, 2022. Available at: [https://www.maine.gov/dep/water/monitoring/305b/2022/25-May-2022_2018-22_ME_IntegratedRpt-REPORT%20\(002\).pdf](https://www.maine.gov/dep/water/monitoring/305b/2022/25-May-2022_2018-22_ME_IntegratedRpt-REPORT%20(002).pdf). Accessed January 17, 2023.

APPENDIX A – STAKEHOLDER COMMENT LETTER

December 16, 2022

Ms. Shannon Ames, Executive Director
Low Impact Hydropower Institute
329 Massachusetts Avenue, Suite 2
Lexington, MA 02420



Transmitted via e-mail to comments@lowimpacthydro.org

Subject: Comments on Application for LIHI Certification for the South Berwick Project

Dear Ms. Ames:

On behalf of its six chapters and over 2,000 members, Maine Council of Trout Unlimited (TU) submits these comments on the Green Mountain Power (GMP) Application for LIHI Certification for the South Berwick Project dated December 8, 2022. The project is located on the Salmon Falls River that forms the boundary between Maine and New Hampshire. TU members fish in and otherwise enjoy the use of the watershed. TU was engaged with the relicensing action involving the Rollinsford Project and is continuing to follow the pending surrender application and relicensing for the Somersworth Project. Both projects are located immediately upstream of the South Berwick Project.

LIHI Certification Requirements

LIHI requirements for upstream and down stream fish passage are:

“3.2.3 Criterion C - Upstream Fish Passage

Goal: The facility allows for the safe, timely, and effective upstream passage of migratory fish. This criterion is intended to ensure that migratory species can successfully complete their life cycles and maintain healthy populations in areas affected by the facility.

Introduction to Standards: The applicant shall list all migratory fish species (anadromous, catadromous, and potamodromous species) that are present or historically occurred at the facility. To pass the upstream fish passage criterion the applicant must demonstrate that upstream passage provisions are sufficient to support healthy populations of migratory species through compliance with at least one of the following standards (C-1 through C-4). Note that impoundments typically qualify for Standard C-1 unless there are additional facility-related barriers to upstream passage once fish have passed the dam.

- ***STANDARD C-1. Not Applicable/De Minimis Effect:*** The facility applicable Zone of Effect does not create a barrier to upstream passage, or there are no migratory fish in the

vicinity of the facility. If such species were present historically, the facility did not contribute to the extirpation of such species; or

- **STANDARD C-2.** *Agency Recommendation: The facility is in compliance with science-based fish passage resource agency recommendations for the facility and which may include provisions for appropriate monitoring and effectiveness determinations; or*

- **STANDARD C-3.** *Best Practice/Best Available Technology: In the absence of applicable resource agency recommendations, the facility includes well-designed, well-operated upstream fish passage methods or technologies that are appropriate for the species that occur in the area affected by the facility. These methods should enable safe, timely and effective passage at all barriers associated with the facility and should include provisions for appropriate monitoring and effectiveness determinations; or*

- **STANDARD C-4.** *Acceptable Mitigation: In the absence of science-based fish passage resource agency recommendations and in lieu of upstream passage provisions at the facility, the facility employs approved, alternative fish passage mitigation measures that support the species affected by the facility. These measures could be in-kind or out-of-kind mitigation. In all cases, resource agencies must approve the measures and must have determined that the total benefits provided by them equal or exceed the benefits of providing upstream passage provisions at the facility, measured in terms of reproductive success (for example, numbers of fish produced) or area of suitable fish habitat provided.*

- **STANDARD C-PLUS:** *In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase upstream passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the effectiveness of the measures implemented. The program should include monitoring of the overall passage effectiveness and correction of deficiencies in effectiveness.*

3.2.4 Criterion D - Downstream Fish Passage and Protection

Goal: *The facility allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, 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 the areas affected by the facility.*

Introduction to Standards: *The applicant shall list all fish species (riverine, anadromous, catadromous, and potamodromous) that occur now or have occurred historically in the area affected by the facility. To pass the downstream fish passage and protection criterion, the applicant must demonstrate compliance with at least one of the following standards (D-1 through D-4). Note that the downstream reach (but not a bypassed reach) typically qualifies for Standard D-1 unless there are additional facility-related*

barriers to downstream passage once fish have passed below the dam and/or bypassed reach.

