



October 12, 2022

Ms. Shannon Ames  
Executive Director  
Low Impact Hydropower Institute  
329 Massachusetts Avenue, Suite 2  
Lexington, MA 02420  
[sames@lowimpacthydro.org](mailto:sames@lowimpacthydro.org)

Re: Low Impact Hydropower Institute Application for the South Berwick Hydroelectric Project (FERC No. 11163).

Dear Ms. Ames:

Green Mountain Power Corporation (GMP) submits the attached Application for the South Berwick Hydroelectric Project (FERC No. 11163) located on the Salmon Falls River in New Hampshire/Maine. GMP is respectfully requesting certification of this facility.

The application includes the following required components.

- Introduction
- Project Description and Low Impact Hydropower Institute (LIHI) Table B-1.
- Zones of Effect descriptions and overview maps and images.
- Matrix of Alternative Standards for each Zone of Effect identified evaluating the LIHI certification standards for each requisite criterion including water quality, fish passage and recreation.
- Facility Contacts Form.
- Sworn Statement and Waiver Form.

If there are any questions or comments regarding the application, please contact me at (802) 770-2195, via email at [John.Greenan@greenmountainpower.com](mailto:John.Greenan@greenmountainpower.com), or at the address below.

Sincerely,

John C. Greenan, P.E.  
Engineer  
Green Mountain Power  
2152 Post Road  
Rutland, VT 05701

**LOW IMPACT HYDROPOWER INSTITUTE  
CERTIFICATION APPLICATION  
SOUTH BERWICK HYDROELECTRIC PROJECT  
FERC PROJECT NO. 11163**



**GREEN MOUNTAIN POWER CORPORATION**



**October 2022**

## TABLE OF CONTENTS

<b>Table of Contents .....</b>	<b>i</b>
<b>List of Tables .....</b>	<b>ii</b>
<b>List of Figures.....</b>	<b>ii</b>
<b>List of Appendices.....</b>	<b>ii</b>
<b>List of Abbreviations and Acronyms .....</b>	<b>iii</b>
<b>1 Project Description.....</b>	<b>1</b>
1.1 Project Location .....	1
1.2 Project Facilities.....	1
1.3 Project Operation .....	2
1.4 Regulatory and Other Requirements.....	2
1.5 Zones of Effect.....	3
<b>2 Standards Matrices .....</b>	<b>15</b>
<b>3 Supporting Information.....</b>	<b>16</b>
3.1 Ecological Flow Standards.....	16
3.2 Water Quality Standards .....	18
3.3 Upstream Fish Passage Standards.....	21
3.4 Downstream Fish Passage and Protection Standards.....	25
3.5 Shoreline and Watershed Protection Standards .....	29
3.6 Threatened and Endangered Species Standards .....	31
3.7 Cultural and Historic Resources Standards.....	34
3.8 Recreational Resources Standards .....	35
<b>4 Contact Forms .....</b>	<b>40</b>
4.1 Applicant-Related Contacts .....	40
4.2 Current Relevant State, Federal, and Tribal Resource Agency Contacts (excluding FERC). ....	41
<b>5 Attestation and Waiver Form .....</b>	<b>46</b>

## LIST OF TABLES

Table 1-1: Current and Historic Dams on the Salmon Falls River .....	4
Table 1.2-2: Facility Information.....	5
Table 1.2-1: Turbine-Generator Characteristics .....	10
Table 3.3.2-1: Annual River Herring Passage Counts at the Project .....	24
Table 3.3.2-2: Annual American Eel Passage Counts at the Project .....	24
Table 3.6.1-1: State of New Hampshire-Threatened and Endangered Plant and Wildlife Species Recorded near the Project Area .....	33

## LIST OF FIGURES

Figure 1.1-1: General Project Location Map .....	11
Figure 1.1-2: Current and Historic Dams along the Salmon Falls River .....	12
Figure 1.2-1: Key Project Structures and Features .....	13
Figure 1.5-1: Zones of Effect.....	14
Table 3.4.1-1: Fish Species found In the Project Vicinity .....	28
Figure 3.5.1-1: Land Use Designations in the Project Vicinity .....	30
Figure 3.8-1: Recreation Facilities and Access Points.....	37
Figure 3.8-2: Foundry Street Boat Launch .....	38
Figure 3.8-3: View of Counting House Park .....	39
Figure A-1: Project Dam and Powerhouse .....	48
Figure A-2: Project Impoundment at Foundry Street Boat Ramp .....	49
Figure A-3: Intake Headworks and Powerhouse .....	50
Figure A-4: Project Powerhouse and Substation .....	51
Figure A-5: Denil Fish Ladder.....	52
Figure A-6: Denil Fish Ladder Exit/Entrance to Downstream Fish Passage Facility.....	53
Figure A-7: Downstream Fish Passage Facility Exit .....	54

## LIST OF APPENDICES

**Appendix A: Project Facility Photographs**

**Appendix B: FERC License Order**

**Appendix C: Water Quality Certification**

**Appendix D: MDEP Consultation**

**Appendix E: USFWS Information for Planning and Consultation Report**



## LIST OF ABBREVIATIONS AND ACRONYMS

cfs	cubic feet per second
ESA	Endangered Species Act
FERC or Commission	Federal Energy Regulatory Commission
GMP	Green Mountain Power Corporation
IPAC	Information for Planning and Consultation
kW	kilowatt
kWh	Kilowatt-hours
LIHI	Low Impact Hydropower Institute
MDEP	Maine Department of Environmental Protection
MDMR	Maine Department of Marine Resources
MHPC	Maine Historic Preservation Commission
mi <sup>2</sup>	Square miles
msl	Mean sea level
MW	Megawatt
MWh	Megawatt-hours
NHDES	New Hampshire Department of Environmental Services
NHFGD	New Hampshire Fish and Game Department
NHNHB	New Hampshire Natural Heritage Bureau
NLEB	Northern longed-eared bat
PCB	Polychlorinated biphenyls
PLC	Programmable Logic Controller
Project	South Berwick Hydroelectric Project
RM	River mile
rpm	Revolutions per minute
SHPO	State Historic Preservation Officer
USFWS	United States Fish and Wildlife Service
WQC	Water Quality Certification
ZOE	Zone of Effect

# 1 PROJECT DESCRIPTION

## 1.1 Project Location

Green Mountain Power Corporation (GMP) owns the 1.2-megawatt (MW) South Berwick Hydroelectric Project (the Project). The Project is located on the Salmon Falls River, which also serves as the border between Maine and New Hampshire. Most of the infrastructure associated with the Project, including the intake, penstocks, and powerhouse, is in the Town of South Berwick, York County, Maine. The right abutment of the dam is in the Town of Rollinsford, Strafford County, New Hampshire. A Project location map is shown in [Figure 1.1-1](#). At the Project dam, the total drainage area is approximately 235 square miles (mi<sup>2</sup>), which is about 99.6% of the Salmon Falls drainage area (236 mi<sup>2</sup>).

The Project dam is located at approximately river mile (RM) 0.0 and is the first dam on the mainstem of the Salmon Falls River. The river reach below the Project dam is tidally influenced. Historically, there were 24 dams along the mainstem of the river, but some have been removed, breached, or are now in ruins. [Table 1.1-1](#) details the name, status, location, and attributes of all dams along the Salmon Falls River from downstream to upstream. The dam locations are shown in [Figure 1.1-2](#).

The following sections describe the Project structures, features, and mode of operation. Project information is also summarized in [Table 1.1-2](#).

## 1.2 Project Facilities

Key structures and features of the Project are shown in [Figure 1.2-1](#). Photographs of the Project structures and features are included in [Appendix A](#). The South Berwick dam was originally constructed in 1831. In 1923, the existing powerhouse was constructed. In the late 1990's the Project was redeveloped into its current configuration and operation.

The Project dam ([Figure A-1](#)) is a concrete gravity design that is an average of 18 feet high and 290 feet long with a 220-foot-long spillway section. The crest elevation is at approximately 22.95 feet, mean sea level (msl). The spillway has a flood discharge capacity of approximately 12,950 cfs. The dam is topped with 2-foot-high flashboards, resulting in a normal pond elevation of 24.95 feet, msl, at the crest of the flashboards.

The Project impoundment ([Figure A-2](#)) has a gross volume of 641 acre-feet with a surface area of 58 acres at the normal pond elevation of 24.95 feet, msl. Since the Project operates as a run-of-river facility, the useable storage volume is negligible.

The intake structure ([Figure A-3](#)) is located at the left (eastern) abutment of the dam. There are three headgates that feed three, 8-foot diameter, 70-foot-long penstocks. In front of the headgates are trashracks with 1-inch clear space bars, oriented at 45 degrees to the river channel and flow. To the right (western) side of the trashracks are an upstream/downstream fish passage facility and two 4-foot by 4-foot sluice gates, which may be used as flood gates and for lowering the headpond level.

The 85-foot-long by 30-foot-wide concrete and brick powerhouse ([Figure A-1](#) and [Figure A-4](#)) is located just downstream of the intake structure and the left (eastern) abutment of the dam. The powerhouse contains three vertical Francis turbine-generator units with a total installed capacity of 1.2 MW as well as the switchgear and unit control system. The specifications for turbine-generator units are further described in [Table 1.2-1](#).

The Project feeds power into a Central Maine Power Company transmission-distribution line via a 2400-volt/12,470-volt step-up transformer located adjacent to the powerhouse ([Figure A-4](#)). The Project's average annual generation from 2018-2021 was 3,164 megawatt-hours (MWh).

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 ([Figure A-5](#)). 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 ([Figure A-6](#)). 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 ([Figure A-7](#)).

### 1.3 Project Operation

The Project is operated in automatic mode as a run-of-river facility with no storage or flood control capacity. 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. The average net head at the Project is 22 feet. The river reach directly below the Project dam is tidal with an average of three feet of daily tidal fluctuation.

Unit 1 is the primary operating unit and is typically the first unit placed on-line and the last unit taken off-line. 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 (approximately 50 cfs), such that all inflow is passed over the spillway.

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, during a time 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.

### 1.4 Regulatory and Other Requirements

FERC issued a 40-year license for the Project on December 9, 1997, with an expiration date of November 30, 2037 ([Appendix B](#)).

- Article 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 (FERC Accession No. 20000203-0135: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000203-0135](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000203-0135)) and July 17, 2000 (FERC Accession No. 20000719-0818: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000719-0818](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000719-0818)).
- Article 402 requires the Licensee to operate the Project in a run-of- river mode.
- Article 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.
- Article 404 required 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 (FERC Accession No. 19990105-0370: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990105-0370](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990105-0370)).

- Article 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 (FERC Accession No. 19990105-0370: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990105-0370](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990105-0370)).
- Article 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 (FERC Accession No. 19981120-0248: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19981120-0248](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19981120-0248)).
- Article 407 requires the Licensee to file detailed design drawings of downstream fish passage facilities. The design drawings were filed on November 12, 1999 (FERC Accession No. 19991115-0673: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19991115-0673](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991115-0673)).
- Article 408 requires the Licensee to file detailed design drawings of upstream fish passage facilities. The design drawings were filed on November 12, 1999 (FERC Accession No. 19991115-0673: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19991115-0673](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991115-0673)).
- Article 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 (FERC Accession No. 19991115-0673: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19991115-0673](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991115-0673)).
- Article 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 (FERC Accession No. 19990826-0340: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990826-0340](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990826-0340)).
- Article 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 (FERC Accession No. 20000310-0136: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000310-0136](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000310-0136)).
- Article 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 (FERC Accession No. 20000310-0136: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000310-0136](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000310-0136)).
- Article 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.

## 1.5 Zones of Effect

The Project is delineated into two Zones of Effect (ZOE): Impoundment and Downstream as shown in [Figure 1.5-1](#) and discussed in greater detail below.

- ZOE 1 starts at the most upstream point of the Project boundary (RM 0.9) on the Salmon Falls River in the Project impoundment and ends at the Project dam (RM 0.0). The approximate length of the 58-acre impoundment is 0.9 RM. The normal pond elevation of 24.95 feet, msl.
- The Project dam discharges to the Salmon Falls River, designated as ZOE 2 – Downstream. This ZOE extends downstream of the Project dam approximately 0.7 RM to the confluence with the Great Works River.

**TABLE 1-1: CURRENT AND HISTORIC DAMS ON THE SALMON FALLS RIVER**

<b>Name</b>	<b>Status</b>	<b>Town</b>	<b>FERC No.</b>	<b>Owner</b>	<b>River Mile</b>	<b>Downstream Fish Passage Facility</b>
South Berwick Dam	Active	Rollinsford	11163	Salmon Falls Hydro, LLC (GMP)	0.0	Yes
Rollinsford Dam	Active	Rollinsford	3777	Town of Rollinsford (operated by GMP)	0.9	Expected (2025)
Lower Great Falls Dam	Active	Somersworth	4451	City of Somersworth & GMP	3.1	Expected (2026)
Back Dam	Active	Somersworth	-	Aclara Technologies, Inc.	4.1	No
Stone Dam	Active	Somersworth	3820	Aclara Technologies, Inc.	4.4	No
Mast Point Dam	Removed	Somersworth	-	General Electric Co.	7.2	
Boston Felt Dam	Active	Rochester	4542	Salmon Falls Power and Light Co	13.7	No
Salmon Falls II Dam	Ruins	Rochester	-	Cocheco Woolen	13.8	NA
Spaulding Pond Dam	Active	Rochester	3985	Spaulding Ave Industrial Complex, LLC	18.8	No
Salmon Falls River I Dam	Ruins	Milton	-	Spaulding Fiber Company	20.1	NA
South Milton Dam	Active	Milton	3984	SFR Hydro Co.	20.8	No
Milton Leather Board Lower Dam	Removed	Milton	-	Mr. John Jamesom	21.0	NA
Milton Leather Board Dam	Active	Milton	-	Milton Land Corp	21.1	No
Salmon Falls River V Dam	Removed	Milton	-	PSNH	21.3	NA
Milton Three Ponds Dam	Active	Milton	-	NHDES Water Division	21.4	No
Salmon Falls River VII	Active	Milton	-	Mr. David Aubert	28.6	Yes (eel)
Waumbek Dam	Active	Milton	5872	NHDES Water Division	28.8	No
Salmon Falls River VIII Dam	Breached	Milton	-	PSNH	28.9	NA
Salmon Falls River VIX Dam	Ruins	Milton	-	PSNH	29.2	NA
Rowe Dam	Active	Milton	-	NHDES Water Division	29.5	No
Salmon Falls River XII Dam	Ruins	Milton	-	Mr. L E Wiggin	31.2	NA
Salmon Falls River XI Dam	Ruins	Milton	-	Mr. Carr Horn	31.6	NA
Horn Pond Dam	Active	Wakefield	-	NHDES Water Division	33.5	No
Great East Lake Dam	Active	Wakefield	-	NHDES Water Division	35.0	No

**TABLE 1.2-2: FACILITY INFORMATION**

Item	Information Requested	Response (include references to further details)
<b>Name of the Facility</b>	Facility name (use FERC project name or other legal name)	South Berwick Hydroelectric Project
<b>Reason for applying for LIHI Certification</b>	1. To participate in state RPS program 2. To participate in voluntary REC market (e.g., Green-e) 3. To satisfy a direct energy buyer's purchasing requirement 4. To satisfy the facility's own corporate sustainability goals 5. For the facility's corporate marketing purposes 6. Other (describe)	(select and describe only applicable reasons) 1. <input checked="" type="checkbox"/> GMP is applying to participate in the NEPOOL State REC Program: NH Class IV, RI Existing, VT Tier I, CT CEO 2. <input type="checkbox"/> 3. <input type="checkbox"/> 4. <input type="checkbox"/> 5. <input type="checkbox"/> 6. <input checked="" type="checkbox"/> describe: Sell into NH IV REC market to offset rates
	If applicable, amount of annual generation (MWh and % of total generation) for which RECs are currently received or are expected to be received upon LIHI Certification	Amount of MWh participating: ~3,164 MWh % of total MWh generated: <u>100%</u>
<b>Location</b>	River name (USGS proper name)	Salmon Falls River
	Watershed name - Select region, click on the area of interest until the 8-digit HUC number appears. Then identify watershed name and HUC-8 number from the map at: <a href="https://water.usgs.gov/wsc/map_index.html">https://water.usgs.gov/wsc/map_index.html</a>	01060003
	Nearest town(s), county(ies), and state(s) to dam	Town of Rollinsford, Strafford County, NH and Town of South Berwick, York County, ME
	River mile of dam above mouth	0.00
	Geographic latitude and longitude of dam	Lat: 43° 13' 36" north Long: 70° 48' 40" west
<b>Facility Owner</b>	Application contact names	John Greenan, P.E.
	Facility owner company and authorized owner representative name. <b>For recertifications: If ownership has changed since last certification, provide the effective date of the change.</b>	Green Mountain Power Corporation
	FERC licensee company name (if different from owner)	Click or tap here to enter text.
<b>Regulatory Status</b>	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	P-11163, date of issuance 12/09/1997, date of expiration 11/30/2037



Item	Information Requested	Response (include references to further details)
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Minor
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	Water Quality Certificate #L-17487-33-D-N, Issued May 25, 1995, by the Maine Department of Environmental Protection
	Hyperlinks to key electronic records on FERC e-Library website or other publicly accessible data repositories <sup>1</sup>	Hyperlinks are provided throughout various sections of this document as pertinent FERC Orders and other related regulatory documents are discussed.
<b>Powerhouse</b>	Date of initial operation (past or future for pre-operational applications) Total installed capacity (MW) <b>For recertifications: Indicate if installed capacity has changed since last certification</b>	Date of initial operation-1998, Installed capacity=1.2 MW
	Average annual generation (MWh) and period of record used <b>For recertifications: Indicate if average annual generation has changed since last certification</b>	3,164 MWh for the period 2018-2021.
	<u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) <b>For recertifications: Indicate if mode of operation has changed since last certification</b>	Run-of-river
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	See Table 1.2-1 for details.
	Trashrack clear spacing (inches) for each trashrack	1.0 inches
	Approach water velocity (ft/s) at each intake if known	1.4 ft/s
	Dates and types of major equipment upgrades <b>For recertifications: Indicate only those since last certification</b>	NA
	Dates, purpose, and type of any recent operational changes <b>For recertifications: Indicate only those since last certification</b>	NA

<sup>1</sup> For example, the FERC license or exemption, recent FERC Orders, Water Quality Certificates, Endangered Species Act documents, Special Use Permits from the U.S. Forest Service, 3<sup>rd</sup>-party agreements about water or land management, grants of right-of-way, U.S. Army Corps of Engineers permits, and other regulatory documents. If extensive, the list of hyperlinks can be provided separately in the application.

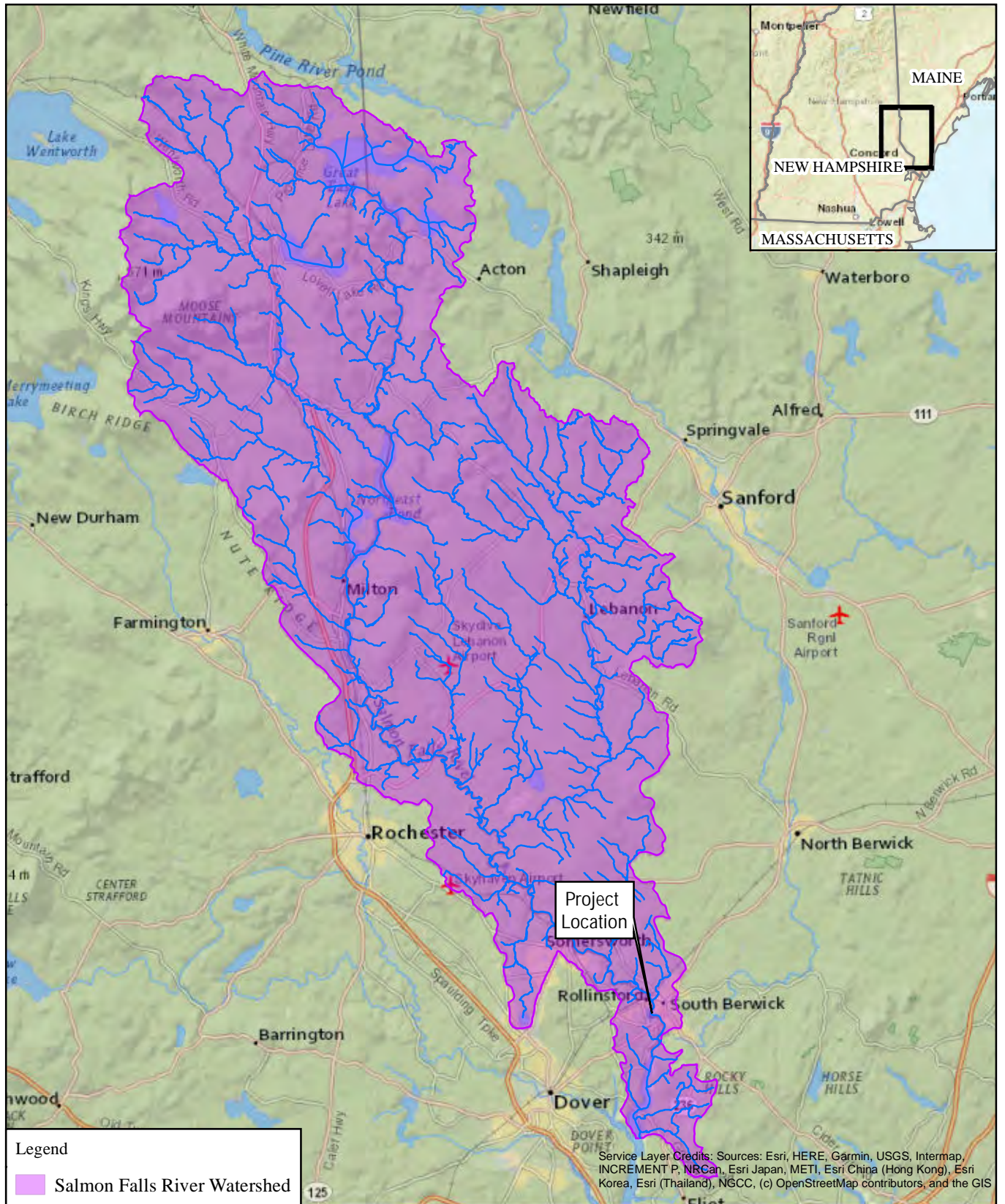
Item	Information Requested	Response (include references to further details)
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	NA
<b><i>Dam or Diversion</i></b>	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	Dam was originally constructed in 1831.
	Dam or diversion structure length, height including separately the height of any flashboards, inflatable dams, etc. and describe seasonal operation of flashboards and the like	Dam length = 290 feet. Dam height = 18 feet. Flashboard height = 2.0 feet.
	Spillway maximum hydraulic capacity	12,950 cfs
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	Three 8-foot diameter steel penstocks with lengths of approximately 70 feet.
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power generation
<b><i>Conduit Facilities Only</i></b>	Date of conduit construction and primary purpose of conduit	NA
	Source water	NA
	Receiving water and location of discharge	NA
<b><i>Impoundment and Watershed</i></b>	Authorized maximum and minimum impoundment water surface elevations <b>For recertifications: Indicate if these values have changed since last certification</b>	No maximum. Minimum = 22.95 ft, msl with flashboards down.
	Normal operating elevations and normal fluctuation range <b>For recertifications: Indicate if these values have changed since last certification</b>	Normal full pond = 24.95 ft, msl with flashboards up. Normal full pond = 22.95 ft, msl with flashboards down.
	Gross storage volume and surface area at full pool <b>For recertifications: Indicate if these values have changed since last certification</b>	Gross Storage Volume = 641 acre-ft. Surface Area = 58 acres.
	Usable storage volume and surface area <b>For recertifications: Indicate if these values have changed since last certification</b>	Negligible-Project is run-of-river.
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	Per water quality certification and FERC license (See Section 1.3).

Item	Information Requested	Response (include references to further details)
	Upstream dams by name, ownership (including if owned by an affiliate of the applicant's company) and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	Next upstream dam is the Rollinsford Hydroelectric Project (P-3777), owned by the Town of Rollinsford and operated by GMP. River mile 0.9. The Rollinsford Project will have downstream fish passage facilities (expected 2025) as a condition of its new FERC License, expected to be issued in 2022. See Table 1-1 for other dams on the Salmon Falls River.
	Downstream dams by name, ownership (including if owned by an affiliate of the applicant's company), river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	NA
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	NA
	Area of land (acres) and area of water (acres) inside FERC project boundary or under facility control. Indicate locations and acres of flowage rights versus fee-owned property.	7.3 acres of land and 60 acres of water are located within the Project boundary. All land within the 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.
<b>Hydrologic Setting</b>	Average annual flow at the dam, and period of record used	407 cfs. Period of Record: 1968-2005; 2011-2018.
	Average monthly flows and period of record used	January: 388 cfs February: 389 cfs, March: 635 cfs, April: 914 cfs, May: 477 cfs, June: 297 cfs, July: 143 cfs, August: 138 cfs, September: 156 cfs, October: 392 cfs, November: 446 cfs, December: 494 cfs. Period of Record: 1968-2005; 2011-2018.
	Location and name of closest stream gaging stations above and below the facility	Upstream: Salmon Falls near Milton, NH gage (USGS gage number 01072100). Downstream: NA
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	Watershed area at the dam: 235 square miles. Flow data from the Salmon Falls near Milton, NH gage (USGS gage number 01072100) was multiplied by a ratio of the drainage areas at each point (235 mi <sup>2</sup> /108 mi <sup>2</sup> ).
	Other facility specific hydrologic information (e.g., average hydrograph)	NA

Item	Information Requested	Response (include references to further details)
<b><i>Designated Zones of Effect</i></b>	Numbers and names of each zone of effect (e.g., “Zone 1: Impoundment”)	Zone 1-Impoundment, Zone 2-Downstream
	River mile of upstream and downstream limits of each zone of effect (e.g., “Zone 1 Impoundment: RM 6.3 - 5.1”)	Zone 1-Impoundment: RM 0.9-0.0, Zone 2-Tailrace: RM 0.0- minus 0.7 RM
<b>Pre-Operational Facilities Only</b>		
<b><i>Expected operational date</i></b>	Date generation is expected to begin	NA
<b><i>Dam, diversion structure or conduit modification</i></b>	Description of modifications made to a pre-existing conduit, dam or diversion structure needed to accommodate facility generation. This includes installation of flashboards or raising the flashboard height. Date the modification is expected to be completed	NA
<b><i>Change in water flow regime</i></b>	Description of any change in impoundment levels, water flows or operations required for new generation	NA

**TABLE 1.2-1: TURBINE-GENERATOR CHARACTERISTICS**

<b>Turbines</b>	<b>Unit 1</b>	<b>Unit 2</b>	<b>Unit 3</b>
Type	Vertical Francis	Vertical Francis	Vertical Francis
Manufacturer	Norcan Hydraulic Turbine	James Leffel Hercules Type D	Norcan Hydraulic Turbine
Runner diameter	56 inches	56 inches	56 inches
Rated head	19.7 feet	22 feet	22 feet
Turbine speed	133 rpm	133 rpm	133 rpm
Maximum (rated) flow	325 cfs	325 cfs	325 cfs
Max. power at turbine shaft	414 kW	400 kW	470 kW
Min. operating flow (est.)	125 cfs	50 cfs	70 cfs
Flow at max. efficiency	239 cfs	269 cfs	283 cfs
Power at max. efficiency	347 kW	350 kW	427 kW
<b>Generators</b>	<b>Unit 1</b>	<b>Unit 2</b>	<b>Unit 3</b>
Manufacturer	General Electric	General Electric	General Electric
Type	Synchronous	Synchronous	Synchronous
Rated capacity	400 kW	400 kW	400 kW
Power factor	0.8	0.8	0.8
Rotational speed	133 rpm	133 rpm	133 rpm



South Berwick Hydroelectric  
Project, FERC No. 11163  
LIHI Certification Application

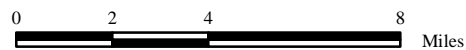
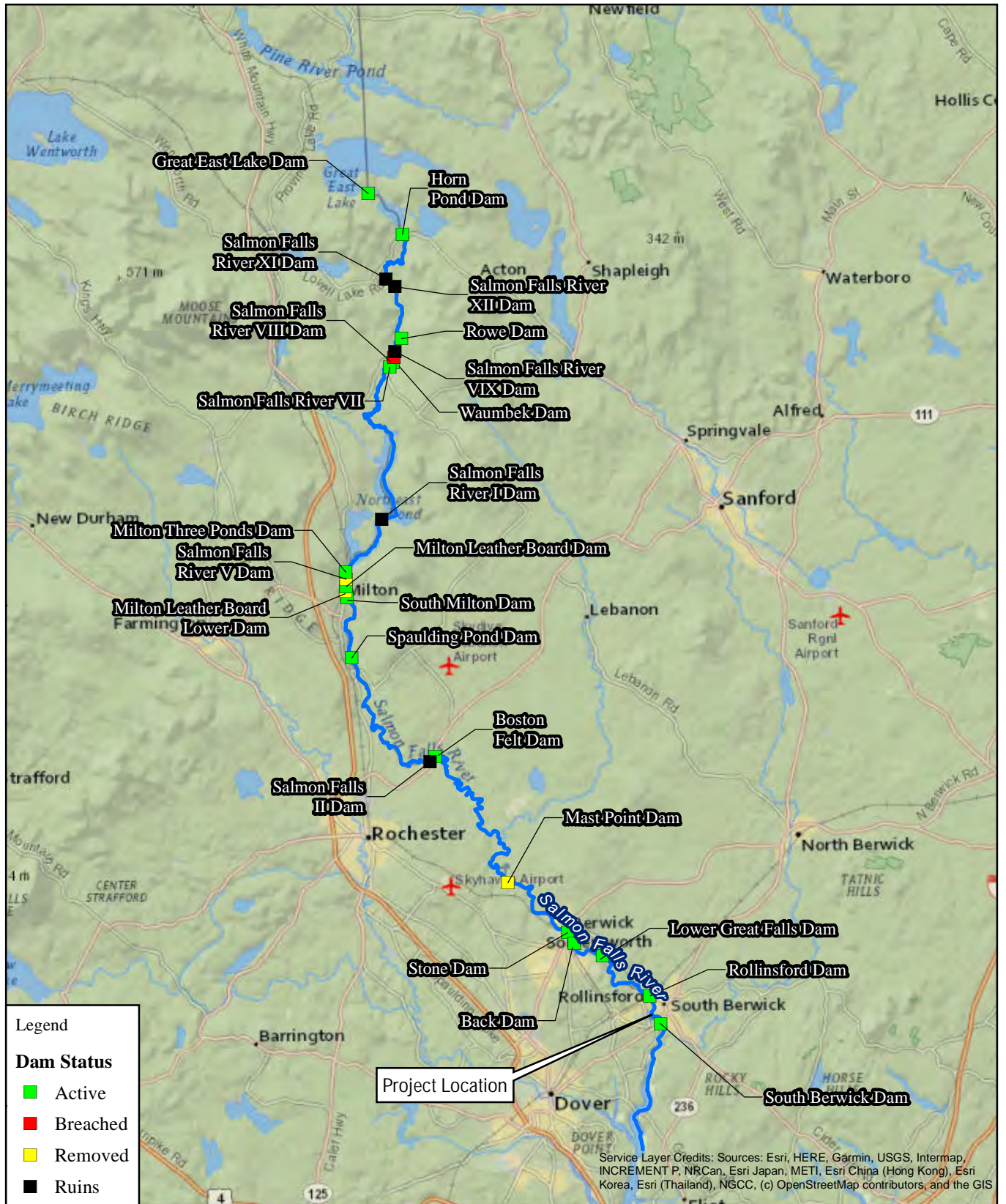


Figure 1.1-1  
General Project Location Map





# South Berwick Hydroelectric Project

FERC No. 11163

LIHI Certification Application

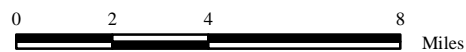
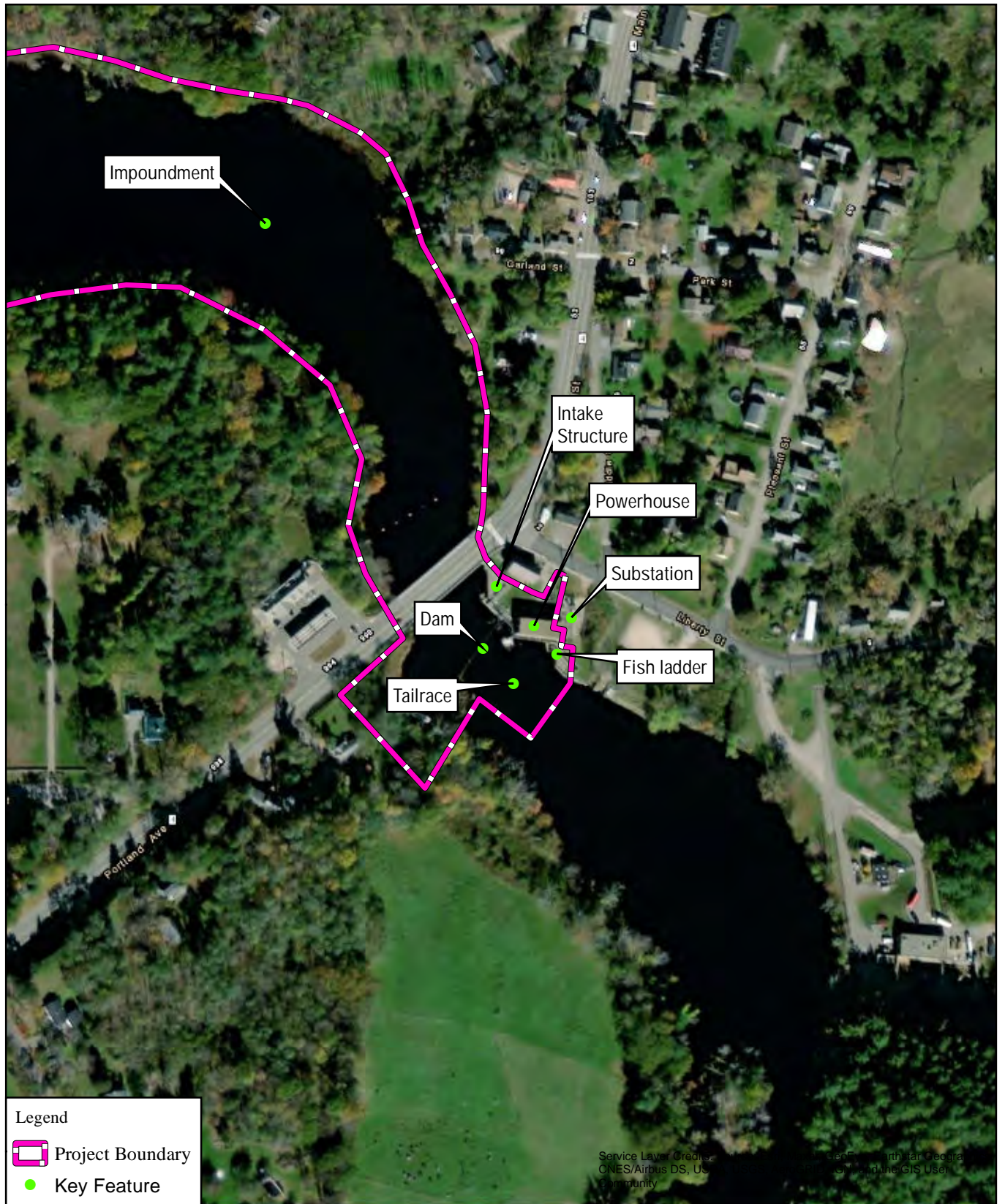


Figure 1.1-2:  
Current and Historic Dams  
along the Salmon Falls River





South Berwick Hydroelectric Project  
FERC No. 11163  
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Figure 1.2-1:  
Key Project Structures and Features





South Berwick Hydroelectric Project  
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LIHI Certification Application



0 400 800 1,600  
Feet



Figure 1.5-1:  
Zones of Effect

## 2 STANDARDS MATRICES

<b>Zone:</b>		<b>1: Impoundment</b>	<b>2. Downstream Reach</b>
River Mile at upper and lower extent of Zone:		0.9-0.0	0.0- minus 0.7
<b>Criterion</b>		<b>Standard Selected (type in one numbered standard and PLUS if applicable)</b>	
A	Ecological Flows	2	2
B	Water Quality	2	2
C	Upstream Fish Passage	1	2
D	Downstream Fish Passage	2	1
E	Shoreline and Watershed Protection	1	1
F	Threatened and Endangered Species	2	2
G	Cultural and Historic Resources	1	1
H	Recreational Resources	2	2

### 3 SUPPORTING INFORMATION

#### 3.1 Ecological Flow Standards

##### 3.1.1 Ecological Flows Standards--Impoundment and Downstream ZOE

<i>(Criterion</i>	<i>Standard</i>	<i>Instructions</i>
A	2	<u>Agency Recommendation (see Appendix A for definition):</u> <ul style="list-style-type: none"><li>• Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).</li><li>• Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.</li><li>• Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife.</li><li>• Explain how the recommendation provides fish and wildlife protection, mitigation, and enhancement (including instream flows, ramping, and peaking rate conditions, and seasonal and episodic instream flow variations).</li></ul>

Both the Impoundment (Zone 1) and Downstream (Zone 2) ZOE are using standard 2 to justify meeting the ecological flow standard. There have been no water level or flow deviations that occurred within the last 10 years of Project operation.

- Article 402 of the FERC License requires the Licensee to operate the Project in a run-of- river mode.
- Article 403 of the FERC License requires the Licensee to control fluctuations of the reservoir elevation within 0.1 ft of elevation 24.95, msl, from May 1 through October 31, each year.
- Article 404 of the FERC License requires the Licensee to file a plan to provide a stable pond elevation from November 1 through April 30. Article 405 of the FERC License requires the Licensee to file a plan to monitor Project impoundment level and outflow to document run-of-river operation. These plans were developed in consultation with the Maine Department of Environmental Protection (MDEP), United States Fish and Wildlife Service (USFWS), and the New Hampshire Fish and Game Department (NHFGD) and filed on December 31, 1998.<sup>2</sup> FERC subsequently approved the plans, and they were made part of the License on April 7, 1999.<sup>3</sup>
- In accordance with the Headpond Level and Run-of-River Compliance Monitoring Plan, the Project is operated in a run-of-river mode, with inflows equal to outflow. The headpond is always maintained within 0.1 ft of the crest of the flashboards, such that all inflows will be passed over the Project's spillway upon unit trip or shutdown. Unit 1 is the primary operating unit and is typically the first unit placed on-line and the last unit taken off-line. The unit load varies from a maximum of 400 kW (approximately 295 cfs) to a low flow loading of approximately 75 kW (approximately 50 cfs). All inflow more than Unit 1's capacity is passed through Units 2 and 3, which are sequentially block loaded under manual control at a maximum load of approximately

<sup>2</sup> FERC Accession No. 19990105-0370: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990105-0370](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990105-0370).

<sup>3</sup> FERC Accession No. 19990408-0275: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990408-0275](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990408-0275).



295 cfs each. All three units are shut down at low inflows less than the minimum capacity of Unit 1 (approximately 50 cfs), such that all inflow is passed over the spillway.

- To achieve compliance with the run-of-river operational requirements Unit 1 is equipped with automatic pond level control to enable it to track the impoundment level. No control devices are included on Units 2 or 3. A Programmable Logic Controller (PLC) is also utilized to accept various operational inputs and to direct operational outputs. The primary purpose of the PLC is to control headpond water level as river flows vary by modulating the turbine gate setting. A pressure transducer is utilized in the impoundment to determine the water level and transmit the information to the PLC for appropriate action. On-site computers enable electronic data collection and storage and facilitate report printing for monitoring purposes.
- There are no formal agreements with upstream facilities to regulate inflow or outflow at the Project. However, GMP does operate the next two projects upstream of South Berwick (Lower Great Falls Hydroelectric Project, FERC No. 4451 and Rollinsford Hydroelectric Project, FERC No. 3777), which provides some level of coordination, if necessary, even though each of the three facilities operate in a run-of-river mode.
- The Project's run-of-river operation provides a stable impoundment level and a natural flow regime below the Project to protect aquatic and riparian habitats.
- Minimum flow requirements are discussed under [Section 3.2 Water Quality Standards](#). With the river reach below the Project dam being tidally influenced, minimum flows requirements at the Project are targeted to address water quality issues, rather than aquatic habitat.



## 3.2 Water Quality Standards

### 3.2.1 Water Quality Standards-Impoundment and Downstream ZOE

Criterion	Standard	Instructions
B	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"><li>• Provide a copy of the most recent Water Quality Certificate and any subsequent amendments, including the date(s) of issuance. If more than 10 years old, provide documentation that the certification terms and conditions remain valid and in effect for the facility (e.g., a letter or email from the agency).</li><li>• Identify any other agency recommendations related to water quality and explain their scientific or technical basis.</li><li>• Describe all compliance activities related to water quality and any agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.</li></ul>

Both the Impoundment (Zone 1) and Downstream (Zone 2) ZOE are using standard 2 to justify meeting the water quality standard.

- The FERC license ([Appendix B](#), page 3) states that “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, MDEP is responsible for issuing the 401 Water Quality Certificate (WQC) for this project.” The FERC license further states “The New Hampshire Department of Environmental Services (NHDES) (supported by the U.S. Environmental Protection Agency) claims that it also has authority to issue a water quality certificate for this project because water is sometimes discharged over the crest of the dam, half of which is in New Hampshire. This issue has become moot, however, because NHDES failed to act on CHNHI's application for certification within the one-year time period set forth in Section 401.” While NHDES did not issue a timely final WQC, it did however issue a draft WQC to the Project record that contained provisions for run-of-river operation, stable pond operation of the Project, and tailrace water quality monitoring. However, similar measures were also contained in the MDEP WQC and the FERC license.
- The Project received a final WQC from the MDEP on May 25, 1995. The conditions from the WQC are contained in [Appendix C](#) to this document.
- Both New Hampshire and Maine have regulatory authority over water quality in the Salmon Falls River. The Salmon Falls River from the Project impoundment to the tidal zone is classified as Class B in New Hampshire and Class C in Maine. In New Hampshire, Class B water bodies are considered acceptable for fishing, swimming, and other recreational purposes, and after treatment, are potential water supplies. In Maine, Class C water must ensure suitability for designated uses of drinking water, fishing, agriculture, recreation, industrial processes, cooling water, hydroelectric power generation, navigation, and habitat for fish and other aquatic life.
- In New Hampshire, the Project impoundment is listed on the Clean Water Act section 303(d) list of impaired waters for pH and chlorophyll-a and the riverine segment downstream of the Project dam is listed for dissolved oxygen, pH, mercury, PCBs, chlorophyll-a, total nitrogen, and dioxin.<sup>4</sup>

<sup>4</sup> <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/r-wd-20-20.pdf> and <https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/303d-2020-2022.xlsx>.

In Maine, the section of river in which the Project is located is listed on the Clean Water Act section 303(d) list of impaired waters for the following: *Escherichia coli*, ammonia, nutrients/eutrophication, dissolved oxygen, dioxin, and PCBs<sup>5</sup>.