- **STANDARD D-1. Not Applicable/De Minimis Effect:** *The facility applicable Zone of Effect does not create a barrier to downstream passage, or there are no migratory fish in the vicinity of the facility. If such species were present historically, the facility did not contribute to the extirpation of them; the facility does not contribute adversely to riverine fish populations or to their access to habitat necessary for the completion of their life cycles, or*

- **STANDARD D-2. Agency Recommendation:** *The facility is in compliance with a science-based resource agency recommendation for downstream fish passage and/or fish protection, which may include provisions for appropriate monitoring and effectiveness determinations; or*

- **STANDARD D-3. Best Practice/Best Available Technology:** *In the absence of science-based resource agency recommendations for downstream fish passage or protection, the facility includes well-designed, well-operated downstream fish passage methods or technologies that are appropriate for the migratory species that occur in the area affected by the facility, and technologies that minimize loss of riverine species. These methods should enable safe, timely and effective passage at all barriers associated with the facility and should include provisions for appropriate monitoring and effectiveness determinations; or*

- **STANDARD D-4. Acceptable Mitigation:** *In the absence of science-based resource agency recommendation for downstream fish passage and in lieu of downstream passage and/or protection provisions at the facility, the applicant employs approved alternative fish passage mitigation measures that support migratory and native non-migratory fish species affected by the facility.*

These measures might include in-kind or out-of-kind mitigation. In all cases, resource agencies must approve the measures and must have determined that the total benefits provided by them are likely to equal or exceed the benefits of installing and operating downstream passage and/or protection provisions, measured in terms of reproductive success (for example numbers of fish produced) or areas of suitable fish habitat provided.

- **STANDARD D-PLUS:** *In addition to satisfying one or more of the standards above, the facility has deployed an advanced technology, the primary purpose of which is to increase downstream passage; or is part of a basin-scale redevelopment strategy; or is operating an adaptive management program to regularly evaluate the effectiveness of*

the measures implemented. The program should include monitoring of the overall passage effectiveness and correction of deficiencies in effectiveness.”¹

Substantive Fish Passage Issues

The South Berwick Project was last relicensed in 1997 for a period of 40 years. GMP has based achievement of LIHI fish passage standards on studies conducted incident to the relicensing that are now about 20 years old:

“Observations of river herring using the fish passage facilities were made during two years of qualitative studies conducted by the Licensee in 2002 and 2003. [FERC Accession Number: 20040405 0022.

https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20040405-0022.] The Licensee’s qualitative observations of fish passage confirmed that river herring ascended the fishway during the spring to spawn in the Project impoundment.”²

This is well beyond the 10-year period within which study data submitted for FERC relicensing is considered valid.³ We believe that the standard is reasonable and should apply to LIHI certification as well.

The application also notes:

“River herring and American eel have been observed to successfully utilize the respective passage facilities. According to the NHFGD, American shad are known to be present below the Project, but to date have not been observed utilizing the upstream fish passage facility because monitoring has been inconsistent through the years.”⁴

All fish species historically present must be addressed (introduction to both upstream and down stream standards). The information GMP provides is anecdotal and does not constitute a reasonable basis for LIHI certification.

Fish passage for the South Berwick Project was recently addressed in the relicensing of the Rollinsford Project, P- 3777:

“2.0 Modified Prescription for Fishway Terms

The Service agrees to file a Modified Prescription as set forth Section 1.9 above reflecting the following terms.

¹ LIHI Handbook 2nd Edition – Revision 2.05, 01/01/2022, pages 8 through 10.

² GMP Low Impact Hydropower Institute Certification Application for South Berwick Hydroelectric Project, FERC Project NO. 11163 Submitted October 12, 2022, page 22.

³ American Rivers and Alabama Rivers Alliance v. FERC, No. 16-1195 (D.C. Cir. 2018) (American Rivers III), page 29.