- Condition 1 of the MDEP WQC requires the Licensee to operate their upstream Lower Great Falls Project and the South Berwick Project discharging a minimum flow of 44 cfs or inflow, whichever is less, for the primary purpose of improving water quality, as the river reach below the South Berwick Project dam is tidally influenced. The MDEP WQC calculated the unregulated 7Q10 flow to be approximately 44 cfs at the South Berwick wastewater treatment plant, located just downstream of the South Berwick Project. This calculation served as the basis for the minimum flow requirement, which MDEP determined would improve dissolved oxygen in the river reach downstream of the South Berwick Project. Condition 1 also requires that during the period from June 1 to September 30, when the 3-day running average of water temperature times river flow duration is greater than 1,500, the South Berwick Project, as well as the upstream Lower Great Falls and Rollinsford Projects, be operated in a run-of-river mode. Additionally, this condition requires monitoring and reporting of flow data. To address these WQC conditions, Article 402 of the License requires the Project to operate in run-of-river mode and Article 405 of the License requires a plan for monitoring and reporting of minimum flows, which was filed on December 31, 1998 and subsequently approved by FERC on April 7, 1999.<sup>6</sup>
- Condition 2 of the WQC requires the Licensee to submit a plan to monitor temperature and flows in the Salmon Falls River. To address this WQC condition, Article 405 of the License requires the Licensee to monitor flows at the Project (see discussion in previous bullet item). In addition, Article 406 of the License requires the Licensee to develop, in consultation with MDEP, a plan for dissolved oxygen and temperature monitoring at the Project. A plan was filed on November 18, 1998<sup>7</sup> and subsequently approved by FERC on January 7, 1999.<sup>8</sup> A final study report was filed on April 19, 2007<sup>9</sup> that detailed 3 years of dissolved oxygen, water temperature, conductivity monitoring (2002-2004). The study report concluded fluctuations in dissolved oxygen concentrations occasionally below state standards, exist in the tidal portion below the Project dam regardless of the operation of the Project. This dissolved oxygen condition was attributed to the leading edge of the estuarine salt wedge reaching the Project tailwater. FERC issued a letter on July 13, 2007<sup>10</sup> stating the report fulfilled the requirement of Article 406. No further monitoring was required by FERC<sup>11</sup> after submittal of the final study report. In addition, MDEP agreed with the findings of the study report and concluded that the run-of-river operation of the Project does not cause or contribute to non-attainment of applicable dissolved oxygen standards in the Project tailwater area.<sup>11</sup> There have been no changes in Project operation subsequent to the study.

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<sup>5</sup> <https://www.epa.gov/sites/default/files/2018-03/documents/2016-me-integrated-rpt-list.pdf>. See pages 98 and 144.

<sup>6</sup> FERC Accession No. 19990408-0275: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990408-0275](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990408-0275).

<sup>7</sup> FERC Accession No. 19981120-0248: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19981120-0248](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19981120-0248).

<sup>8</sup> FERC Accession No. 19990108-0280: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990108-0280](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990108-0280).

<sup>9</sup> FERC Accession No. 20070424-0106: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20070424-0106](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070424-0106).

<sup>10</sup> FERC Accession No. 20070719-0097: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20070719-0097](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070719-0097).

<sup>11</sup> FERC Accession No. 20070608-0165: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20070608-0165](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070608-0165).

- Condition 3 of the WQC requires the Licensee to maintain the impoundment within 1 foot of full pond elevation (24.95 feet), except when the product of the 3-day average of temperature times flow duration is greater than 1,500, at which time the Project will be operated in a strict run-of-river mode during the period from June 1 through September 30. The WQC also requires that from October 1 through May 31, the Project is to be operated so that the impoundment water level remains within 2 feet of full pond elevation of 24.95 feet. The FERC license requirements for stable pond management and run-of-river operation are more restrictive than the impoundment levels required by the WQC condition, as Article 403 of the License requires stable pond operation between May 1 and October 31 of each year. Article 404 of the License requires development and implementation of a plan for stable pond operation during the rest of the year, including the winter season. The plan was filed on December 31, 1998<sup>Error! Bookmark not defined.</sup> and subsequently approved by FERC on April 7, 1999.<sup>6</sup>
- GMP contacted MDEP on April 19, 2022, to confirm that the WQC terms and conditions remain valid. On April 27, 2022 MDEP confirmed that the WQC conditions are still valid and in effect for the Project ([Appendix D](#)).

### 3.3 Upstream Fish Passage Standards

Diadromous fish 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). Historically, Atlantic salmon (*Salmo salar*) migrated up the Salmon Falls River, giving the river its name. By 1750 prior to the dam's construction, these runs were sufficiently disrupted by dams, overfishing, and sawdust pollution that the salmon no longer returned to the Salmon Falls River for spawning (Noon, 2002).<sup>12</sup> 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).<sup>13</sup> The Project tailrace is heavily fished in the spring when diadromous fish are present.

#### 3.3.1 Upstream Fish Passage Standards-Impoundment ZOE 1

Criterion	Standard	Instructions
C	1	<u>Not Applicable / De Minimis Effect:</u> <ul style="list-style-type: none"><li>• Explain why the facility does not impose a barrier to upstream fish passage in the designated zone. Typically, impoundment zones will qualify for this standard since once above a dam and in an impoundment, there is no facility barrier to further upstream movement.</li><li>• Document available fish distribution data and the lack of migratory fish species in the vicinity.</li><li>• If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.</li></ul>

The Impoundment ZOE (Zone 1) is using standard 1 to justify meeting the upstream fish passage standard since once the fish pass upstream of the dam into the impoundment, they are not restricted in any way until they encounter the upstream dam.

#### 3.3.2 Upstream Fish Passage Standards-Downstream ZOE 2

Criterion	Standard	Instructions
C	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).</li><li>• Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is or is not part of a Settlement Agreement.</li><li>• Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.</li><li>• Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).</li></ul>

<sup>12</sup> Noon, J. (2002). New Hampshire's Native Fish. Wildlife Journal. July/August 2002.  
<http://www.wildlife.state.nh.us/pubs/documents/samples/nh-native-fish.pdf>.

<sup>13</sup> Federal Energy Regulatory Commission (FERC). 1996. South Berwick Hydroelectric Project Environmental Assessment for Hydropower License. FERC Accession Number: 19961231-0267:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_Number=19961231-0267](https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=19961231-0267).

The Downstream ZOE (Zone 2) is using standard 2 to justify meeting the upstream fish passage standard.

- Article 408 of the FERC license ([Appendix B](#)) required the Licensee to file detailed design drawings of upstream fish passage facilities.
- Article 409 of the FERC license ([Appendix B](#)) required the Licensee to file a plan to monitor the effectiveness of the fish passage facilities. Both the detailed design drawings and monitoring plans were filed on November 12, 1999.<sup>14</sup>

In 2001, in accordance 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 Maine Department of Marine Resources (MDMR) and serve as the permanent upstream fish passage facilities at the Project.

The anadromous fish passage facility consists of a standard galvanized steel and concrete Denil fish ladder with removable wooden baffles that extend from the tailrace to the impoundment. The ladder is approximately 320 feet in total length and 4 feet in width. There are 78 baffles spaced at 30-inch intervals. To accommodate tidal fluctuation and maintain optimal attraction conditions, the ladder is equipped with an automatic tailrace-level-tracking entrance gate, which maintains a 6-inch differential between the fishway and tailwater, per USFWS recommendations. A 180-degree turn pool occurs approximately 70 feet from the entrance. Upstream migrating fish enter the fishway adjacent to the Project tailrace and ascend through the baffles to a flume at the upstream end of the facility. Fish then exit the ladder into the impoundment and continue their spawning migration. The fish ladder is operated for upstream fish passage from April 15 to July 15 annually, although the ladder start date is adjusted in consultation with NHFGD based on likely river herring presence. Operational flow for the upstream fish ladder is 20 cfs, which is included as part of the Project minimum flow, when applicable.

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.

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.<sup>15</sup> The Licensee's qualitative observations of fish passage confirmed that river herring ascended the fishway during the spring to spawn in the Project impoundment. The Licensee's qualitative observations were consistent with typical movement patterns associated with alosids in the region (i.e., adult upstream migration at the Project typically begins in mid-May and extends through mid-June).

In accordance with Article 409 of the FERC license, the Licensee undertook quantitative studies in 2004 and 2006 to demonstrate the effectiveness of the installed Denil fish ladder at passing targeted fish species. In the 2004 study<sup>16</sup>, a total of 332 river herring were tagged and released in three different groups below the Project. A total of 104 river herring (27% of 332) were subsequently detected at the entrance of the fish ladder, of these a total of 89 (86% of 104) completed passage through the fish ladder. Therefore, the

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<sup>14</sup> FERC Accession No. 19991115-0673: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19991115-0673](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991115-0673).

<sup>15</sup> FERC Accession Number: 20040405-0022: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20040405-0022](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20040405-0022).

<sup>16</sup> FERC Accession Number 20050406-0206: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20050406-0206](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20050406-0206).

resulting attraction<sup>17</sup> and internal passage<sup>18</sup> efficiencies of the fish ladder were 27% and 86%, respectively. Based on these results, resource agencies recommended a second year of effectiveness testing to be completed in 2006 that focused on evaluating the attraction efficiency of the ladder. Even though the 2006 study<sup>19</sup> was hampered by extremely high spring flows, it yielded similar results to the 2004 study. A total of 298 river herring were tagged and released in six different groups below the Project. When expected mortality from tagging and handling was factored in, a total of 256 river herring were considered available for upstream passage. A total of 80 river herring (31% of 256) were subsequently detected at the entrance of the fish ladder, resulting in an attraction efficiency of 31%. No further monitoring of the upstream fish passage facility was required by FERC or the resource agencies.<sup>20</sup>

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 and are shown in [Table 3.3.2-1](#).

Upstream passage for American eel is also provided at the Project, via an eel ramp located at the base of dam that is used to collect eels, where they are then taken and transferred into the Project impoundment. No efficiency testing of the ramp has been required by resource agencies. [Table 3.3.2-2](#) illustrates the annual eel ramp passage totals for the period 2007-18. 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 Denil fish ladder, as well as manual counts at the eel ladder. There are currently no passage performance standards required at the Project.

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<sup>17</sup> Attraction efficiency is the probability of a fish to move from the Project tailrace region into the entrance of the fish ladder.

<sup>18</sup> Internal passage efficiency is the probability of a fish successfully passing through the fish ladder once it has entered.

<sup>19</sup>FERC Accession Number 20070525-5030:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20070525-5030](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070525-5030).

<sup>20</sup> FERC Accession Number 20070904-0016:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20070904-0016](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20070904-0016).



**TABLE 3.3.2-1: ANNUAL RIVER HERRING PASSAGE COUNTS AT THE PROJECT**

<b>Year</b>	<b>Passage Total</b>
2011	3,452
2012	8,076
2013	--
2014	--
2015	--
2016	--
2017	4,504
2018	24,517
2019	16,418

**TABLE 3.3.2-2: ANNUAL AMERICAN EEL PASSAGE COUNTS AT THE PROJECT**

<b>Year</b>	<b>Passage Total</b>
2007	386
2008	304
2009	332
2010	40
2011	686
2012	843
2013	1,929
2014	2,023
2015	313
2016	1,516
2017	1,107
2018	2,362

### 3.4 Downstream Fish Passage and Protection Standards

In addition to the diadromous species described in [Section 3.3](#), the Salmon Falls River, in the vicinity of the Project, is known to support a variety of resident fish species, including macrohabitat generalists such as yellow perch, largemouth bass, bluegill, golden shiner, brown bullhead, and redbfin pickerel; and fluvial-dependent fish such as white sucker and fallfish ([Table 3.4.1-1](#)). Several non-native species are present at the Project, including black crappie, bluegill, and several species of bass that were introduced to the Salmon Falls River via stocking.

#### 3.4.1 Downstream Fish Passage Standards-Impoundment ZOE

Criterion	Standard	Instructions
D	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"><li>• Identify the proceeding and source, date, and specifics of the agency recommendation applied (NOTE: there may be more than one; identify and explain which is most environmentally protective).</li><li>• Explain the scientific or technical basis for the agency recommendation, including methods and data used. This is required regardless of whether the recommendation is part of a Settlement Agreement or not.</li><li>• Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented.</li><li>• Provide evidence that required passage facilities are being operated and maintained as mandated (e.g., meets seasonal operational requirements, coordination with agencies, effectiveness relative to performance targets).</li></ul>

The Impoundment ZOE (Zone 1) is using standard 2 to justify meeting the downstream fish passage standard.

- Article 407 of the FERC license ([Appendix B](#)) requires the Licensee to file detailed design drawings of downstream fish passage facilities.
- Article 409 of the FERC license ([Appendix B](#)) requires the Licensee to file a plan to monitor the effectiveness of the fish passage facilities. Both the detailed design drawings and monitoring plans were filed on November 12, 1999.<sup>21</sup>

In 2001, in accordance Article 407 of the FERC license, the Licensee installed a downstream bypass to facilitate diadromous fish migration through the Project area. The downstream bypass is a combined facility with the upstream Denil fish ladder described in [Section 3.3.2](#). Specifically, the Denil fish ladder exit, also serves as the downstream bypass entrance, and is located at the downstream end (or right side) of angled (45 degrees) trashracks with 1-inch clear spacing. When operated as a downstream passage facility, the baffles are removed from the upper section of the Denil 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. Operational flows for the downstream fish bypass are 20 cfs, which is included as part of the Project minimum flow, when applicable.

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.<sup>22</sup> The Licensee's qualitative observations of fish passage confirmed that juvenile river herring successfully and safely passed the Project. The Licensee's

<sup>21</sup> FERC Accession No. 19991115-0673: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19991115-0673](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19991115-0673).

<sup>22</sup> FERC Accession Number: 20040405-0022: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20040405-0022](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20040405-0022).

qualitative observations were consistent with typical movement patterns associated with alosids in the region (i.e., juvenile downstream migration occurs between mid-July and mid-October).

In accordance with Article 409 of the FERC license, the Licensee undertook quantitative studies in 2004 and 2007 to determine the effectiveness of the installed downstream bypass at passing targeted fish species. In the 2004 study<sup>23</sup>, a total of 580 juvenile river herring were released into the Project impoundment. Accounting for control mortality a total of 371 fish were considered available to pass downstream. A total of 79 juvenile river herring were documented using the downstream bypass, resulting in an effectiveness of 21% (79/371). The effectiveness value did not account for fish that may have passed via spillage, suffered predatory loss, or did not have the inclination to emigrate. Other species including largemouth bass, juvenile centrarchids, American eel, and brook trout were documented using the downstream bypass during the study.

Based on these results, resource agencies recommended a second year of effectiveness testing to be completed in 2007. For the 2007 study<sup>24</sup> a total of 649 juvenile river herring were marked (fin-clipped) and released into the Project impoundment. A total of 6 of these marked juvenile river herring were documented using the downstream bypass. In addition, a total of 417 juvenile river herring that were not marked and were not part of the study sample group were documented using the downstream bypass during the study period. Further, during the study the Project was not generating during the entire outmigration period, and it is likely that emigrating juvenile river herring in the impoundment passed the Project via spill. The study provided qualitative evidence that juvenile river herring use the downstream bypass; however, several confounding factors made it difficult to fully quantify downstream passage effectiveness. Other species including largemouth and smallmouth bass, crappie, American eel, and several shiner species were documented using the downstream bypass during the study. No further monitoring of the downstream fish passage facility was required by FERC or the resource agencies.<sup>25</sup>

Operation of the fish passage facilities is coordinated annually with NHFGD. There are currently no passage performance standards required at the Project.

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<sup>23</sup> FERC Accession Number 20050406-0206:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20050406-0206](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20050406-0206).

<sup>24</sup> FERC Accession Number 20080208-0183:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20080208-0183](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20080208-0183).

<sup>25</sup> FERC Accession Number 20081029-0040:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20081029-0040](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20081029-0040).

### 3.4.2 Downstream Fish Passage Standards-Downstream ZOE

Criterion	Standard	Instructions
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"><li>• Explain why the facility does not impose a barrier to downstream fish passage in the designated zone, considering both physical obstruction and increased mortality relative to natural downstream movement (e.g., entrainment into hydropower turbines). Typically, tailwater/downstream zones will qualify for this standard since below a dam and powerhouse there is no facility barrier to further downstream movement. Bypassed reach zones must demonstrate that flows in the reach are adequate to support safe, effective and timely downstream migration.</li><li>• For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the species populations or to their access to habitat necessary for successful completion of their life cycles.</li><li>• Document available fish distribution data and the lack of fish species requiring passage in the vicinity.</li><li>• If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.</li></ul>

The Downstream ZOE (Zone 2) is using standard 1 to justify meeting the downstream fish passage standard since once the fish pass downstream of the dam into the tailwater, they are not restricted in any way. There is no barrier to restrict further downstream movement.

**TABLE 3.4.1-1: FISH SPECIES FOUND IN THE PROJECT VICINITY**

<b>Common Name</b>	<b>Scientific Name</b>
Alewife	<i>Alosa pseudoharengus</i>
American eel	<i>Anguilla rostrata</i>
American shad	<i>Alosa sapidissima</i>
Black crappie	<i>Pomoxis nigromaculatus</i>
Blueback herring	<i>Alosa aestivalis</i>
Bluegill	<i>Lepomis macrochirus</i>
Bridle shiner	<i>Notropis bifrenatus</i>
Brook trout	<i>Salvelinus fontinalis</i>
Brown bullhead	<i>Ameiurus nebulosus</i>
Brown trout	<i>Salmo trutta</i>
Common shiner	<i>Luxilus cornutus</i>
Eastern silvery minnow	<i>Hybognathus regius</i>
Fallfish	<i>Semotilus corporalis</i>
Golden shiner	<i>Notemigonus crysoleucas</i>
Largemouth bass	<i>Micropterus salmoides</i>
Longnose dace	<i>Rhinichthys cataractae</i>
Rainbow trout	<i>Oncorhynchus mykiss</i>
Rainbow smelt	<i>Osmerus mordax</i>
Redfin pickerel	<i>Esox americanus americanus</i>
Sea lamprey	<i>Petromyzon marinus</i>
Smallmouth bass	<i>Micropterus dolomieu</i>
White perch	<i>Morone Americana</i>
White sucker	<i>Catostomus commersoni</i>
Yellow perch	<i>Perca flavescens</i>

### 3.5 Shoreline and Watershed Protection Standards

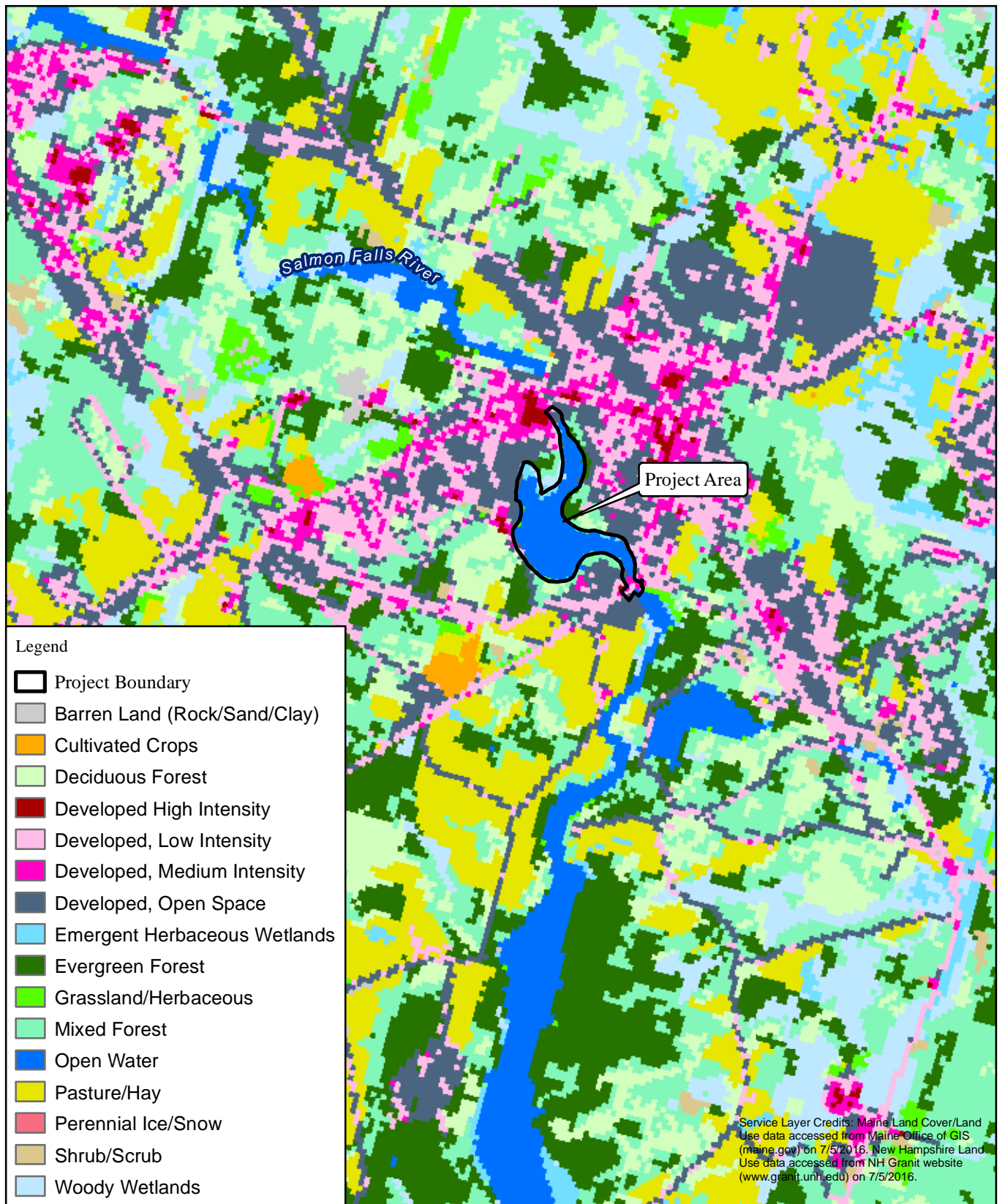
#### 3.5.1 Shoreline and Watershed Protection Standards-Impoundment and Downstream ZOE

Criterion	Standard	Instructions
E	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"><li>• If there are no lands with significant ecological value associated with the facility, document and justify this (e.g., describe the land use and land cover within the project boundary).</li><li>• Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.</li></ul>

Both the Impoundment (Zone 1) and Downstream (Zone 2) ZOE are using standard 1 to justify meeting the shoreline and watershed protection standard.