⁴ ⁴ GMP Low Impact Hydropower Institute Certification Application for South Berwick Hydroelectric Project, FERC Project NO. 11163 Submitted October 12, 2022, page 22.

2.1 Initial Requirement to Construct, with Exception for Trap and Truck Operations

The Licensee shall construct and begin operation of a Denil Fishway at the Rollinsford Project, as described in the USFWS June 25, 2020 Preliminary Prescription filed with FERC, prior to the fourth full passage season¹ after license issuance UNLESS, within two years of license issuance,

GMP has submitted

A. A request to the Commission for approval of plans to construct facilities necessary to support a trap and truck operation from the South Berwick Project. This facility shall be substantially as described in the Alternative Fishway Prescription filed July 24, 2020 ("Alternative Prescription"), but must be designed such that the capacity is adequate, fish are moved within 24 hours of reaching the facilities to the extent practicable, fish may pass volitionally into the South Berwick Project impoundment when trapping operations for the trap and truck program are not in progress, and shall include facilities for counting fish that pass through the fishway, whether directly into the impoundment or upstream via trap and truck. Such plans shall be approved by the Service during the conceptual, 30 percent, and 90 percent design stages, prior to submission to the Commission of the 90 percent drawings, with approval not to be unreasonably withheld.

B. For Service approval (with such approval not to be unreasonably withheld), and Commission approval as necessary, a draft operations and maintenance plan for a trucking operation substantially as described in its Alternative Prescription, to begin in the third year after license issuance at the Project. The draft operations and maintenance plan should be provided to the Service one year before trapping and trucking operations begin, and be revised, as needed, upon completion of trap construction, and include: details regarding stocking (i.e., GMP will stock over the course of the run), specifically where fish will be released into the Rollinsford Project, and the upstream Lower Great Falls Project (FERC Project No. 4451) and Somersworth Project (FERC Project No. 3820) impoundments. It will also include provisions for counting fish using the South Berwick Project fishway, with data reported both on a daily basis (real time, daily counts) and annually (annual count), both total and by destination.

2.2 Contingency if Permission Denied to Begin Trap and Truck from South Berwick Project

If GMP submits a request for approval for construction of the trap and truck operation at the South Berwick Project, but the Commission denies the request, the Licensee's

obligation to construct and operate the Denil Fishway at the Project must be fulfilled by the fourth full passage season after such denial.

2.3 Delay of Denil Fishway Construction Obligation During Trap and Truck Operations

If GMP begins trap and truck operations from the South Berwick Project in the third full passage season from Rollinsford Project license issuance, the obligation to have the Denil Fishway functional and operational at Rollinsford will be delayed. In 2032, the Licensee and GMP will consult with the Service to determine whether continued trap and truck operations are appropriate in light of data on the resulting population growth of American shad and river herring in the Salmon Falls River over the period of the interim trap and truck program, the status of the Somersworth Project dams, and fish passage efficiency rates at the South Berwick Project, as well as any other factors relevant at that time. If the Licensee, GMP, and the Service agree that continued trap and truck operation is appropriate, then the obligation to implement fish passage facilities at the Rollinsford Project will be delayed for two more years. The Licensee, GMP, and the Service shall meet for further discussion every two years thereafter. GMP may continue trap and truck operation as long as GMP and the Service agree, at each successive twoyear meeting, that trap and truck continues to be appropriate in light of the data and factors relevant at that time. If at any point a determination is made that GMP is to discontinue trapping and trucking, or the Service determines, at a two-year meeting, that trap and truck operations will no longer provide for shad and/or herring population growth at the levels to be expected by volitional passage or better, the Licensee shall construct a Denil Fishway, as set forth in the Modified Prescription, and begin operations four years after the cessation of the trap and truck operation. GMP will continue trap and truck operations until the Denil Fishway is operational.

If the river herring and shad populations decline, due to factors unrelated to fish passage efforts on the Salmon Falls River, to a level that causes the Service to determine that further trapping and trucking is unwarranted, the Licensee, GMP and the Service will consult to discuss appropriate next steps, including potential discontinuation of the trap and truck operation.