- There are approximately 7.3 acres of land and 60 acres of water contained within the FERC Project boundary.
- Existing land use and aesthetic resources at the Project consist of undeveloped forested riverbanks and scattered development along the river corridor. This Project has existed in its present form since 1923 and is an accepted part of the natural landscape. [Figure 3.5.1-1](#) shows land use designations in the Project vicinity.
- The Lands within the Project boundary are limited to those required for Project operations. The Project's run-of-river operation and stable pond elevations provide protection for the Project's shoreline areas.
- The 1996 FERC Environmental Assessment<sup>26</sup> describes the Project impoundment as being primarily surrounded by upland, however, in or adjacent to the 58-acre impoundment are about 13 acres of wetlands. Because of the relatively steep shoreline, most of these areas (4 of 6) are small, isolated forested or shrub wetland patches. There is one exception in the cove along the northwestern shore of the impoundment where there is an approximately 7-acre palustrine emergent marsh and scrub-shrub wetland. On the eastern side of this cove, there is a separate 4-acre marsh and shrub swamp.
- Below the Project powerhouse, the shoreline affected by the tailrace discharge is tidally influenced (experiencing a 2- to 3-foot tidal fluctuation) and is intertidal estuarine habitat.
- GMP does not have a shoreline management plan or policy with regards to permitting the development of piers, boat docks, or other shoreline facilities at the Project. In addition, GMP does not maintain a buffer zone around the Project impoundment. None of these provisions are required under the current FERC license.

<sup>26</sup> FERC Environmental Assessment: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_Number=19961231-0267](https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=19961231-0267).



South Berwick Hydroelectric Project  
FERC No. 11163  
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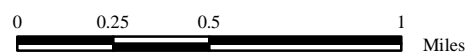


Figure 3.5.1-1:  
Land Use Designations  
in the Project Vicinity



### 3.6 Threatened and Endangered Species Standards

#### 3.6.1 Threatened and Endangered Species Standards: Impoundment and Downstream ZOE

Criterion	Standard	Instructions
F	2	<p><u>Finding of No Negative Effects:</u></p> <ul style="list-style-type: none"><li>• Identify all federal and state listed species that are or may be in the immediate facility area based on current data from the appropriate state and federal natural resource management agencies.</li><li>• Provide documentation that there is no demonstrable negative effect of the facility on any listed species in the area from an appropriate natural resource management agency or provide documentation that habitat for the species does not exist within the ZoE or is not impacted by facility operations.</li></ul>

Both the Impoundment (Zone 1) and Downstream (Zone 2) ZOE are using standard 2 to justify meeting the threatened and endangered species standard.

The USFWS's Information for Planning and Consultation (IPaC) ([Appendix E](#)) was used to conduct a search of the Project area to identify any species listed under the federal Endangered Species Act (ESA) as threatened or endangered<sup>27</sup>. The IPaC search results show one insect and one mammal to potentially inhabit the Project area, the monarch butterfly (*Danaus plexippus*), and the northern long-eared bat (NLEB) (*Myotis septentrionalis*).

On December 15, 2020, the USFWS found that listing the monarch butterfly as endangered or threatened under the ESA was warranted but was precluded by work on higher priority listing actions. With this listing decision, the monarch butterfly became a candidate species for listing under the ESA, and its status will be reviewed each year until it is no longer a candidate. In eastern North America, monarch butterflies travel north in the spring, from Mexico to Canada, over two to three successive generations, breeding along the way. The final generation in the fall makes the return trip to wintering sites in Mexico and coastal California. Unlike previous generations, which complete their life cycle in four weeks, these "super generation" monarch butterflies live for six to eight months and may travel thousands of miles to return to wintering grounds. These monarch butterflies then begin the multi-generational migration the following spring. Because monarch butterflies travel long distances, it is critical to maintain reliable sources of nectar plants for them to feed on and ample milkweed on which to lay their eggs. Because monarch butterflies are solely dependent on milkweed during the caterpillar stage, efforts to boost the number of milkweed stems are the basis for many monarch butterfly conservation plans.

The NLEB was listed as a federally threatened species under the ESA on May 4, 2015 and was recently proposed to be reclassified as endangered on March 23, 2022.<sup>28</sup> The NLEB is also a state-listed endangered species in New Hampshire and Maine. In January 2016, the USFWS finalized the 4(d) rule for this species, which focuses on preventing effects on bats in hibernacula associated with the spread of white-nose syndrome and effects of tree removal on roosting bats or maternity colonies. As part of the 4(d) rule, USFWS proposes that take incidental to certain activities would not be prohibited, if the following criteria are met: (1) occurs more than 0.25 mile from a known, occupied hibernacula; (2) avoids cutting or destroying known, occupied maternity roost trees during the pup season (June 1 – July 31); and (3) avoids cutting or destroying any tree within a 150-foot radius of a known, occupied maternity tree during the pup

<sup>27</sup> USFWS. IPaC – Information for Planning and Consultation. [Online] URL: <https://ecos.fws.gov/ipac/>. Date accessed: 2/2/2022.

<sup>28</sup> Federal Register. <https://www.federalregister.gov/documents/2022/03/23/2022-06168/endangered-and-threatened-wildlife-and-plants-endangered-species-status-for-northern-long-eared-bat>. Date accessed: 4/25/2022.

season. 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.

The New Hampshire Natural Heritage Bureau (NHNHB) DataCheck Tool<sup>29</sup> 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) ZOE is considered a brackish riverbank marsh system by NHNHB due to its rarity and vulnerability. This system contains known occurrences of five (5) endangered plants species and one (1) wildlife species of concern ([Table 3.6.1-1](#)). Publicly available MDIFW GIS data show one occurrence of an unidentified rare animal, with a special concern designation, within the vicinity of the Project boundary.<sup>30</sup>

The Project is operated in run of river mode with stable headpond. Periodic dam maintenance may require some drawdown for which the resource agencies are notified. In addition, the impoundment may drop below the elevation of 2 feet from normal full pond at times when pinned flashboards fail. Normal routine Project operations, however, are not anticipated to have a negative effect on the known federal and state listed terrestrial and aquatic species identified in the Impoundment (Zone 1) and Downstream (Zone 2) ZOE.

Routine Project maintenance activities are not anticipated to affect federal, and state listed terrestrial species. Existing vegetation management activities at the Project include mowing, which occurs approximately every week, in grassed areas adjacent to the powerhouse, adjacent to the intake headworks during the months of May through September. Vegetation on the Project dam abutments is treated with herbicide (KleenUp®) once per year, during the spring or early summer. The abutments are further maintained during the growing season (May through September) with a string trimmer and handheld cutters once a month. These areas are outside of the known occurrence ranges of the identified terrestrial species. As such, no negative effects are anticipated by this periodic activity.

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<sup>29</sup> [NHB DataCheck Tool \(state.nh.us\)](#), Date accessed: 04/15/2022.

<sup>30</sup> MDIFW. [Online] URL: [Endangered Threatened and Special Concern Wildlife Habitat - \(Summarized\) | Endangered Threatened and Special Concern Wildlife Habitat - \(Summarized\) | ArcGIS Hub Home](#). Date accessed: 03/28/2022.

**TABLE 3.6.1-1: STATE OF NEW HAMPSHIRE-THREATENED AND ENDANGERED PLANT  
AND WILDLIFE SPECIES RECORDED NEAR THE PROJECT AREA**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Type</b>	<b>State Status</b>	<b>General Location</b>
Atlantic mudwort	<i>Limosella australis</i>	Plant	Endangered	Downstream ZOE
eastern grasswort	<i>Lilaeopsis chinensis</i>	Plant	Endangered	Downstream ZOE
great bur-reed	<i>Sparganium eurycarpum</i>	Plant	Threatened	Downstream ZOE
pygmy-weed	<i>Crassula aquatica</i>	Plant	Endangered	Downstream ZOE
seaside brookweed	<i>Samolus valerandi</i>	Plant	Endangered	Downstream ZOE
American Eel	<i>Anguilla rostrata</i>	Fish	Species of Concern	Downstream ZOE
Bald Eagle	<i>Haliaeetus leucocephalus</i>	Bird	Species of Concern	Impoundment ZOE

### 3.7 Cultural and Historic Resources Standards

#### 3.7.1 Cultural and Historic Resources Standards: Impoundment and Downstream ZOE

Criterion	Standard	Instructions
G	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"><li>• Document that there are no cultural or historic resources located on facility lands associated with the designated ZoE that can be affected by construction or operations of the facility; or</li><li>• Document that the facility construction and operation have not in the past, nor currently adversely affect any cultural or historic resources that are present on facility lands in the designated ZoE; and</li><li>• Provide a letter from the state and tribal (if applicable) historic preservation office that confirms no effect (this may be newly obtained or issued during prior FERC licensing or exemption proceedings).</li></ul>

Both the Impoundment (Zone 1) and Downstream (Zone 2) ZOE are using standard 1 to justify meeting the cultural and historic resources standard.

- The 1996 FERC Environmental Assessment stated that Phase I archeological surveys of the Project area conducted during the previous licensing process discovered no resources within the potential Project impact zone. Additionally, the Maine Historic Preservation Commission (MHPC) 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.<sup>31</sup> A recent check of the Maine historic resources mapper indicates none of the Project facilities are of cultural or historic significance.<sup>32</sup>
- In addition, to protect cultural resources, Article 413 of the FERC License required consultation with the State Historic Preservation Officer (SHPO) and preparation and implementation of a cultural resources management plan if archeological or historic sites were discovered during construction of the proposed recreation sites or fish passage facilities or during Project operation. No discoveries were made during construction, and no cultural resources have been discovered during the term of the current FERC License. Therefore, no consultation or cultural resources management plan has been required to date.
- Adjacent to the Project boundary is the Counting House, which was listed on the National Register of Historic Places in 1975.<sup>33</sup> The Counting House is not part of the Project but is the last structural remnant of the Portsmouth Company Cotton Mills at Quamphegan Falls Landing. The Portsmouth Mills were established in 1832 near the Project site.

<sup>31</sup> FERC Environmental Assessment at page 17:  
[https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19961231-0267](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19961231-0267).

<sup>32</sup> Maine Historic Preservation Commission, Cultural & Architectural Resource Management Archive Map Viewer:  
<https://www.maine.gov/mhpc/quick-links/carma>. Date accessed: 04/27/2022.

<sup>33</sup> National Archives Catalog. <https://catalog.archives.gov/id/88687823>. Date accessed: 04/27/2022.

### 3.8 Recreational Resources Standards

- The most recent FERC Environmental and Recreation Inspection was conducted on September 11, 2008.<sup>34</sup> On September 15, 2008 FERC issued a follow-up letter requiring the Licensee to submit a plan and schedule for submission of an updated Project public safety plan and erosion repair at the Foundry Street boat launch.<sup>35</sup> The requested plan and schedule were submitted to FERC on October 14, 2008. The Licensee subsequently notified FERC on October 27, 2008<sup>36</sup> that an updated public safety plan for the Project was submitted on October 20, 2008. In addition, in this filing the Licensee notified FERC that the minor erosion at the Foundry Street boat launch was repaired of October 22, 2008.

#### 3.8.1 Recreational Resources Standards: Impoundment ZOE

Criterion	Standard	Instructions
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"><li>• Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations.</li><li>• Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.</li></ul>

The Impoundment ZOE (Zone 1) is using standard 2 to justify meeting the recreational resources standard.

- Article 410 required the Licensee to file a proposed agreement with the Town of Rollinsford to improve and maintain the existing Foundry Street boat launch on the Project impoundment. The filing was made on August 25, 1999.<sup>37</sup>
- Article 412 required the Licensee to file a final recreation plan to include the improvements to the Foundry Street boat launch on the Project impoundment, development of the Counting House Park facility and installation of directional signs for recreationists. The plan was filed on March 9, 2000.<sup>38</sup>
- The Foundry Street boat launch is located on the New Hampshire side of the Salmon Falls River approximately half a mile upstream of the Project dam ([Figure 3.8-1](#)). This facility provides a gazebo, parking for approximately 15 vehicles, and a concrete boat ramp that provides access to the Project waters above the dam. The boat launch is adjacent to Gold Star Park, which has a baseball diamond and provides informal shoreline access to the Salmon Falls River upstream of the Project ([Figure 3.8-2](#)). The site is owned by the Town of Rollinsford and per Article 410 of the License, the Licensee filed with FERC an agreement with the Town of Rollinsford that described improvements to the boat launch that were undertaken by the Licensee in 2000 as well as measures to maintain the improved boat launch. The improvements consisted of removing, grading and adding new pavement to the existing boat ramp, installing 12-foot-long concrete log planks over the existing gravel ramp extension, grading the existing gravel parking area and

<sup>34</sup> FERC Accession No. 20081118-0126: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20081118-0126](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20081118-0126).

<sup>35</sup> FERC Accession Number: 20080922-0031: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20080922-0031](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20080922-0031).

<sup>36</sup> FERC Accession Number: 20081027-5124: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20081027-5124](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20081027-5124).

<sup>37</sup> FERC Accession No. 19990826-0340: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=19990826-0340](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=19990826-0340).

<sup>38</sup> FERC Accession No. 20000310-0136: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000310-0136](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000310-0136).

repairing erosion. After the improvements to the facility were completed in the Fall of 2000, the Town of Rollinsford assumed responsibility for maintaining the facility.

### 3.8.2 Recreational Resources Standards: Downstream ZOE

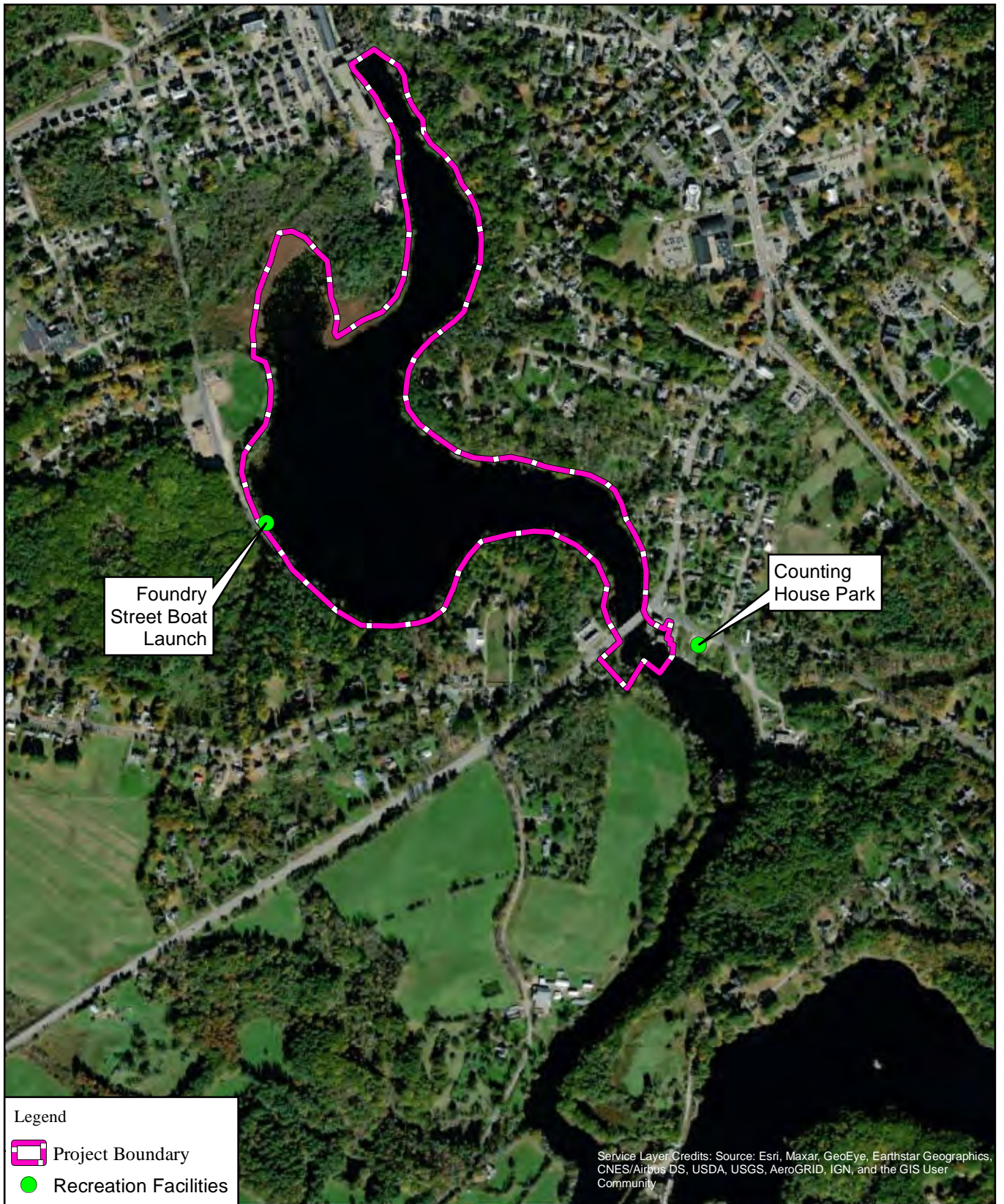
<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
H	2	<u>Agency Recommendation:</u> <ul style="list-style-type: none"> <li>• Document any resource agency recommendations and any enforceable recreation plan that is in place for recreational access or accommodations.</li> <li>• Document that the facility in the designated ZoE is in compliance with all such recommendations and plans.</li> </ul>

The Downstream ZOE (Zone 2) is using standard 2 to justify meeting the recreational resources standard.

- Article 411 required 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.<sup>39</sup>
- Article 412 required the Licensee to file a final recreation plan to include the improvements to the Foundry Street boat launch on the Project impoundment, development of the Counting House Park facility and installation of directional signs for recreationists. The plan was filed on March 9, 2000.<sup>39</sup>
- As required by Articles 411 and 412 of the License, the Licensee constructed Counting House Park in cooperation with the Town of South Berwick, Maine. The Park is located adjacent to the Project powerhouse and the Town of South Berwick's Counting House Museum off Liberty Street in South Berwick, Maine ([Figure 3.8-1](#)). The parcel is also adjacent to the Town of South Berwick Water Treatment Facility. Construction included excavation and grading, installation of an 18-car parking lot, installation of ornamental trees and shrubs, installation of a carry-in boat launch and loaming and seeding of open space areas for passive recreation use ([Figure 3.8-3](#)). The Park land was owned by the Licensee but was transferred to the Town of South Berwick after construction of the Park was completed by the Licensee in 2001. The land transfer provided for easements to include Licensee access to the east side of the Project, as well as access for Central Maine Power Company for operation and maintenance of their nearby transmission line. The Licensee was responsible for the original construction of the park; however, maintenance of the Park is performed by the Town of South Berwick.
- The recreation facilities required under Article 412 also include provisions for signs directing recreationists to the Foundry Street boat launch and Counting House Park facilities. Accordingly, a sign with the name of the Project, owner of the Project, FERC License Number, directions to the Foundry Street boat launch and Counting House Park, the Project's and owner's telephone numbers and a statement that the recreational facilities are open to the public without discrimination are posted in front of the Project powerhouse, and signage is also provided at the Foundry Street boat launch.