2.4 Meeting Obligation During Duration of Trap and Truck

The Licensee will meet with the Service and GMP annually to discuss the trap and truck operations. This meeting will occur no later than January 31 each year unless the Licensee, GMP, and the Service agree on a different date. The purpose of the meeting will be to discuss the trap and truck operation results from the previous year, and discuss logistics and planning for the upcoming fish passage season. Every two years after 2032, the continuation of trap and truck (and therefore the potential delay of volitional fish

passage installation at the Rollinsford Project and Lower Great Falls Project) will also be discussed.”⁵

While recognizing that upstream and down stream fish passage may be provided should this complex arrangement come to pass, it makes little sense to certify the project while the ongoing method of effecting fish passage is subject to change.

Conclusion

Accordingly, TU asks that LIHI withhold LIHI certification to the South Berwick Project until such time as fish passage arrangements have become stable and GMP submits current data demonstrating that the South Berwick project meets LIHI criteria for upstream and down stream fish passage for all fish species known to be historically present, especially river herring, American shad and American eels. Only then can effective fish passage and compliance with agency recommendations be demonstrated.

Maine TU Council appreciates the opportunity to comment on this application.

Respectfully,



Stephen G. Heinz
Maine TU Council FERC Coordinator

Reply to: heinz@maine.rr.com

⁵ Town of Rollinsford, Rollinsford Hydroelectric Project, Project No. 3777, Settlement Agreement for Modified Prescription for Fishways dated 1/31/21, pages 4 through 6.

APPENDIX B – CONSULTATION WITH RESOURCE AGENCIES

From: [Hogan, Kenneth J](#)
To: ["Nuria Holmes"](#)
Cc: [Rosset, Julianne](#); mfischer@lowimpacthydro.org
Subject: RE: [EXTERNAL] South Berwick LIHI Application questions
Date: Wednesday, January 25, 2023 3:00:34 PM

Hi Nuria,

Unfortunately, Julianne's confidence in my capability to answer your questions is significantly overstated. I will provide you with what I can, but I must caveat my answers first, by informing you that the U.S. Fish and Wildlife Service, Northeast Region is significantly under staffed and unable to address most of its FERC relicensing workload at this time. Similarly, in many cases, we are unable to conduct project reviews or comment on LIHI Certification Applications. As is the case with the South Berwick Project. With that caveat in place, I address your questions to the best of my ability as follows:

What is your sense of the upstream/downstream fish passage currently taking place at South Berwick?

Downstream and Upstream fish passage is taking place at the Project. I have no knowledge on the adequacy or efficiency of the fish passage facilities at the Project. You may consider inquiring with Michael Dionne (Michael.A.Dionne@wildlife.nh.gov) or Cheri Patterson (Cheri.A.Patterson@wildlife.nh.gov) for more information.

Are you aware of any issues related to fish passage based on your expertise?

I am not aware of circumstances; but I have never looked for any issues or evaluated fish passage at the Project; and I have never been to the Project. I suggest you inquire with New Hampshire Fish and Game Department.

In general, do you feel the licensee (GMP) has been a good environmental steward (in terms of fish passage)?

In general I think GMP who owns multiple projects throughout New England has demonstrated an interest in being a good environmental steward and that level of interest varies from project to project. I am unable to speak to GMP's environmental stewardship at the South Berwick Project.

Has there been any on-going consultation since the study reports came out in 2007?

Aside from Settlement discussions with GMP on the upstream Rollinsford Project (P-3777) and Lower Great Falls Project (P-4451) and their potential implications to the South Berwick Project, I am not aware of any on-going consultation since the 2007 study reports.

I hope you are doing well and enjoying your new position with SWCA.

Ken

Kenneth Hogan || Hydropower Program Coordinator || Northeast Region
U.S. Fish & Wildlife Service || New England Field Office
70 Commercial Street, Suite 300

Concord, New Hampshire 03301

(603) 682-5694

Kenneth_Hogan@fws.gov | fws.gov/newengland/FERC/

From: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>

Sent: Wednesday, January 25, 2023 2:25 PM

To: Rosset, Julianne <julianne_rosset@fws.gov>; 'Nuria Holmes' <nuria.holmes17@gmail.com>

Cc: Hogan, Kenneth J <kenneth_hogan@fws.gov>

Subject: RE: [EXTERNAL] South Berwick LIHI Application questions

Sorry Julianne – that was my mistake. Thank you for correcting it.

Maryalice

From: Rosset, Julianne <julianne_rosset@fws.gov>

Sent: Wednesday, January 25, 2023 2:24 PM

To: Nuria Holmes <nuria.holmes17@gmail.com>

Cc: mfischer@lowimpacthydro.org; Hogan, Kenneth J <kenneth_hogan@fws.gov>

Subject: Re: [EXTERNAL] South Berwick LIHI Application questions

Hi Nuria,

Thanks so much for your email.

Ken Hogan (Cc'd) is the USFWS lead for the South Berwick project and will be able to answer your questions.

Please don't hesitate to contact me if you need anything additional.

Kind regards,

Julianne

Julianne Rosset (she/her)

Hydropower Coordinator | Maine Field Office

United States Fish and Wildlife Service

306 Hatchery Road, East Orland, ME 04431

207-298-3080 | julianne_rosset@fws.gov

fws.gov/office/maine-ecological-services | facebook.com/usfwsnortheast/

From: Nuria Holmes <nuria.holmes17@gmail.com>
Sent: Tuesday, January 24, 2023 10:11 PM
To: Rosset, Julianne <julianne_rosset@fws.gov>
Cc: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>
Subject: [EXTERNAL] South Berwick LIHI Application questions

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hi Julianne,

My name is Nuria Holmes and I am working on the LIHI certification review for the South Berwick Project. My understanding is you are the appropriate agency representative to field my questions as I review portions of the application that cover upstream and downstream fish passage. I can see in my review that Green Mountain Power (GMP) did several upstream/downstream fish passage studies between 2004 and 2007 which included agency consultation.

My question for you is, what is your sense of the upstream/downstream fish passage currently taking place at South Berwick? Are you aware of any issues related to fish passage based on your expertise? In general, do you feel the licensee (GMP) has been a good environmental steward (in terms of fish passage)? Has there been any on-going consultation since the study reports came out in 2007?

Thank you, and please let me know if you think a call is worthwhile. I look forward to hearing back.

Nuria Holmes

From: [William McDavitt - NOAA Affiliate](#)
To: [Nuria Holmes](#)
Cc: mfischer@lowimpacthydro.org; [Christopher Boelke - NOAA Federal](#)
Subject: Re: South Berwick LIHI Application questions
Date: Tuesday, January 31, 2023 9:14:24 AM
Attachments: [20070525-5030 Consolidated Hydro Upstream Fish Passage Report.pdf](#)
[20070904-0016 FERC to licensee comments on upstream passage report.pdf](#)

Hi Nuria,

I'm attaching the 2006 upstream fish passage study (filed on the FERC e-library in the spring of 2007) and FERC's response to the licensee on this filing.

I searched the FERC e-library for P-11163 for filings in the past 5 years. Other than some dam safety related matters, the docket is silent on anything related to fish passage at South Berwick.

If this project is going to receive a certificate from the Low Impact Hydropower Institute, it seems as though the licensee should be able to provide information that the existing fish ladder and downstream fishway provides safe, timely and effective passage for a suite of migratory fish. The fish ladder should allow migratory fish to reach historic freshwater spawning habitat for animals to complete their life cycle and without much delay. Adult eel and juvenile clupeids should be able to pass this project on their downstream migration with low levels of mortality. Both fishways should be functional through a range of flows (flows that are exceeded 5% to 95% of the time during the passage season). There should be a fishway operation and maintenance plan. The licensee should be able to demonstrate that the fishway is well maintained and that there is a plan to remove large woody debris that might negatively impact entrance or exit conditions.