<sup>39</sup> FERC Accession No. 20000310-0136: [https://elibrary.ferc.gov/eLibrary/filelist?accession\\_number=20000310-0136](https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20000310-0136)





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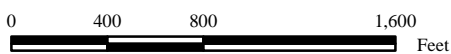


Figure 3.8-1:  
Recreation Facilities  
and Access Points



**FIGURE 3.8-2: FOUNDRY STREET BOAT LAUNCH**



**FIGURE 3.8-3: VIEW OF COUNTING HOUSE PARK**



## 4 CONTACT FORMS

### 4.1 Applicant-Related Contacts

<b>Facility Owner:</b>	
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701
<b>Facility Operator (if different from Owner):</b>	
Name and Title	
Company	
Phone	
Email Address	
Mailing Address	
<b>Consulting Firm / Agent for LIHI Program (if different from above):</b>	
Name and Title	Kirk Smith, Director of Licensing
Company	Gomez and Sullivan Engineers, DPC
Phone	603.340.7667
Email Address	ksmith@gomezandsullivan.com
Mailing Address	41 Liberty Hill Road - Building 1, P.O. Box 2179, Henniker, NH 03242
<b>Compliance Contact (responsible for LIHI Program requirements):</b>	
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701
<b>Party responsible for accounts payable:</b>	
Name and Title	John Greenan, Engineer
Company	Green Mountain Power
Phone	802-770-2195
Email Address	John.Greenan@greenmountainpower.com
Mailing Address	1252 Post Road, Rutland, VT 05701

#### 4.2 Current Relevant State, Federal, and Tribal Resource Agency Contacts (excluding FERC).

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	United States Fish and Wildlife Service	<input checked="" type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input checked="" type="checkbox"/> Watershed <input checked="" type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Kenneth Hogan North Atlantic-Appalachian Region Hydropower Program Coordinator	
Phone	603-227-6426	
Email address	kenneth_hogan@fws.gov	
Mailing Address	70 Commercial Street, Suite 300, Concord, New Hampshire 03301	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	National Marine Fisheries Services	<input checked="" type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Christopher Boelke, Chief, New England Branch, Habitat and Ecosystem Services Division	
Phone	978-281-9131	
Email address	christopher.boelke@noaa.gov	
Mailing Address	55 Great Republic Drive, Gloucester, MA 01930	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	New Hampshire Department of Environmental Services	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input checked="" type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	James Tilley, Water Quality Certification Supervisor	
Phone	603-271-0699	
Email address	james.w.tilley@des.nh.gov	
Mailing Address	29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	New Hampshire Fish and Game Department	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input checked="" type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input checked="" type="checkbox"/> Recreation
Name and Title	Mike Dionne, Environmental Review Coordinator	
Phone	603-271-1136	
Email address	Michael.Dionne@wildlife.nh.gov	
Mailing Address	11 Hazen Drive, Concord, NH 03301	



Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	New Hampshire Department of Historical Resources	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input checked="" type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Benjamin Wilson, Director and State Historic Preservation Officer	
Phone	603-271-3483	
Email address	benjamin.wilson@dncr.nh.gov	
Mailing Address	19 Pillsbury Street- 2nd Floor, Concord, NH 03301-3570	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Environmental Protection	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input checked="" type="checkbox"/> Recreation
Name and Title	Kyle Olcott, Hydropower Coordinator, Bureau of Land Resources	
Phone	207-641-9012	
Email address	Kyle.Olcott@maine.gov	
Mailing Address	17 State House Station, 28 Tyson Drive, Augusta, ME 04333-0017	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Inland Fisheries and Wildlife	<input checked="" type="checkbox"/> Flows <input checked="" type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input checked="" type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input checked="" type="checkbox"/> Recreation
Name and Title	John Perry, Environmental Review Coordinator	
Phone	207-287-5254	
Email address	John.Perry@maine.gov	
Mailing Address	284 State Street, 41 SHS, Augusta, Maine 04333-0041	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Department of Marine Resources	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input checked="" type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Gail Wippelhauser, Ph. D, Marine Resources Scientist	
Phone	207-624-6349	
Email address	gail.wippelhauser@maine.gov	
Mailing Address	21 State House Station, Augusta, ME 04333-0021	

Agency Contact		Area of Responsibility (check applicable boxes)
Agency Name	Maine Historic Preservation Commission	<input type="checkbox"/> Flows <input type="checkbox"/> Water Quality <input type="checkbox"/> Fish/Wildlife <input type="checkbox"/> Watershed <input type="checkbox"/> T&E Species <input checked="" type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Mr. Kirk Mohny, Director and State Historic Preservation Officer	
Phone	207-287-3811	
Email address	kirk.mohny@maine.gov	
Mailing Address	55 Capitol Street, 65 State House Station, Augusta, ME 04333-0065	

## 5 ATTESTATION AND WAIVER FORM

All applications for LIHI Certification must include the following statement before they can be reviewed by LIHI:

### ATTESTATION

*As an Authorized Representative of Green Mountain Power, the Undersigned attests that the material presented in the application is true and complete.*

*The Undersigned acknowledges that the primary goal of the Low Impact Hydropower Institute's certification program is public benefit, and that the LIHI Governing Board and its agents are not responsible for financial or other private consequences of its certification decisions.*

*The Undersigned further acknowledges that if LIHI Certification of the applying facility is granted, the LIHI Certification Mark License Agreement must be executed prior to the final certification decision and prior to marketing the electricity product as LIHI Certified® (which includes selling RECs in a market that requires LIHI Certification).*

*The Undersigned further agrees to hold the Low Impact Hydropower Institute, the Governing Board, and its agents harmless for any decision rendered on this or other applications, from any consequences of disclosing or publishing any submitted certification application materials to the public, or on any other action pursuant to the Low Impact Hydropower Institute's certification program.*

### FOR PRE-OPERATIONAL CERTIFICATIONS:

*The Undersigned acknowledges that LIHI may suspend or revoke the LIHI Certification should the impacts of the facility, once operational, fail to comply with the LIHI program requirements.*

Authorized Representative:

Name: John Greenan

Title: Engineer

Authorized Signature: \_\_\_\_\_

Date: October 12, 2022.

## **APPENDIX A: PROJECT FACILITY PHOTOGRAPHS**



**FIGURE A-1: PROJECT DAM AND POWERHOUSE**



**FIGURE A-2: PROJECT IMPOUNDMENT AT FOUNDRY STREET BOAT RAMP**





**FIGURE A-3: INTAKE HEADWORKS AND POWERHOUSE**



**FIGURE A-4: PROJECT POWERHOUSE AND SUBSTATION**



**FIGURE A-5: DENIL FISH LADDER**





**FIGURE A-6: DENIL FISH LADDER EXIT/ENTRANCE TO DOWNSTREAM FISH PASSAGE FACILITY**





**FIGURE A-7: DOWNSTREAM FISH PASSAGE FACILITY EXIT**



## **APPENDIX B: FERC LICENSE ORDER**

81 FERC ¶ 62,172

UNITED STATES OF AMERICA  
FEDERAL ENERGY REGULATORY COMMISSION

Consolidated Hydro Maine, Inc. )

Project No. 11163-000

ORDER ISSUING LICENSE  
(MINOR PROJECT)

INTRODUCTION

DEC 9 1997

On June 28, 1991, Consolidated Hydro Maine, Inc. filed an application with the Federal Energy Regulatory Commission (Commission) for an original license to continue to operate and maintain the unlicensed 1.2-megawatt (MW) South Berwick Hydroelectric Project, located on the Salmon Falls River in the towns of South Berwick, York County, Maine, and Rollinsford, Strafford County, New Hampshire. 1/ On September 26, 1996, Consolidated Hydro Maine, Inc. filed for an amendment of license to change the name of the applicant from Consolidated Hydro Maine, Inc. to Consolidated Hydro New Hampshire, Inc. (CHNHI or applicant).

BACKGROUND

The Commission issued a public notice of CHNHI's application for original license on February 5, 1992. The State of Maine, State Planning Office, filed an untimely motion to intervene in this proceeding on April 27, 1992. This motion to intervene was unopposed. The motion is not in opposition to the project and has been granted. The United States Environmental Protection Agency (EPA), Region 1, also filed an untimely motion to intervene in this proceeding on August 18, 1997. CHNHI filed an objection to this motion to intervene on September 2, 1997. The motion is not in opposition to the project and was granted on September 10, 1997.

The Commission issued a Notice of Application Ready for Environmental Analysis (REA) on February 9, 1993. Comment

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- 1/ The project has been owned and operated by Consolidated Hydro Maine, Inc. since 1986. The Salmon Falls River is a navigable waterway of the United States for its entire length (Spaulding Fiber Company, EL78-41, 12 FERC ¶ 61,028, July 9, 1980). On September 30, 1988, the Director, Office of Hydropower Licensing (OHL) issued an Order Finding Hydroelectric Project Jurisdiction for the South Berwick Project under Section 23(b) of the Federal Power Act (FPA). The Director determined that, because the project is located on a navigable waterway of the United States, the project requires a license to continue to operate. See 44 FERC ¶ 62,345.

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DEC 9 1997

Project No. 11163-000

-2-

letters on the REA received prior to the April 12, 1993, deadline specified in this public notice were filed by the State of New Hampshire, Fish and Game Department dated March 31, 1993; State of Maine, Department of Environmental Protection dated April 2, 1993; U.S. Department of the Interior dated April 5, 1993; and the State of Maine, State Planning Office dated April 8, 1993. CHNHI responded to these comments by letter dated June 3, 1993.

The Commission's staff issued the South Berwick Hydroelectric Project draft Environmental Assessment (DEA) for public comment on February 23, 1995. In response, comment letters were received from the State of New Hampshire, Fish and Game Department dated March 29, 1995; State of New Hampshire, Department of Environmental Services dated April 6, 1995; U.S. Environmental Protection Agency dated April 6, 1995; U.S. Department of the Interior, Fish and Wildlife Service dated April 7, 1995; and CHNHI dated April 21, 1995. These comments have been considered in preparing the final Environmental Assessment (EA) which is attached to this order.

The Commission's staff issued the South Berwick Hydroelectric Project EA on December 23, 1996. A letter was filed by CHNHI dated February 4, 1997, which requested a conference to discuss the economic analysis contained in the EA. This conference was held on July 1, 1997.

#### A. Project Description

The South Berwick dam was originally constructed in 1831. In 1923, the project was redeveloped and the existing powerhouse was constructed. The current project consists of: (1) a concrete gravity dam with a concrete spillway section, which uses wooden flashboards; (2) an impoundment that is about 1 mile long and contains 116 acrefeet of usable storage; (3) a concrete intake structure consisting of three headgates that lead to three penstocks and two sluice gates; (4) a powerhouse housing three turbine units; and (5) appurtenant facilities. CHNHI plans capital improvements to the project including turbine-generator rehabilitation, utility protection upgrade, dam repairs and penstock repairs. These improvements will increase annual project generation. A more detailed project description can be found in ordering paragraph (B) (2).

The total rated capacity of the three turbine-generators is 1,200 kilowatts (kW). The project's hydraulic range varies from 50 to 885 cubic feet per second (cfs). The project presently operates in a manual run-of-river mode most of the time, matching inflows from upstream projects as closely as possible. During periods of low flow, the project operates as a modified peaking project (12 inch elevation drop in the summer and fall and up to 24 inches in the winter to manage ice and protect against flashboard failure). CHNHI proposes to continue this mode of

Project No. 11163-000

-3-

operation. There are no primary transmission lines included in this project.

CHNHI does not own, operate, or maintain any recreation facilities within the project boundaries, but does allow recreationists to cross its property to gain access to the river below the project. Access for water-based recreation on the project impoundment is available at a public boat launch and parking area on Foundry Street in Rollinsford. There is also a dirt road and paths that allow access to the tailrace area. CHNHI proposes to transfer land to the town of South Berwick for the development of a park below the project.

#### B. Water Quality Certification

Section 401(a)(1) of the Clean Water Act (CWA) <sup>2/</sup> requires an applicant for a federal license or permit for any activity that may result in a discharge into navigable waters of the United States to provide to the licensing or permitting agency certification from the state in which the discharge originated that such discharge will comply with certain sections of the CWA. If a state fails to act on a request for certification within one year, the certification requirement is waived. <sup>3/</sup> Section 401(d) of the CWA <sup>4/</sup> provides that state certifications shall set forth conditions necessary to ensure that applicants comply with specific portions of the CWA and with appropriate requirements of state law.

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 Maine Department of Environmental Protection (MDEP) is responsible for issuing the 401 Water Quality Certificate (WQC) for this project. <sup>5/</sup>

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<sup>2/</sup> 33 U.S.C. § 1341.

<sup>3/</sup> 33 U.S.C. § 1341 (a) (1).

<sup>4/</sup> 33 U.S.C. § 1341 (d)

<sup>5/</sup> The New Hampshire Department of Environmental Services (NHDES) (supported by the U.S. Environmental Protection Agency) claims that it also has authority to issue a water quality certificate for this project because water is sometimes discharged over the crest of the dam, half of which is in New Hampshire. This issue has become moot, however, because NHDES failed to act on CHNHI's application for certification within the one-year time period set forth in Section 401. In any event, I am requiring run-of-river, stable pond operation of the

(continued...)

Project No. 11163-000

-4-

On July 9, 1991, MDEP received CHNHI's original application for a WQC. CHNHI subsequently withdrew and refiled its application on July 6, 1992; June 23, 1993; and again on June 8, 1994. On May 25, 1995, MDEP issued an order granting Water Quality Certification for the project.

MDEP's WQC for the South Berwick Project lists items labeled "1" through "8." These conditions are presented in their entirety in Appendix A. My findings regarding these conditions follow. <sup>6/</sup>

Condition 1 requires CHNHI to operate their upstream Lower Great Falls Project and the South Berwick Project discharging a minimum flow of 44 cfs or inflow, whichever is less. During the period from June 1 to September 30, when the 3-day running average of water temperature times river flow duration is greater than 1,500, this condition requires that the Lower Great Falls, Rollinsford, and South Berwick Projects be operated in a run-of-river mode. Additionally, this condition requires monitoring and reporting of flow data. Staff considered the requirements for minimum flows and monitoring, and recommended that the license be conditioned to include flows and monitoring plans that meet MDEP's goals. Article 402 of this license requires the project to operate in run-of-river mode. <sup>7/</sup> Article 405 of this license requires a plan for monitoring and reporting of minimum flows.

Condition 2 requires CHNHI to submit a plan to monitor temperature and flows in the Salmon Falls River. Article 405 of the license requires CHNHI to monitor flows at the project. In addition, Article 406 of the license requires CHNHI to develop, in consultation with the state, a plan for dissolved oxygen (DO) and temperature monitoring at the project. This plan is to be filed with the Commission, for approval.

Condition 3 requires CHNHI to maintain the impoundment

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(...continued)

project, and tailrace water quality monitoring, which were conditions in NHDES' draft water quality certification.

<sup>6/</sup> See Great Northern Paper, Inc., 77 FERC ¶ 61,068 at pp. 61,271-73 (1996).

<sup>7/</sup> The run-of-river operation at the South Berwick Project required by Article 402 would provide flows in excess of those required by MDEP in this condition. Therefore, while we do not adopt the specific minimum flow recommendation contained in Condition 1, run-of-river operation would provide greater benefits to water quality and aquatic habitat than sought by MDEP in the WQC.



Project No. 11163-000

-5-

within 1 foot of full pond elevation (24.95 feet mean sea level [msl]), except when the product of the 3-day average of temperature times flow duration is greater than 1,500, at which time the project will be operated in a strict run-of-river mode during the period from June 1 through September 30. From October 1 through May 31, the project is to be operated so that the impoundment water level remains within 2 feet of full pond elevation of 24.95 feet msl. Staff's recommendations for stable pond management and run-of-river operation would be more restrictive than the impoundment levels required by this condition. Article 403 requires stable pond operation between May 1 and October 31 of each year. Article 404 requires development and implementation of a plan for stable pond operation during the rest of the year, including the winter season.

Condition 4 requires that CHNHI transfer land to the town of South Berwick to assist in the development of a park downstream of the powerhouse and assist the town of Rollinsford, New Hampshire, with the repair of the existing boat launch site on Foundry Street. Staff concluded that the development of the park and repair of the Rollinsford boat launch are necessary. CHNHI is ultimately responsible, however, for developing and maintaining these facilities. Article 410 of this license requires CHNHI to repair or rebuild the boat launch on the impoundment, and Article 411 requires that CHNHI develop and maintain the park downstream of the project.

Condition 5 requires that upstream and downstream fish passage facilities be installed and operated at the South Berwick Project within 3 years following the adoption of a formal anadromous fish restoration plan for the Salmon Falls River by the Maine Department of Marine Resources. Staff concluded that the immediate development of fish passage facilities at the South Berwick Project would enhance the existing coastal bait fish industry and provide benefits in terms of prey for gamefish. Therefore, I have included Articles 407 and 408 in the license to require development of both downstream and upstream passage facilities.

As discussed in the Commission order issuing a license for the Moosehead Project (FERC Project No. 2671) <sup>8/</sup>, we are required by the recent decision of the United States Court of Appeals in American Rivers, et al. v. FERC <sup>9/</sup> to include all conditions in a water quality certificate as conditions on a license even if we believe that the conditions may be outside the scope of Section 401. While I have included certain of these

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<sup>8/</sup> Kennebec Water Power Company, 81 FERC ¶ 61,254.

<sup>9/</sup> No. 96-4110, 1997 U.S. App. LEXIS 30372.

Project No. 11163-000

-6-

conditions as license articles, all of the Section 401 conditions are conditions to this license. In any event, nothing in the conditions of the water quality certification shall be viewed as restricting the Commission's ability or the licensee's obligation, under the Federal Power Act, to take timely action necessary to protect human life, health, property, or the environment.

#### COASTAL ZONE MANAGEMENT

The South Berwick Project is located within the state-designated Coastal Zone Management area in Maine and New Hampshire. Under Section 307(c)(3)(A) of the Coastal Zone Management Act (CZMA), 16 U.S.C. § 1456(3)(A), the Commission cannot issue a license for a project within or affecting a state's coastal zone, unless the state CZMA agency concurs with the license applicant's certification of consistency with the state's CZMA program, or the agency's concurrence is conclusively presumed by its failure to act within 180 days of its receipt of the applicant's certification. The State of Maine, State Planning Office (in a letter dated October 10, 1995) determined that the South Berwick Project is consistent with applicable elements of the Maine Coastal Program.

CHNHI (letter dated October 12, 1995) submitted a federal consistency certification to the Office of State Planning, New Hampshire Coastal Program, for a determination regarding the South Berwick Project's consistency with Federal and New Hampshire Coastal Programs. The New Hampshire Coastal Program (letter dated April 29, 1996) denied concurrence with CHNHI's consistency certification due to the lack of sufficient information to indicate that the project is consistent with the enforceable policies of New Hampshire's federally approved coastal management program.

By letter dated June 27, 1997, Marcia Brown Thunberg, Federal Consistency Coordinator, New Hampshire Coastal Program, Office of State Planning, stated that the South Berwick Project, as conditioned in the final environmental assessment, was consistent with New Hampshire's federally approved coastal management program. Since I am now issuing a license for that project corresponding to the staff recommended alternative in the environmental assessment, I conclude that the State of New Hampshire has no further objection to this action based on the Coastal Zone Management Act.

#### SECTION 18 FISHWAY PRESCRIPTION

Section 18 of the FPA, 16 U.S.C. 811, provides the Secretary of the Interior the authority to prescribe fishways at

Project No. 11163-000

-7-

Commission-licensed projects. <sup>10/</sup> Interior, by letter dated April 5, 1993, prescribed the following measures pursuant to Section 18:

1. The Licensee shall ensure that the design, location, installation (including scheduling), maintenance, and operation of fishways at the South Berwick Dam Project conform to the specifications of the Fish and Wildlife Service.
2. The Secretary of the Interior's authority to prescribe the construction, operation, and maintenance of fishways is reserved under Section 18 of the Federal Power Act.

These above items, with the exception of the scheduling component, are appropriate Section 18 measures, and are included in the license as Articles 407 and 408.

#### RECOMMENDATIONS OF FEDERAL AND STATE FISH AND WILDLIFE AGENCIES AND SECTION 10(j) PROCESS

Section 10(j) of the FPA, 16 U.S.C. 803, requires the Commission to include license conditions, based on recommendations of federal and state fish and wildlife agencies for the protection, mitigation of adverse impacts to, and enhancement of fish and wildlife resources unless such conditions would conflict with the FPA or other law.

Recommendations were submitted pursuant to Section 10(j) by the U.S. Department of the Interior (Interior), Maine Department of Environmental Protection (MDEP), and the New Hampshire Fish and Game Department (NHFG). In the EA, staff recommended, and I adopt herein, conditions consistent with the agencies recommendations that the licensee operate the project in run-of-river mode (Article 402); install both upstream and downstream fish passage facilities (Articles 407 and 408); develop a plan for monitoring minimum flows (Article 405); monitor dissolved oxygen levels (Article 406); and limit drawdowns in the impoundment to 1-foot throughout the year (Articles 403 and 404).

I conclude that fish and wildlife resources affected by the project are adequately protected, mitigated, and enhanced, and that the fish and wildlife measures required in this order comply with the requirements of the FPA.

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<sup>10/</sup> Section 18 of the FPA provides: "The Commission shall require the construction, maintenance, and operation by a licensee at its own expense of....such fishways as may be prescribed by the Secretary of Commerce or the Secretary of Interior, as appropriate."

Project No. 11163-000

-8-

The agencies also made a number of recommendations which, because they are not recommendations for specific measures to protect fish and wildlife, do not come within the scope of Section 10(j), but were considered under FPA Section 10(a)(1). The NHFG recommended that if DO levels fall below state standards, the licensee should be required to take measures to prevent such depletions. However, NHFG did not identify specific provisions to be implemented or the specific standard that must be met. This recommendation is therefore not a specific measure to enhance fish and wildlife resources and thus is outside the scope of Section 10(j). The required measures for run-of-river operation and flow monitoring for the tailrace should reduce or eliminate violations of state water quality standards.

NHFG stated that if the operational mode of the upstream Lower Great Falls Project was clarified to require run-of-river operation, they would withdraw the recommendation for DO monitoring. The Commission issued an order, dated November 17, 1995, requiring run-of-river operation at the Lower Great Falls Project, negating the need for NHFG's recommendation for additional DO monitoring.

Interior and NHFG recommend that the licensee monitor and report recreation use every 5 years, ensure public access to the impoundment and tailrace, and provide public boat launch facilities on the impoundment and in the tailrace. Because these recommendations are not specific measures to protect fish and wildlife, they do not come within the scope of Section 10(j), but were considered under FPA Section 10(a)(1). Recreational use reporting is required by the Commission every 6 years using the Form 80 reporting procedures. I conclude that this level of monitoring is adequate for the project. Articles 410 and 411 provide for public access to the project impoundment and tailrace and boat launching facilities on the impoundment in Rollinsford, New Hampshire and below the tailrace as part of the Counting House Park facility in South Berwick, Maine.

#### COMPREHENSIVE PLANS

Section 10(a)(2) of the FPA requires the Commission to consider the extent to which a project is consistent with federal or state comprehensive plans for improving, developing, or conserving a waterway or waterways affected by the project. Under Section 10(a)(2), federal and state agencies filed a total of 15 comprehensive plans of which we identified 5 Maine, 6 New Hampshire, and 4 United States plans to be applicable. <sup>11/</sup> This

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<sup>11/</sup> Atlantic States Marine Fisheries Commission, Supplement to American Shad and River Herrings Fishery Management Plan; Fish and Wildlife Service, Fisheries USA: The Recreational (continued...)

Project No. 11163-000

-9-

license would not conflict with any of these plans.

### COMPREHENSIVE DEVELOPMENT

Sections 4(e) and 10(a)(1) of the FPA, 16 U.S.C. §§ 797(e) and 803(a)(1), require the Commission, in acting on applications for license, to give equal consideration to the power and development purposes and to the purposes of energy conservation, the protection, mitigation of damage to, and enhancement of fish and wildlife, the protection of recreational opportunities, and the preservation of other aspects of environmental quality. Any license issued shall be such as in the Commission's judgment will be best adapted to a comprehensive plan for improving or developing a waterway or waterways for all beneficial public uses. The decision to license this project, and the terms and conditions included herein, reflect such consideration.

#### A. Recommended Alternative

Based on staff's independent review and evaluation of the proposed South Berwick Project, agency recommendations, and the no-action alternative as documented in the EA, I am issuing an original license for the South Berwick Project, with additional staff-recommended mitigative measures, as the preferred option. I have selected this option because (1) with mitigation, the environmental effects of operating the project would be relatively minor; (2) the proposed mitigation measures would

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Fisheries Policy of the U.S. Fish and Wildlife Service; Maine Department of Conservation, Maine rivers study final report; Maine State Planning Office, State of Maine comprehensive rivers management plan; Maine State Planning Office, Maine comprehensive rivers management plan Volume 4; Maine Department of Inland Fisheries and Wildlife, Salmon Falls River, Survey Report; Maine Department of Inland Fisheries and Wildlife, Statewide River Fisheries Management Plan; New Hampshire Office of State Planning, New Hampshire coastal program and final environmental impact statement; National Park Service, The Nationwide Rivers Inventory; New Hampshire Office of State Planning, Wild, scenic, and recreational rivers for New Hampshire; New Hampshire Office of State Planning, New Hampshire wetlands priority conservation plan; New Hampshire Office of State Planning, New Hampshire outdoors, 1988-1993: state comprehensive outdoor recreation plan; New Hampshire Office of State Planning, Public access plan for New Hampshire's lakes, ponds, and rivers; State of New Hampshire, New Hampshire rivers management and protection program; State of New Hampshire, New Hampshire rivers management and protection program.

Project No. 11163-000

-10-

benefit environmental and recreational resources; and (3) the electricity that would be generated from a renewable resource would be beneficial because it would reduce the use of fossil-fueled, steam-electric generating plants, thereby conserving nonrenewable energy resources and reducing atmospheric pollution.

The EA has evaluated effects of operating and maintaining the South Berwick Project as proposed by CHNHI and recommends eight measures to protect, mitigate adverse impacts on, and enhance environmental resources. These measures are:

- (1) operating the project in run-of-river mode;
- (2) developing and implementing a plan to monitor flows, temperature, and DO;
- (3) designing, installing, and operating both upstream and downstream fish passage facilities;
- (4) operating the project within 0.1 foot of the flashboard crest from May 1 through October 31;
- (5) developing and implementing a plan for seasonal stable pond operation that can be maintained from November 1 through April 30;
- (6) rebuilding the impoundment boat launch in the town of Rollinsford;
- (7) developing and maintaining the "Counting House Park" downstream of the project; and
- (8) developing and implementing a recreation plan for the project impoundment and tailrace recreation area.

B. Developmental and Nondevelopmental Uses of the Waterway

The project, with staff's recommended measures, will generate an estimated 4.18 gigawatt-hours of electricity annually from a renewable energy resource for use by area consumers. Positive, long-term benefits to water quality, aquatic habitat, and area recreational resources will result from operating the project with the required measures.

Under the Commission's approach to evaluating the economics of hydropower projects, as articulated in Mead Corporation, 12/ we employ an analysis that uses current costs to compare the costs of the project and likely alternative power. In our

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12/ 72 FERC ¶ 61,027 (1995), reh'g denied 76 FERC ¶ 61,352 (1996).



Project No. 11163-000

-11-

analysis for this project, we use no forecasts concerning potential future inflation, escalation, or deflation beyond the license issuance date. This economic analysis provides a general estimate of the potential power benefits of the project compared to the cost of reasonable alternative power. The estimate helps to support an informed licensing decision concerning what is in the public interest.

To determine the economic benefits of the project proposed, staff compared the cost of energy from the proposed project to the most economical source of new power in the New England region of the country, which is a natural gas-fueled combined-cycle combustion turbine capacity. We estimate that the cost of alternative power would be about 54.4 mills/kilowatt hours (kWh).  
13/

The annual cost of the existing project is about \$318,400, or about 106.1 mills/kWh, for the existing annual generation of 3.0 gigawatt hours (GWh). The existing project, therefore, produces power at an annual cost of about \$155,100, or about 51.7 mills/kWh more than currently available alternative power.

Including CHNHI's planned capital improvements increases the annual cost to about \$521,100 or about 118.4 mills/kWh, based on the generation of 4.4 Gwh 14/ of energy annually. CHNHI's proposed project, therefore, would produce power at an annual cost of about \$331,800, or about 75.4 mills/kWh more than currently available alternative power.

Under the staff alternative, the annual cost of the project would be about \$511,300, or about 122.3 mills/kWh, based on the generation of 4.18 Gwh 15/ of energy annually. Staff's proposed project, therefore, would produce power at an annual cost of about \$362,400, or about 86.7 mills/kWh more than currently available alternative power.

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13/ The 54.4 mills/kWh cost of alternative power is for the existing project. This cost is reduced to 43.0 mills/kWh for the existing project with the applicant's proposed measures and further reduced to 36.8 mills/kWh when staff's measures are added (see page 61 of the attached EA).

14/ CHNHI's planned rehabilitation work on the turbine generators would increase annual generation to about 4.65 Gwh without increasing capacity. Proposed minimum flows would reduce the annual generation by about 0.1 Gwh to 4.4 Gwh.

15/ Staff's recommended change to run-of-river operation would decrease annual generation from 4.4 Gwh to about 4.18 Gwh.

Project No. 11163-000

-12-

The primary costs associated with the required measures will be: (1) operating the project in run-of-river mode at an annual cost of \$27,900; <sup>16/</sup> (2) upgrading equipment to provide minimum flows and stable pond at an annual cost of \$11,300; (3) constructing, operating, and studying the effectiveness of fish passage facilities at an annual cost of \$62,400; (4) conducting temperature and DO monitoring in the project tailrace at an annual cost of \$10,800; and (5) providing additional recreation enhancements at an annual levelized cost of \$7,100.

In total, staff estimates that, in addition to the annual cost of CHNHI's planned capital improvements, it would cost CHNHI about \$106,000 annually to implement its proposed enhancements

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<sup>16/</sup> The staff has evaluated the impacts of such a run-of-river restriction on the power benefits of the South Berwick Project. The staff used the peaking operation spreadsheet model that it developed to model the multiple-project peaking operation of the projects in the Lower Androscoggin, Flambeau, and Saco River Basins. The staff's studies evaluated the peaking capacity of the project based on a weekly 6-hour, 5-day peaking cycle with weekend pondage to maximize generation during the weekly peak-load hours with the useable reservoir storage. The staff used the water year 1992 as generally representative of average water conditions. The staff's studies show that the applicant could operate the project to an average 6-hour peak capacity of 860 kW during the November through February winter season by maximizing the use of its current 2-foot reservoir drawdown limit. The staff's studies further show that if the drawdown were eliminated in run-of-river operations, the average winter weekday 6-hour peaking capacity would be reduced to 528 kW. Therefore a run-of-river operating requirement would reduce the project's winter peaking capability by an average of 332 kW. If the applicant would lose 332 kW of capacity credit in its power sales for the entire year then the value of lost power would be about \$36,188 annually, based on the staff's estimated \$109/kW-year capacity value (FEA Footnote 11).

At the July 1, 1997, conference in Boston, the applicant claimed that the run-of-river operating restriction would result in the annual loss of capacity payments of approximately \$750,000. Even if the applicant were receiving capacity payments for the total maximum generating capability of the project at all times, and the run-of-river restriction would eliminate all capacity benefits, the maximum economic impact to the licensee would be about \$146,060 annually. This is computed from the applicant's claimed maximum project generating capability of 1,340 kW multiplied by \$109/kilowatt-year.

Project No. 11163-000

-13-

and an additional \$30,400 annually to implement the staff's additional measures. Under the staff alternative, the project would produce power at an annual cost of about \$362,400 or 86.7 mills/kWh more than the currently available alternative.

Staff's evaluation of the economics of the proposal shows that it appears to cost more than currently available alternative power (or avoided costs). However, as explained in Mead, supra, economics is only one of the many public interest factors we consider in determining whether or not, and under what conditions, to issue a license. Although the continued operation of the project would be more economical under CHNHI's proposal than under the conditions adopted herein, CHNHI is ultimately responsible and best able to determine whether continued operation of the existing project including the conditions adopted herein is a reasonable decision in these circumstances. I conclude that it is in the public interest to issue the license, as conditioned herein, and leave to CHNHI the decision of whether or not to continue to operate the project as so conditioned.

#### SUMMARY

Based on a review of the agency and public comments filed in this proceeding and on staff's independent analysis pursuant to Section 10(a)(1) of the FPA, I conclude that the South Berwick Project, as proposed by CHNHI, with staff required measures and other special license conditions, would be best adapted to the comprehensive development of the Salmon Falls River.

#### LICENSE TERM

CHNHI does not propose new hydropower development at the project, but does propose substantial enhancement measures including turbine upgrades, run-of-river operation, float control for run-of-river operation, and upstream and downstream fish passage facilities. Therefore the original license for the South Berwick Project will be for a term of 40 years, effective the first day of the month in which this license is issued. <sup>17/</sup>

As set forth in City of Danville, Virginia, 58 FERC ¶ 61,318 (1992), in the case of licenses issued for previously unauthorized existing projects, the license term is prospective only. However, it is the Commission's policy to condition the license upon payment of an amount equivalent to any additional charges that would have been collected, had the license been

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<sup>17/</sup> An original license is only issued for an unlicensed project, whether constructed or unconstructed.

Project No. 11163-000

-14-

backdated to when it first should have been issued. 18/

The Commission determined that the Salmon Falls River, including the South Berwick Project segment, is a navigable waterway as defined by Section 3(8) of the Federal Power Act (12 FERC ¶ 61,028 (1980)). Therefore, if not before, then certainly after that date, all concerned were on notice that the project was required to be licensed. We will accordingly assess back annual charges from July 9, 1980, the month and year in which the river was determined to be navigable, to September 30, 1994.

#### SUMMARY OF FINDINGS

The EA issued for this project includes background information, analysis of impacts, support for related license articles, and the basis for a finding of no significant impact on the environment. Issuance of this license is not a major federal action significantly affecting the quality of the human environment.

The design of this project is consistent with the engineering standards governing dam safety. The project will be safe if operated and maintained in accordance with the requirements of this license.

#### The Director orders:

(A) This license is issued to Consolidated Hydro New Hampshire, Inc. (Licensee), for a period of 40 years, effective the first day of the month in which this order is issued, to operate and maintain the South Berwick Hydroelectric Project. This license is subject to the terms and conditions of the FPA, which is incorporated by reference as part of this license, and subject to the regulations the Commission issues under the provisions of the FPA.

(B) The project consists of:

(1) All lands, to the extent of the Licensee's interests in those lands, shown by Exhibit G.

<u>Exhibit G</u>	<u>FERC Drawing No.</u>	<u>Showing</u>
G	11163-3	Map of Project Area

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18/ See City of Danville, VA., 58 FERC at pp. 62,021-22. As of October 1, 1994, the Commission is not assessing annual charges for projects with less than 1,500 kW authorized installed capacity.

Project No. 11163-000

-15-

(2) Project works consisting of: (1) a concrete gravity dam that is an average of 18 feet high and 290 feet long with a 220-foot-long concrete spillway section utilizing 2-foot-high wooden flashboards; (2) an impoundment that is about 1 mile long, has a surface area of 58 acres, and contains 116 acre-feet of usable storage; (3) a concrete intake structure in the east abutment of the dam consisting of three headgates that lead to three, 8-foot diameter penstocks and two sluice gates that may be used as flood gates and for lowering the headpond; (4) an 85-foot-long by 30-foot-wide powerhouse housing three turbine units for a total installed capacity of 1,200 kW; and (5) appurtenant facilities.

The project works generally described above are more specifically shown and described by those portions of exhibits A and F shown below.

Exhibit A: The following sections of Exhibit A filed June 26, 1991:

The generator description on page A-1; the turbine description on pages A-1 and A-4, and additional mechanical and electrical equipment described elsewhere on page A-3.

<u>Exhibit F</u>	<u>FERC Drawing No.</u>	<u>Showing</u>
F	11163-1	Principal Project Works
F	11163-2	Principal Project Works

(3) All of the structures, fixtures, equipment, or facilities used to operate or maintain the project and located at the project; all portable property that may be employed in connection with the project and located near the project; and all riparian or other rights that are necessary or appropriate in the operation or maintenance of the project.

(C) The Exhibits A, F, and G described above are approved and made part of the license.

(D) The following sections of the FPA are waived and excluded from the license for this minor project:

4(b), except the second sentence; 4(e), insofar as it relates to approval of plans by the Chief of Engineers and the Secretary of the Army; 6, insofar as it relates to public notice and to the acceptance and expression in the license of terms and conditions of the FPA that are waived here; 10(c), insofar as it relates to depreciation reserves; 10(d); 10(f); 14, except insofar as the power of condemnation is reserved; 15; 16; 19; 20; and 22.

(E) This license is subject to the articles set forth in Form L-9 (October 1975), entitled "Terms and Conditions of

Project No. 11163-000

-16-

License for Constructed Minor Project Affecting the Navigable Waters of the United States," and the following articles:

Article 201. The Licensee shall pay the United States the following annual charges:

1. From July 9, 1980, to September 30, 1994, for the purpose of reimbursing the United States for the costs of administering Part I of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,200 kilowatts (kW).

2. From November 1, 1997, through January 30, 2037, for the purpose of reimbursing the United States for the costs of administering Part I of the Federal Power Act, a reasonable amount as determined in accordance with the provisions of the Commission's regulations in effect from time to time. The authorized installed capacity for that purpose is 1,200 kW. Under the regulations currently in effect, projects with authorized installed capacity of less than or equal to 1,500 kW are not assessed an annual administrative charge.

Article 202. If the licensee's project was directly benefitted by the construction work of another licensee, a permittee, or the United States on a storage reservoir or other headwater improvement during the term of the original license (including extensions of that term by annual licenses), and if those headwater benefits were not previously assessed and reimbursed to the owner of the headwater improvement, the licensee shall reimburse the owner of the headwater improvement for those benefits, at such time as they are assessed, in the same manner as for benefits received during the term of this license.

Article 203. Within 45 days of the date of issuance of the license, the licensee shall file an original set and two duplicate sets of aperture cards of the approved exhibit drawings. The set of originals shall be reproduced on silver or gelatin 35 mm microfilm. The duplicate set shall be copies of the originals made on diazo-type microfilm. All microfilm shall be mounted on type D (3-1/4" x 7-3/8") aperture cards.

Prior to microfilming, the Commission Drawing Number (11163-1 through 11163-13) shall be shown in the margin below the title block of the approved drawing. After mounting, the Commission Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, Commission Exhibit (e.g., F-1, G-1), Drawing Title, and date of this license shall be typed on the upper left corner of each aperture card.



Project No. 11163-000

-17-

The original and one duplicate set of aperture cards shall be filed with the Secretary of the Commission, ATTN: DLC/Engineering Section. The remaining duplicate set of aperture cards shall be filed with the Commission's Atlanta Regional Office.

Article 401. At least 90 days before the start of any land-disturbing or land-clearing activities associated with the construction of recreation facilities, fishways, or other features required by this license, the Licensee shall file with the Commission, for approval, a plan to control erosion, to control slope instability, and to minimize the quantity of sediment resulting from project construction and operation.

The plan shall be based on actual-site geological, soil, and groundwater conditions and on project design, and shall include, at a minimum, the following four items:

- (1) a description of the actual site conditions;
- (2) measures proposed to control erosion, to prevent slope instability, and to minimize the quantity of sediment resulting from project construction and operation;
- (3) detailed descriptions, functional design drawings, and specific topographic locations of all control measures; and
- (4) a specific implementation schedule and details for monitoring and maintenance programs for fishway and recreational facility construction and operation.

The Licensee shall prepare the plan after consultation with the Natural Resources Conservation Service, the Maine Department of Environmental Conservation, and the town of South Berwick.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on geological, soil, and groundwater conditions at the site.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Project No. 11163-000

-18-

Article 402. The Licensee shall operate the project in a run-of-river mode for the protection of water quality, aquatic and riparian habitats, and recreational resources on the Salmon Falls River. The Licensee shall at all times act to minimize the fluctuation of the reservoir surface elevation by maintaining a discharge from the project so that, at any point in time, flows, as measured immediately downstream from the project tailrace, approximate the sum of inflows to the project reservoir.

Run-of-river operation may be temporarily modified if required by operating emergencies beyond the control of the Licensee, and for short periods upon mutual agreement between the Licensee and the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental Protection. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 403. The Licensee shall operate the South Berwick Project to control fluctuations of the reservoir surface elevation for the protection of wetlands, wildlife, and fish habitat in the project impoundment. The Licensee shall act at all times to maintain the impoundment water surface elevation, as measured immediately upstream of the project dam, as follows:

From May 1 through October 31, each year - maintain the impoundment water surface elevation within 0.1 feet of elevation 24.95 feet mean sea level (msl).

If the instantaneous inflow falls below the hydraulic capacity of one turbine unit, all inflows shall be released through an automated gate tied to project operation.

These flows may be temporarily modified, if required by operating emergencies beyond the control of the Licensee, or for short periods upon agreement among the Licensee, the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental Protection. If the flow is so modified, the Licensee shall notify the Commission as soon as possible, but no later than 10 days after each such incident.

Article 404. Within 6 months after license issuance, the Licensee shall file with the Commission, for approval, a plan to provide stable pond operation at an elevation that can be maintained for the duration of the winter ice season (November 1 through April 30) or some portion of the winter season when ice load on the flashboards would limit stable pond operation at the top of the flashboards. Stable pond operation is important to aquatic and riparian resources in the impoundment; however, during this period, operation of the impoundment at the top of the flashboards during winter and early spring may result in

Project No. 11163-000

-19-

flashboard failure due to ice load. Therefore, the stable pond operation developed in this plan would benefit resources while recognizing the operational difficulties in dealing with seasonal ice loads.

The Licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental Protection.

The Licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan.

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 405. Within 6 months after license issuance, the Licensee shall file with the Commission, for approval, a plan to monitor the project impoundment level and outflow from the project below the tailrace to document compliance with the run-of-river operation required by Article 402 and the stable pond requirements of Articles 403 and 404.

The plan shall include, at a minimum, the following items:

- (1) the specific methods to provide the specified run-of-river flows;
- (2) a schedule for installing all flow measuring devices;
- (3) the planned locations of the flow measuring devices;
- (4) the design of the devices, including any pertinent hydraulic calculations; and
- (5) the method of flow data collection, and provisions for providing data to the regulatory agencies in a timely manner.

The Licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental

Project No. 11163-000

-20-

Protection.

The Licensee shall include with the plan documentation of agency consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan.

The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 406. Within 6 months after license issuance, the Licensee shall file with the Commission, for approval, a plan to monitor dissolved oxygen (DO) and temperature levels in the Salmon Falls River downstream of the project.

The purpose of this monitoring plan is to ensure that streamflows below the project, as measured immediately downstream of the project tailrace, maintain a DO content of no less than 7 parts per million or 75 percent of saturation, whichever is higher, except for the period from October 1 to May 14.

The monitoring plan shall include a schedule for:

- (1) implementation of the program;
- (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and
- (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental Protection.

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall

Project No. 11163-000

-21-

include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 407. Within 9 months after the date of license issuance, the Licensee shall file, for Commission approval, detailed design drawings of the Licensee's proposed permanent downstream fish passage facilities.

This filing shall include but not be limited to: (1) the location and design specifications of the passage facilities; (2) a schedule for installing the facilities; and (3) procedures for operating and maintaining the facilities.

The Licensee shall prepare the aforementioned drawings, schedule, and plans after consultation with the U.S. Fish and Wildlife Service, the Maine Department of Marine Resources, the Maine Division of Inland Fisheries and Wildlife, and the New Hampshire Fish and Game Department.

The Licensee shall include with the filing documentation of consultation, copies of agency comments and recommendations on the drawings, plans, and schedule after they have been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the Licensee's facilities. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the drawings, plans, and schedule with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No construction of downstream fish passage facilities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

Article 408. Within 9 months after the date of license issuance, the Licensee shall file, for Commission approval, detailed design drawings for permanent upstream fish passage facilities.

The Licensee shall prepare the plan after consultation with the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, the New Hampshire Department of Fish and Game, and the Maine Department of Environmental Protection.

Project No. 11163-000

-22-

The Licensee shall include with the plan documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the agencies, and specific descriptions of how the agencies' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed facilities and schedule. No land-disturbing or land-clearing activities related to upstream fish passage shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the proposal, including any changes required by the Commission.

Article 409. Within 18 months after license issuance, the Licensee shall file with the Commission, for approval, a plan to monitor the effectiveness of all the facilities and flows provided pursuant to Articles 407 and 408 of this license that will enable the efficient and safe passage of anadromous fish migrating upstream and downstream. The results of these monitoring studies shall be submitted to the agencies listed below and shall provide a basis for recommending future structural or operational changes at the project.

The monitoring plan shall include a schedule for: (1) implementation of the plan; (2) consultation with the appropriate federal and state agencies concerning the results of the monitoring; and (3) filing the results, agency comments, and Licensee's response to agency comments with the Commission.