You might want to reach out to [Byran Sojkowski](#), a USFWS fish passage engineer in Hadley, MA, to see if he has visited this site and if he or his agency have any concerns with the existing fish ladder and downstream fishway.

-Bill

Bill McDavitt
Environmental Specialist
Integrated Statistics, Inc.

Under contract to National Marine Fisheries Service
Greater Atlantic Regional Fisheries Office
55 Great Republic Drive
Gloucester, MA 01930
978-675-2156
William.mcdavitt@noaa.gov

On Mon, Jan 30, 2023 at 1:29 PM Christopher Boelke - NOAA Federal

<christopher.boelke@noaa.gov> wrote:

Hi Nuria - Sorry for the delay in responding. We were not very active in the South Berwick project, so unfortunately I cannot comment on the studies or GMP. I know that USFWS was engaged and I am cc'ing Bill McDavitt from our office to see if he

has additional info.

Thanks

On Tue, Jan 24, 2023 at 10:10 PM Nuria Holmes <nuria.holmes17@gmail.com> wrote:

Hi Chris,

My name is Nuria Holmes and I am working on the LIHI certification review for the South Berwick Project. My understanding is you are the appropriate agency representative to field my questions as I review portions of the application that cover upstream and downstream fish passage. I can see in my review that Green Mountain Power (GMP) did several upstream/downstream fish passage studies between 2004 and 2007 which included agency consultation.

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Thank you, and please let me know if you think a call is worthwhile. I look forward to hearing back.

Nuria Holmes

--

Christopher Boelke
Chief, New England Branch
Habitat and Ecosystem Services Division
NOAA Fisheries
U.S. Department of Commerce

978-281-9131



From: [Dionne, Michael](#)
To: [Nuria Holmes](#)
Cc: mfischer@lowimpacthydro.org
Subject: Re: South Berwick LIHI Application questions
Date: Monday, February 6, 2023 2:26:05 PM

Hi Nuria,

Sorry for the late response on this, I'm in a new position with F&G and not as directly involved with the fieldwork associated with this hydro but have good knowledge of the project.

The current upstream/downstream passage at the project is actually really good. For the last several years GMP (and Enel before them) has allowed NHFGD to install an electronic fish counter at the fishway to monitor upstream river herring migrations. NHFGD visits the fishway to perform calibration counts daily from late April through early June. The staff at the hydro is always very friendly and extremely willing to take care of any issues with the fishway immediately. They set up and take down the fish counting equipment for us and provide power to run the fish counting box. I don't feel there are any major issues with fish passage based on my experience there. In general since we have been monitoring the herring run there the numbers have been increasing. In both 2021 and 2022 around 60,000 herring each year have migrated upstream through the fishway.

If you have further questions or need an explanation of anything let me know.

Mike Dionne
Environmental Review Coordinator

NH Fish & Game Department
11 Hazen Drive
Concord, NH 03301
(603) 271-1136, michael.dionne@wildlife.nh.gov

NH Fish and Game...*connecting you to life outdoors*
www.wildnh.com, www.facebook.com/nhfishandgame

Did you know? New Hampshire Fish and Game has been conserving New Hampshire's wildlife and their habitats since 1865.

From: Nuria Holmes <nuria.holmes17@gmail.com>
Sent: Tuesday, January 24, 2023 10:12 PM
To: Dionne, Michael <Michael.Dionne@wildlife.nh.gov>
Cc: mfischer@lowimpacthydro.org <mfischer@lowimpacthydro.org>
Subject: South Berwick LIHI Application questions

EXTERNAL: Do not open attachments or click on links unless you recognize and trust the sender.

Hi Michael,

My name is Nuria Holmes and I am working on the LIHI certification review for the South Berwick Project. My understanding is you are the appropriate agency representative to field my questions as I review portions of the application that cover upstream and downstream fish passage. I can see in my review that Green Mountain Power (GMP) did several upstream/downstream fish passage studies between 2004 and 2007 which included agency consultation.

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Thank you, and please let me know if you think a call is worthwhile. I look forward to hearing back.

Nuria Holmes