The Licensee shall prepare the monitoring plan after consultation with the U.S. Fish and Wildlife Service, Maine Department of Marine Resources, the Maine Department of Environmental Protection, and the New Hampshire Fish and Game Department.

The Licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the Licensee's plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the



Project No. 11163-000

-23-

proposed plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

If the results of the monitoring indicate that changes in project structures or operations, including alternative flow releases, are necessary to protect fish resources, the Licensee shall first consult with the agencies listed above to develop recommended measures for amelioration and then file its proposal with the Commission, for approval. The Commission reserves its authority to require the Licensee to modify project structures or operations to protect and enhance aquatic resources.

Article 410. Within 6 months after license issuance, the Licensee shall file with the Commission, for approval, a proposed agreement with the town of Rollinsford that indicates the measures to be undertaken to improve and maintain the existing impoundment boat launch.

If during this period an agreement cannot be reached with the town of Rollinsford, the Licensee shall develop and implement a plan to construct, operate, and maintain a public boat access point to the project impoundment at an alternative site. This plan shall be filed with the Commission, for approval, within 1 year from the issuance date of this license. The Licensee shall file the plan after consultation with the Maine State Planning Office, the Maine Department of Environmental Protection, the New Hampshire Office of State Planning, and the New Hampshire Fish and Game Department.

The Licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the Licensee's plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 411. Within one year after license issuance, the Licensee shall file with the Commission, for approval, a plan for the construction and maintenance of the "Counting House Park" facility. This plan shall be based on the facilities described in the May 6, 1992, Filing Response to Request for Additional Information, Appendix A-3 containing an April 6, 1992, letter

Project No. 11163 000

-24-

from Wayne Nelson to the town of South Berwick.

The final plan shall be developed in consultation with the town of South Berwick, the Maine State Planning Office, and the Maine Department of Environmental Protection.

The Licensee shall include with the plan documentation of agency consultation, copies of agency comments and recommendations on the plan after it has been prepared and provided to them, and specific descriptions of how the agencies' comments are accommodated by the Licensee's plan. The Licensee shall allow a minimum of 30 days for the agencies to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the proposed plan. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Article 412. Within 6 months after license issuance, the Licensee shall file with the Commission, for approval, a final recreation plan.

The final plan shall provide for the following recreational enhancements at the project: (1) a public parking and trailered boat launching area on the project impoundment; (2) development of the "Counting House Park" located downstream of the powerhouse; and (3) signs directing recreationists to the boat launch and Counting House Park facilities.

The final plan shall include, at a minimum, the following: (1) final drawings and specifications for the recreation facilities cited above; (2) design drawings of the directional signs and a description of where they will be located; (3) erosion and sediment control measures, designed in consultation with the Natural Resource Conservation Service, which shall be implemented during construction; (4) an implementation schedule not to exceed 6 months from the date of the plan's approval; (5) costs of all improvements; and (6) a description of the proposed operation and maintenance of each facility and access area.

The plan shall also include a discussion of how the needs of the disabled were considered in the planning and design of each recreation facility, and an identification of all facilities that are available for use by the disabled.

The Licensee shall file the plan after consultation with the Town of South Berwick, the Maine State Planning Office, and the Maine Department of Environmental Protection.

Project No. 11163-000

-25-

The Licensee shall include with the filing documentation of consultation, copies of comments and recommendations on the completed plan after it has been prepared and provided to the entities, and specific descriptions of how the entities' comments are accommodated by the plan. The Licensee shall allow a minimum of 30 days for the entities to comment and to make recommendations before filing the plan with the Commission. If the Licensee does not adopt a recommendation, the filing shall include the Licensee's reasons, based on project-specific information.

The Commission reserves the right to require changes to the plan. No land-disturbing or land-clearing activities for recreational facilities shall begin until the Licensee is notified by the Commission that the plan is approved. Upon Commission approval, the Licensee shall implement the plan, including any changes required by the Commission.

Within 90 days after completion of construction, the Licensee shall file as-built drawings of the recreation facilities with the Commission.

Article 413. If archeological or historic sites are discovered during construction of proposed recreational or fish passage facilities or during project operation, the Licensee shall: (1) consult with the State Historic Preservation Officer (SHPO); (2) prepare and implement a cultural resources management plan to evaluate the significance of the sites and to avoid or mitigate any impacts to any sites found eligible for inclusion in the National Register of Historic Places; (3) base the plan on the recommendations of the SHPO and the Secretary of the Interior's Guidelines for Archeology and Historic Preservation; (4) file the plan for Commission approval, together with the written comments of the SHPO on the plan; and (5) take the necessary steps to protect the discovered sites from further impact until notified by the Commission that all of these requirements have been satisfied.

The Commission may require a cultural resources survey and changes to the cultural resources management plan based on the filings. The Licensee shall not implement a cultural resources management plan or begin any land-clearing or land-disturbing activities in the vicinity of any discovered sites until informed by the Commission that the requirements of this article have been fulfilled.

Article 414. (a) In accordance with the provisions of this article, the Licensee shall have 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

Project No. 11163-000

-26-

Commission approval. The Licensee may exercise the authority only if the proposed use and occupancy is consistent with the purposes of protecting and enhancing the scenic, recreational, and other environmental values of the project. For those purposes, the Licensee shall also have continuing responsibility to supervise and control the use and occupancies for which it grants permission, and to monitor the use of, and ensure compliance with the covenants of the instrument of conveyance for, any interests that it has conveyed, under this article.

If a permitted use and occupancy violates any condition of this article or any other condition imposed by the Licensee for protection and enhancement of the project's scenic, recreational, or other environmental values, or if a covenant of a conveyance made under the authority of this article is violated, the Licensee shall take any lawful action necessary to correct the violation. For a permitted use or occupancy, that action includes, if necessary, canceling the permission to use and occupy the project lands and waters and requiring the removal of any noncomplying structures and facilities.

(b) The type of use and occupancy of project lands and water for which the Licensee may grant permission without prior Commission approval are:

- (1) landscape plantings;
- (2) noncommercial piers, landings, boat docks, or similar structures and facilities that can accommodate no more than 10 watercraft at a time and where said facility is intended to serve single-family type dwellings;
- (3) embankments, bulkheads, retaining walls, or similar structures for erosion control to protect the existing shoreline; and
- (4) food plots and other wildlife enhancement.

To the extent feasible and desirable to protect and enhance the project's scenic, recreational, and other environmental values, the Licensee shall require multiple use and occupancy of facilities for access to project lands or waters. The Licensee shall also ensure, to the satisfaction of the Commission's authorized representative, that the use and occupancies for which it grants permission are maintained in good repair and comply with applicable state and local health and safety requirements. Before granting permission for construction of bulkheads or retaining walls, the Licensee shall:

- (1) inspect the site of the proposed construction;
- (2) consider whether the planting of vegetation or the use

Project No. 11163-000

-27-

of riprap would be adequate to control erosion at the site; and

- (3) determine that the proposed construction is needed and would not change the basic contour of the reservoir shoreline.

To implement this paragraph (b), the Licensee may, among other things, establish a program for issuing permits for the specified types of use and occupancy of project lands and waters, which may be subject to the payment of a reasonable fee to cover the Licensee's costs of administering the permit program. The Commission reserves the right to require the Licensee to file a description of its standards, guidelines, and procedures for implementing this paragraph (b) and to require modification of those standards, guidelines, or procedures.

(c) The Licensee may convey easements or rights-of-way across, or leases of, project lands for:

- (1) replacement, expansion, realignment, or maintenance of bridges or roads where all necessary state and federal approvals have been obtained;
- (2) storm drains and water mains;
- (3) sewers that do not discharge into project waters;
- (4) minor access roads;
- (5) telephone, gas, and electric utility distribution lines;
- (6) non-project overhead electric transmission lines that do not require erection of support structures within the project boundary;
- (7) submarine, overhead, or underground major telephone distribution cables or major electric distribution lines (69-kV or less); and
- (8) water intake or pumping facilities that do not extract more than one million gallons per day from a project reservoir.

No later than January 31 of each year, the Licensee shall file three copies of a report briefly describing for each conveyance made under this paragraph (c) during the prior calendar year, the type of interest conveyed, the location of the lands subject to the conveyance, and the nature of the use for which the interest was conveyed.

Project No. 11163-000

-28-

(d) The Licensee may convey fee title to, easements or rights-of-way across, or leases of project lands for:

- (1) construction of new bridges or roads for which all necessary state and federal approvals have been obtained;
- (2) sewer or effluent lines that discharge into project waters, for which all necessary federal and state water quality certification or permits have been obtained;
- (3) other pipelines that cross project lands or waters but do not discharge into project waters;
- (4) non-project overhead electric transmission lines that require erection of support structures within the project boundary, for which all necessary federal and state approvals have been obtained;
- (5) private or public marinas that can accommodate no more than 10 watercraft at a time and are located at least one-half mile (measured over project waters) from any other private or public marina;
- (6) recreational development consistent with an approved Exhibit R or approved report on recreational resources of an Exhibit E; and
- (7) other uses, if: (I) the amount of land conveyed for a particular use is five acres or less; (ii) all of the land conveyed is located at least 75 feet, measured horizontally, from project waters at normal surface elevation; and (iii) no more than 50 total acres of project lands for each project development are conveyed under this clause (d) (7) in any calendar year.

At least 60 days before conveying any interest in project lands under this paragraph (d), the Licensee must submit a letter to the Director, Office of Hydropower Licensing, stating its intent to convey the interest and briefly describing the type of interest and location of the lands to be conveyed (a marked exhibit G or K map may be used), the nature of the proposed use, the identity of any federal or state agency official consulted, and any federal or state approvals required for the proposed use. Unless the Director, within 45 days from the filing date, requires the Licensee to file an application for prior approval, the Licensee may convey the intended interest at the end of that period.

(e) The following additional conditions apply to any intended conveyance under paragraph (c) or (d) of this article:



Project No. 11163-000

-29-

- (1) Before conveying the interest, the Licensee shall consult with federal and state fish and wildlife or recreation agencies, as appropriate, and the State Historic Preservation Officer.
- (2) Before conveying the interest, the Licensee shall determine that the proposed use of the lands to be conveyed is not inconsistent with any approved exhibit R or approved report on recreational resources of an exhibit E; or, if the project does not have an approved exhibit R or approved report on recreational resources, that the lands to be conveyed do not have recreational value.
- (3) The instrument of conveyance must include the following covenants running with the land: (i) the use of the lands conveyed shall not endanger health, create a nuisance, or otherwise be incompatible with overall project recreational use; (ii) the grantee shall take all reasonable precautions to insure that the construction, operation, and maintenance of structures or facilities on the conveyed lands will occur in a manner that will protect the scenic, recreational, and environmental values of the project; and (iii) the grantee shall not unduly restrict public access to project waters.
- (4) The Commission reserves the right to require the Licensee to take reasonable remedial action to correct any violation of the terms and conditions of this article, for the protection and enhancement of the project's scenic, recreational, and other environmental values.

(f) The conveyance of an interest in project lands under this article does not in itself change the project boundaries. The project boundaries may be changed to exclude land conveyed under this article only upon approval of revised exhibit G or K drawings (project boundary maps) reflecting exclusion of that land. Lands conveyed under this article will be excluded from the project only upon a determination that the lands are not necessary for project purposes, such as operation and maintenance, flowage, recreation, public access, protection of environmental resources, and shoreline control, including shoreline aesthetic values. Absent extraordinary circumstances, proposals to exclude lands conveyed under this article from the project shall be consolidated for consideration when revised exhibit G or K drawings would be filed for approval for other purposes.

(g) The authority granted to the Licensee under this article shall not apply to any part of the public lands and reservations

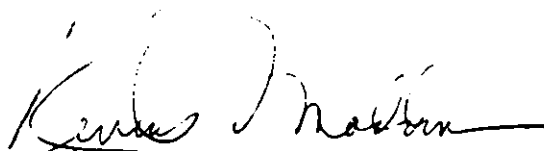
Project No. 11163-000

-30-

of the United States included within the project boundary.

(F) The licensee shall serve copies of any Commission filing required by this order on any entity specified in this order to be consulted on matters related to that filing. Proof of service on entities must accompany the filing with the Commission.

(G) This order is issued under authority delegated to the Director and constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order, pursuant to 18 CFR Section 385.713. The filing of a request to rehearing does not operate as a stay of the effective date of this order or of any other data specified in this order, except as specifically ordered by the Commission. The Licensee's failure to file a request for rehearing shall constitute acceptance of this order.

  
Kevin P. Madden,  
Acting Director, Office of  
Hydropower Licensing

Form L-9  
(October, 1975)

**FEDERAL ENERGY REGULATORY COMMISSION**

**TERMS AND CONDITIONS OF LICENSE FOR CONSTRUCTED  
MINOR PROJECT AFFECTING NAVIGABLE  
WATERS OF THE UNITED STATES**

**Article 1.** The entire project, as described in this order of the Commission, shall be subject to all of the provisions, terms, and conditions of the license.

**Article 2.** No substantial change shall be made in the maps, plans, specifications, and statements described and designated as exhibits and approved by the Commission in its order as a part of the license until such change shall have been approved by the Commission: Provided, however, That if the Licensee or the Commission deems it necessary or desirable that said approved exhibits, or any of them, be changed, there shall be submitted to the Commission for approval a revised, or additional exhibit or exhibits covering the proposed changes which, upon approval by the Commission, shall become a part of the license and shall supersede, in whole or in part, such exhibit or exhibits theretofore made a part of the license as may be specified by the Commission.

**Article 3.** The project area and project works shall be in substantial conformity with the approved exhibits referred to in Article 2 herein or as changed in accordance with the provisions of said article. Except when emergency shall require for the protection of navigation, life, health, or property, there shall not be made without prior approval of the Commission any substantial alteration or addition not in conformity with the approved plans to any dam or other project works under the license or any substantial use of project lands and waters not authorized herein; and any emergency alteration, addition, or use so made shall thereafter be subject to such modification and change as the Commission may direct. Minor changes in project works, or in uses of project lands and waters, or divergence from such approved exhibits may be made if such changes will not result in a decrease in efficiency, in a material increase in cost, in an adverse environmental impact, or in impairment of the general scheme of development; but any of such minor changes made without the prior approval of the Commission, which in its judgment have produced or will produce any of such results, shall be subject to such alteration as the Commission may direct.

**Article 4.** The project, including its operation and maintenance and any work incidental to additions or alterations authorized by the Commission, whether or not conducted upon lands

of the United States, shall be subject to the inspection and supervision of the Regional Engineer, Federal Energy Regulatory Commission, in the region wherein the project is located, or of such other officer or agent as the Commission may designate, who shall be the authorized representative of the Commission for such purposes. The Licensee shall cooperate fully with said representative and shall furnish him such information as he may require concerning the operation and maintenance of the project, and any such alterations thereto, and shall notify him of the date upon which work with respect to any alteration will begin, as far in advance thereof as said representative may reasonably specify, and shall notify him promptly in writing of any suspension of work for a period of more than one week, and of its resumption and completion. The Licensee shall submit to said representative a detailed program of inspection by the Licensee that will provide for an adequate and qualified inspection force for construction of any such alterations to the project. Construction of said alterations or any feature thereof shall not be initiated until the program of inspection for the alterations or any feature thereof has been approved by said representative. The Licensee shall allow said representative and other officers or employees of the United States, showing proper credentials, free and unrestricted access to, through, and across the project lands and project works in the performance of their official duties. The Licensee shall comply with such rules and regulations of general or special applicability as the Commission may prescribe from time to time for the protection of life, health, or property.

Article 5. The Licensee, within five years from the date of issuance of the license, shall acquire title in fee or the right to use in perpetuity all lands, other than lands of the United States, necessary or appropriate for the construction maintenance, and operation of the project. The Licensee or its successors and assigns shall, during the period of the license, retain the possession of all project property covered by the license as issued or as later amended, including the project area, the project works, and all franchises, easements, water rights, and rights or occupancy and use; and none of such properties shall be voluntarily sold, leased, transferred, abandoned, or otherwise disposed of without the prior written approval of the Commission, except that the Licensee may lease or otherwise dispose of interests in project lands or property without specific written approval of the Commission pursuant to the then current regulations of the Commission. The provisions of this article are not intended to prevent the abandonment or the retirement from service of structures, equipment, or other project works in connection with replacements thereof when they become obsolete, inadequate, or inefficient for further service due to wear and tear; and mortgage or trust deeds or judicial sales made thereunder, or tax sales, shall not be deemed voluntary transfers within the meaning of this article.

**Article 6.** The Licensee shall install and thereafter maintain gages and stream-gaging stations for the purpose of determining the stage and flow of the stream or streams on which the project is located, the amount of water held in and withdrawn from storage, and the effective head on the turbines; shall provide for the required reading of such gages and for the adequate rating of such stations; and shall install and maintain standard meters adequate for the determination of the amount of electric energy generated by the project works. The number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, shall at all times be satisfactory to the Commission or its authorized representative. The Commission reserves the right, after notice and opportunity for hearing, to require such alterations in the number, character, and location of gages, meters, or other measuring devices, and the method of operation thereof, as are necessary to secure adequate determinations. The installation of gages, the rating of said stream or streams, and the determination of the flow thereof, shall be under the supervision of, or in cooperation with, the District Engineer of the United States Geological Survey having charge of stream-gaging operations in the region of the project, and the Licensee shall advance to the United States Geological Survey the amount of funds estimated to be necessary for such supervision, or cooperation for such periods as may be mutually agreed upon. The Licensee shall keep accurate and sufficient records of the foregoing determinations to the satisfaction of the Commission, and shall make return of such records annually at such time and in such form as the Commission may prescribe.

**Article 7.** The Licensee shall, after notice and opportunity for hearing, install additional capacity or make other changes in the project as directed by the Commission, to the extent that it is economically sound and in the public interest to do so.

**Article 8.** The Licensee shall, after notice and opportunity for hearing, coordinate the operation of the project, electrically and hydraulically, with such other projects or power systems and in such manner as the Commission may direct in the interest of power and other beneficial public uses of water resources, and on such conditions concerning the equitable sharing of benefits by the Licensee as the Commission may order.

**Article 9.** The United States specifically retains and safeguards the right to use water in such amount, to be determined by the Secretary of the Army, as may be necessary for the purposes of navigation on the navigable waterway affected; and the operations of the Licensee, so far as they affect the use, storage and discharge from storage of waters affected by the license, shall at all times be controlled by such reasonable rules and regulations as the Secretary of the Army may prescribe in the interest of navigation, and as the Commission may prescribe for the protection of life, health, and property, and in the interest of the fullest practicable conservation and

utilization of such waters for power purposes and for other beneficial public uses, including recreational purposes, and the Licensee shall release water from the project reservoir at such rate in cubic feet per second, or such volume in acre-feet per specified period of time, as the Secretary of the Army may prescribe in the interest of navigation, or as the Commission may prescribe for the other purposes hereinbefore mentioned.

**Article 10.** On the application of any person, association, corporation, Federal agency, State or municipality, the Licensee shall permit such reasonable use of its reservoir or other project properties, including works, lands and water rights, or parts thereof, as may be ordered by the Commission, after notice and opportunity for hearing, in the interests of comprehensive development of the waterway or waterways involved and the conservation and utilization of the water resources of the region for water supply or for the purposes of steam-electric, irrigation, industrial, municipal or similar uses. The Licensee shall receive reasonable compensation for use of its reservoir or other project properties or parts thereof for such purposes, to include at least full reimbursement for any damages or expenses which the joint use causes the Licensee to incur. Any such compensation shall be fixed by the Commission either by approval of an agreement between the Licensee and the party or parties benefiting or after notice and opportunity for hearing. Applications shall contain information in sufficient detail to afford a full understanding of the proposed use, including satisfactory evidence that the applicant possesses necessary water rights pursuant to applicable State law, or a showing of cause why such evidence cannot concurrently be submitted, and a statement as to the relationship of the proposed use to any State or municipal plans or orders which may have been adopted with respect to the use of such waters.

**Article 11.** The Licensee shall, for the conservation and development of fish and wildlife resources, construct, maintain, and operate, or arrange for the construction, maintenance, and operation of such reasonable facilities, and comply with such reasonable modifications of the project structures and operation, as may be ordered by the Commission upon its own motion or upon the recommendation of the Secretary of the Interior or the fish and wildlife agency or agencies of any State in which the project or a part thereof is located, after notice and opportunity for hearing.

**Article 12.** Whenever the United States shall desire, in connection with the project, to construct fish and wildlife facilities or to improve the existing fish and wildlife facilities at its own expense, the Licensee shall permit the United States or its designated agency to use, free of cost, such of the Licensee's lands and interests in lands, reservoirs, waterways and project works as may be reasonably required to complete such facilities or such improvements thereof. In addition, after notice and opportunity for hearing, the Licensee shall modify the



project operation as may be reasonably prescribed by the Commission in order to permit the maintenance and operation of the fish and wildlife facilities constructed or improved by the United States under the provisions of this article. This article shall not be interpreted to place any obligation on the United States to construct or improve fish and wildlife facilities or to relieve the Licensee of any obligation under this license.

Article 13. So far as is consistent with proper operation of the project, the Licensee shall allow the public free access, to a reasonable extent, to project waters and adjacent project lands owned by the Licensee for the purpose of full public utilization of such lands and waters for navigation and for outdoor recreational purposes, including fishing and hunting: Provided, That the Licensee may reserve from public access such portions of the project waters, adjacent lands, and project facilities as may be necessary for the protection of life, health, and property.

Article 14. In the construction, maintenance, or operation of the project, the Licensee shall be responsible for, and shall take reasonable measures to prevent, soil erosion on lands adjacent to streams or other waters, stream sedimentation, and any form of water or air pollution. The Commission, upon the request or upon its own motion, may order the Licensee to take such measures as the Commission finds to be necessary for these purposes, after notice and opportunity for hearing.

Article 15. The Licensee shall clear and keep clear to an adequate width lands along open conduits and shall dispose of all temporary structures, unused timber, brush, refuse, or other material unnecessary for the purposes of the project which results from the clearing of lands or from the maintenance or alteration of the project works. In addition, all trees along the periphery of project reservoirs which may die during operations of the project shall be removed. All clearing of the lands and disposal of the unnecessary material shall be done with due diligence and to the satisfaction of the authorized representative of the Commission and in accordance with appropriate Federal, State, and local statutes and regulations.

Article 16. Material may be dredged or excavated from, or placed as fill in, project lands and/or waters only in the prosecution of work specifically authorized under the license; in the maintenance of the project; or after obtaining Commission approval, as appropriate. Any such material shall be removed and/or deposited in such manner as to reasonably preserve the environmental values of the project and so as not to interfere with traffic on land or water. Dredging and filling in a navigable water of the United States shall also be done to the satisfaction of the District Engineer, Department of the Army, in charge of the locality.

Article 17. If the Licensee shall cause or suffer essential project property to be removed or destroyed or to become unfit

for use, without adequate replacement, or shall abandon or discontinue good faith operation of the project or refuse or neglect to comply with the terms of the license and the lawful orders of the Commission mailed to the record address of the Licensee or its agent, the Commission will deem it to be the intent of the Licensee to surrender the license. The Commission, after notice and opportunity for hearing, may require the Licensee to remove any or all structures, equipment and power lines within the project boundary and to take any such other action necessary to restore the project waters, lands, and facilities remaining within the project boundary to a condition satisfactory to the United States agency having jurisdiction over its lands or the Commission's authorized representative, as appropriate, or to provide for the continued operation and maintenance of nonpower facilities and fulfill such other obligations under the license as the Commission may prescribe. In addition, the Commission in its discretion, after notice and opportunity for hearing, may also agree to the surrender of the license when the Commission, for the reasons recited herein, deems it to be the intent of the Licensee to surrender the license.

Article 18. The right of the Licensee and of its successors and assigns to use or occupy waters over which the United States has jurisdiction, or lands of the United States under the license, for the purpose of maintaining the project works or otherwise, shall absolutely cease at the end of the license period, unless the Licensee has obtained a new license pursuant to the then existing laws and regulations, or an annual license under the terms and conditions of this license.

Article 19. The terms and conditions expressly set forth in the license shall not be construed as impairing any terms and conditions of the Federal Power Act which are not expressly set forth herein.

## **APPENDIX C: WATER QUALITY CERTIFICATION**



STATE OF MAINE  
DEPARTMENT OF ENVIRONMENTAL PROTECTION  
STATE HOUSE STATION 17                      AUGUSTA, MAINE 04333

DEPARTMENT ORDER

IN THE MATTER OF

CONSOLIDATED HYDRO MAINE, INC.	)	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N                      (APPROVAL)	)	WATER QUALITY CERTIFICATION

Pursuant to the provisions of 38 M.R.S.A. Section 464 et seq. and Section 401 of the Federal Water Pollution Control Act (a.k.a. Clean Water Act), the Department of Environmental Protection has considered the application of CONSOLIDATED HYDRO MAINE, INC. with its supportive data, agency review comments, and other related materials on file and FINDS THE FOLLOWING FACTS:

1. APPLICATION SUMMARY

- a. Application: The applicant proposes the continued operation of the South Berwick Hydroelectric project located on the Salmon Falls River in the town of South Berwick, York County, Maine (See Exhibit 1).
- b. Existing Project Features: The existing project consists of a dam, an intake structure, a powerhouse, and an impoundment (See Exhibit 2).
  - i. The dam is a 290 foot long concrete gravity structure with masonry abutments and is located at the head-of-tide on the Salmon Falls River. There is a 220 foot long spillway section with an average height of 18 feet. The spillway has 2 foot high wooden flashboards supported by steel pins. With flashboards in place, the normal full pond elevation of the spillway is 24.95 feet (MSL).
  - ii. The intake is located on the east abutment of the dam. There are 3 headgates which feed three 8 foot diameter penstocks.
  - iii. The powerhouse is located just below the east abutment of the dam. The penstocks feed 3 vertical Francis turbines rated at 50-295 cfs each. It houses 3 generators with rated capacities of 400 kW each (1200 kW total).
  - iv. The impoundment formed by the South Berwick dam has a surface area of 64 acres at normal full pond elevation of 24.95 feet (MSL). The impoundment is approximately 1 mile long and backwaters to the base of the natural falls at the next upstream dam, the Rollinsford Dam (FERC No. 3777). At normal full pond elevation, the impoundment has a gross storage capacity of 641 acre-feet and a usable capacity of 116 acre-feet.
- c. Existing Project Operation: The flow of the Salmon Falls River is regulated at the outlet of Milton Pond by the New Hampshire Water Resources Board. The agency attempts to provide a flow of 35-45 cfs during the summer low flow periods. Flow is also regulated at several other dams upstream of South Berwick. One of these projects, the Lower Great Falls Project (FERC No. 3777), passes a minimum flow of approximately 6 cfs while operating in a pond and release mode. During low flow periods this effectively reregulates river flow for the next two downstream projects, Rollinsford (FERC No. 3777) and

CONSOLIDATED HYDRO MAINE, INC.	2	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

South Berwick. Rollinsford has a minimum flow requirement of 115 cfs or inflow, whichever is less, and operates in a run-of-river mode. The Lower Great Falls and Rollinsford Projects are both operated by the applicant.

The Salmon Falls Project presently operates in modified run-of-river/store and release mode. When inflow exceeds approximately 55 cfs the project is operated run-of-river, and any water that doesn't pass through the turbines is spilled over the dam. When inflow is less than the minimum hydraulic capacity of one unit (~55 cfs), the project operates in a store and release mode. During periods of store and release, headpond levels fluctuate by as much as a foot in the summer months and up to two feet in the winter months. One of the turbine/generator units is controlled by a mechanical headpond tracking system.

Potential average annual generation from the project is estimated at 4,500,000 kWh.

- d. Summary of proposal: The applicant has proposed to operate the project in accordance with several measures for the protection or enhancement of, or mitigation of impacts on, public resources. These measures are discussed below.

## 2. JURISDICTION

Water Quality Certification. The proposed continued operation of the project qualifies as an "activity...which may result in (a) discharge into the navigable water (of the United States)" under the Clean Water Act (CWA), 33 USC 1251 et seq. Section 401 of the CWA requires that any applicant for a federal license or permit to conduct such an activity obtain a certification that the activity will comply with applicable State water quality standards.

On September 30, 1988, FERC issued an order finding the South Berwick Project jurisdictional and ordering CHMI to file an application for license. Subsequently the licensee has filed an Application for New License for Minor Project less than 5 MW to continue to operate the South Berwick Hydroelectric Project. The project has been assigned FERC Project No. 11163. This application is currently pending before the Federal Energy Regulatory Commission.

The Department of Environmental Protection has been designated by the Governor of the State as the certifying agency for issuance of Section 401 Water Quality Certification for hydropower projects located in whole or in part in organized municipalities subject to the Department's regulatory jurisdiction. The South Berwick Project is located in whole in the Town of South Berwick which is an organized municipality subject to the Department's jurisdiction.

## 3. APPLICABLE WATER QUALITY STANDARDS

- a. Classification: The waters of the South Berwick project are currently classified as follows:

CONSOLIDATED HYDRO MAINE, INC.	3	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

Salmon Falls River, main stem - From the outlet of Great East Lake to tidewater, those waters lying within the State, including all impoundments - Class B. 38 M.R.S.A. §467(6)(A)(3).

All estuarine and marine waters lying within the boundaries of the State and which are not otherwise classified are Class SB waters. 38 M.R.S.A. §469.

- b. Designated Uses: Class B waters shall be of such quality that they are suitable for the designated uses of drinking water after treatment; fishing; recreation in and on the water; industrial process and cooling water supply; hydroelectric power generation and navigation; and as habitat for fish and other aquatic life. The habitat shall be characterized as unimpaired. 38 M.R.S.A. §465(3)(A).

Class SB waters shall be of such quality that they are suitable for the designated uses of recreation in and on the water, fishing, aquaculture, propagation and harvesting of shellfish, industrial process and cooling water supply, hydroelectric power generation and navigation and as habitat for fish and other estuarine and marine life. The habitat shall be characterized as unimpaired.

- c. Numeric Standards: The dissolved oxygen content of Class B waters shall be not less than 7 parts per million or 75% of saturation, whichever is higher. 38 M.R.S.A. §465(3)(B).

The dissolved oxygen content of Class SB waters shall be not less than 85% of saturation.

- d. Narrative Standards: Discharges to Class B waters shall not cause adverse impact to aquatic life in that the receiving waters shall be of sufficient quality to support all aquatic species indigenous to the receiving water without detrimental changes in the resident biological community. 38 M.R.S.A. §465(3)(C).

Discharges to Class SB waters shall not cause adverse impact to estuarine and marine life in that the receiving waters shall be of sufficient quality to support all estuarine and marine species indigenous to the receiving water without detrimental changes in the resident biological community. There shall be no new discharges to Class SB waters which would cause closure of open shellfish areas by the Department of Marine Resources.

- e. Antidegradation: The Department may only approve water quality certification if the standards of classification of the waterbody and the requirements of the State's Antidegradation policy will be met. The Department may approve water quality certification for a project affecting a waterbody in which the standards of classification are not met if the project does not cause or contribute to the failure of the waterbody to meet the standards of classification. 38 M.R.S.A. §464(4)(F).

#### 4. DISSOLVED OXYGEN

- a. Existing Conditions: Flow in the Salmon Falls river is regulated by a total of 7 hydroelectric projects. Within a 4 mile stretch of the river, there are 4 municipal treatment plant outfalls, one of which discharges into the project's headpond and one of which discharges into the project tailwater. Significant point source loading from



CONSOLIDATED HYDRO MAINE, INC.	4	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

treatment plants combined with very low summer flows and non-point source discharges have resulted in intense algal blooms each summer. In 1991 and 1992 the Department conducted water quality sampling in the project impoundment and estuary to determine compliance with applicable DO standards. The conclusion reached was that the discharges and low flow have resulted in dissolved oxygen levels falling below acceptable state standards for Class B waters in the South Berwick impoundment and Class SB in the estuary below the project.

In 1989 and 1992 the applicant also conducted water quality monitoring. The monitoring documented continued violations of DO standards in both the impoundment and estuary. In order to determine what affect, if any, minimum flows from the project would have on the flushing rate of the estuary, the applicant performed a flushing analysis. From the results of the flushing analysis, the applicant concluded that minimum flows from the project do not significantly influence flushing rates in the Salmon Falls estuary. The analysis did point out that during low flow periods, effluent from the South Berwick treatment plant can back up to the dam on rising tides. This may account for some of the DO violations in the estuary.

The Department has calculated the unregulated 7Q10 flow in the river to be approximately 44 cfs at the Berwick treatment plant.

- b. Applicant's Proposal: The applicant initially proposed to provide a minimum flow of 73 cfs or inflow, whichever is less, with run-of-river operations during the summer low flow period, as necessary, based on water quality monitoring.
- c. Discussion: The DEP Division of Environmental Assessment (DEA) comments that sufficient information does not exist to show a clear relationship between water quality in the tailrace and minimum flow releases from the project. Freshwater flow from the river does influence DO levels in the estuary. DEA recommends that during the summer low flow period, the project be operated run-of-river. DEA also comments that when the project is operating run-of-river, and power generation is not occurring, water should be spilled over the dam which could significantly improve DO levels in the estuary (exclusive of water passed through future fish passage facilities).

The Department believes that some of the water quality problems in the project's waters are attributable to periods when the Lower Great Falls project is cycling. Once the impoundment for the Lower Great Falls project has been drawn down approximately 1 foot, generation ceases and the only flow that is passed downstream to the Rollinsford and South Berwick projects is 6 cfs via uncontrolled leakage from the dam. Lower Great Falls will pass this flow until the impoundment has refilled and generation again takes place.

To mitigate for water quality impacts associated with low flows in the river, the applicant agrees to amend its proposal to provide year-round minimum flows of 44 cfs or inflow, whichever is less, through the Lower Great Falls and South Berwick Projects. Further, during the period June 1 - September 30 when the 3-day average of water temperature times river flow duration is greater than 1500, the projects will be operated in a strict run-of-river mode with all non-generation flows being passed as leakage or spillage at the Rollinsford and South Berwick (exclusive of any flows required for fish passage facilities). Headpond cycling at South Berwick Project

CONSOLIDATED HYDRO MAINE, INC.	5	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

will be limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31. Headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode. To this end the applicant proposes to monitor and record river flow and water temperature in the river. A 3-day running average of water temperature times river flow duration is proposed for triggering initiation and suspension of cycling operations. When the product of the two is 1500 or less, cycling operations can be initiated. This is the same formula used in the Department's "River Sampling Protocol" to determine acceptable conditions under which water quality data can be collected.

In order to facilitate water quality studies being conducted by the Department and US EPA on the Salmon Falls River during the summer of 1995, the applicant agrees to implement the new minimum flow/operational plan effective June 1, 1995. However, the applicant states that due to the need to make significant adjustments in operations and possibly physical modifications to facilities at the Lower Great Falls and South Berwick Projects, minimum flows will be provided as best as can be reasonably achieved during the first 1-2 years.

The Department has determined that the water quality monitoring previously proposed by the applicant is not necessary and will not be included as a condition of operation in this certification. The Department will be collecting data as part of the ongoing evaluation of water quality in the Salmon Falls River. This evaluation will provide the Department with data necessary to evaluate changes in project operation and to address other water quality problems in the river. Further, the Department's technical staff comments that the applicant's proposed water quality trigger for the initiation of run-of-river operations during the summer months at Lower Great Falls, Rollinsford and South Berwick is acceptable and should not compromise water quality.

Operation of the Lower Great Falls and South Berwick Projects which provides: year-round minimum flows of 44 cfs or inflow, whichever is less; strict run-of-river at all three projects during the period June 1 - September 30, when the 3-day average of water temperature times river flow duration is greater than 1500; and all non-generation flows passed as leakage or spillage at the Rollinsford and South Berwick Dams (exclusive of any flows required for fish passage facilities), will improve existing Class B and Class SB dissolved oxygen levels, and will not cause or contribute to the failure of the project waters to attain such designated uses; provided the applicant submit a temperature and flow monitoring plan to the Department for review and approval.

## 5. FISH

- a. Existing Resources: South Berwick currently supports warmwater fish species including chain pickerel, suckers, largemouth and smallmouth bass, and yellow perch. In the estuary below the dam, alewife and blueback herring can be found. There is no upstream fish passage facility at the project dam and therefore, no anadromous species such as alewife and river herring can migrate past the dam to spawn.

CONSOLIDATED HYDRO MAINE, INC.	6	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

The applicant conducted a reconnaissance level survey of the impoundment to evaluate the available fish habitat and to evaluate water level management practices relative to that fish habitat. Habitat for the warmwater species present can be described as good to excellent. Largemouth bass is one of the species that would be affected by changing water levels in the impoundment. Largemouth bass spawn in water 1-4 feet deep during the months of May and June.

- b. Existing Management Plans: The Maine Department of Marine Resources (DMR) has no formal anadromous fish restoration plan written for the Salmon Falls River system.

The Maine Department of Inland Fisheries and Wildlife (DIF&W) has no management plans to develop additional fishery resources within the Salmon Falls River system. Present management strategies are to continue to provide for the maintenance of the existing inland fishery resources in the system.

The Maine Atlantic Sea Run Salmon Commission comments that they have no immediate plans to restore Atlantic salmon to the Salmon Falls River.

- c. Applicant's Proposals: For the protection and enhancement of fish resources in the project waters, the applicant initially proposed to:

- Provide a minimum flow of 73 cfs or inflow, whichever is less, with run-of-river operation during the summer low flow periods, as necessary, based on water quality monitoring at the project, and operate the project in a store and release mode at other times; and
- Limit headpond fluctuations to 2 feet during the late fall, winter, and early spring months.

- d. Discussion: DMR recommends the project be operated to provide a minimum flow of 117 cfs, or inflow, whichever is less, which is derived from the U.S. Fish and Wildlife Service's New England Flow Policy. 117 cfs represents the estimated median August flow of a New England river. The rationale behind the recommended flow is that the median August flow will adequately protect aquatic life. DMR comments that any flow less than 117 cfs must be supported by a habitat based instream flow study.

DIF&W comments that the applicant's proposed minimum flow of 73 cfs is sufficient for the protection of inland fisheries management concerns below the project. DIF&W has no plans for fishery management that would require either upstream or downstream fish passage to be provided.

The applicant disagrees with the minimum flow recommended by DMR. The applicant contends that the flow policy utilized is flawed because it is not based on true median flows, rather it is based on the average monthly flows which tend to overestimate true median flow conditions. During consultation, the applicant had proposed a minimum flow of 61 cfs, the August median flow of the nearby Lamprey River. The applicant's proposed 73 cfs minimum flow is based on averaging the true August median flows of the Lamprey and Royal Rivers. Both of these nearby rivers have similar drainage basins,



CONSOLIDATED HYDRO MAINE, INC.	7	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

precipitation and flow characteristics, and are basically unregulated.

As acknowledged in Section 4, DISSOLVED OXYGEN, inflow to the South Berwick headpond is partially regulated by the upstream Lower Great Falls project. Implementation of the DMR recommendation would result in periods when inflow to the project is only 6 cfs. The applicant agrees to amend its proposal to provide year-round minimum flows of 44 cfs or inflow, whichever is less, through the Lower Great Falls and South Berwick Projects. Further, during the period June 1 - September 30 when the 3-day average of water temperature times river flow duration is greater than 1500, the projects will be operated in a strict run-of-river mode with all non-generation flows being passed as leakage or spillage at the Rollinsford and South Berwick Dams (exclusive of any flows required for fish passage facilities). Headpond cycling at South Berwick Project will be limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31. Headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode.

With regard to fish passage, DMR recommends the applicant install both upstream and downstream fish passage facilities, and that the design of such facilities should be done in consultation with state and federal fisheries agencies.

However, as previously stated, DMR has no restoration plan for anadromous fish in the Salmon Falls River. DMR has not indicated it has intentions of developing a plan any time in the near future. Given the current water quality conditions in the river and the scarcity of knowledge of anadromous fish habitat above the South Berwick impoundment, the Department will not require fish passage facilities at South Berwick until such time as a formal restoration plan is prepared and adopted by DMR.

The Operation of the Lower Great Falls and South Berwick Projects which provides: year-round minimum flows of 44 cfs or inflow, whichever is less; strict run-of-river at all three projects during the period June 1 - September 30, when the 3-day average of water temperature times river flow duration is greater than 1500; and all non-generation flows passed as leakage or spillage at the Rollinsford and South Berwick Dams (exclusive of any flows required for fish passage facilities), will maintain or improve existing use of the project waters affected by the project as habitat for fish, provided the applicant install upstream and downstream fish passage facilities at South Berwick within 3 years following the adoption of an anadromous fish restoration plan by the Maine Department of Marine Resources.

## 6. AQUATIC LIFE

- a. Existing Resources: During the summer of 1992, the DEP collected macroinvertebrate samples above and below the Berwick sewage treatment plant. The treatment plant is located approximately 4 river miles above the South Berwick dam. Those samples revealed that both sites do not meet the aquatic life standards for Class B waters.

Chemical water quality monitoring has documented a similarity between the waters where aquatic life standards were not met and the waters of the project impoundment. Because of this, it is likely that Class B standards for aquatic life are not being attained in the impoundment. However, the operation of the Salmon Falls Project does not appear to cause or contribute to the failure of the waterbody to meet aquatic life standards.

- b. Applicant's Proposals: The applicant initially proposed to operate the project in a run-of-river mode of operation during the summer months and provide a minimum flow of 73 cfs or inflow, whichever is less, and limit headpond fluctuations to 1-2 feet at other flows as necessary.

The applicant agrees to amend its proposal to provide year-round minimum flows of 44 cfs or inflow, whichever is less, through the Lower Great Falls and South Berwick Projects. Further, during the period June 1 - September 30 when the 3-day average of water temperature times river flow duration is greater than 1500, the projects will be operated in a strict run-of-river mode with all non-generation flows being passed as leakage or spillage at the Rollinsford and South Berwick Dams (exclusive of any flows required for fish passage facilities). Headpond cycling at South Berwick Project will be limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31. Headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode.

- c. Discussion: The applicant's proposals appear adequate to maintain and improve existing use of the waters affected by the project as habitat for other aquatic life.

#### 7. FISHING AND RECREATION IN AND ON THE WATER

- a. Existing Use and Facilities: Existing recreational use in the project area consists of boating and fishing.

Recreational facilities in the area include a public boat launch site and parking area in Rollinsford, several tailwater access points for fishing, and an unimproved dirt road which allows for small boat and canoe launching below the project.

- b. Applicant's Proposals: The applicant proposes the following measures to mitigate and enhance project impacts on recreational access to the waters affected by the project:

- Donate land to the Town of South Berwick, Maine, for assistance with the development of a park downstream of the powerhouse. The park will include parking, picnic facilities, and a launching ramp for small boats; and
- Assist the Town of Rollinsford, New Hampshire, with the repair of the existing boat launch site on Foundry Street.

- c. Discussion: The Maine Department of Conservation (DOC) has reviewed and approves of the applicant's proposals for increasing and enhancing public access to the Salmon Falls River.

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SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

The applicant's proposal's to donate land to the Town of South Berwick, Maine, to assist in the development of a recreational park on that land, and to assist with the repair of the Foundry Street boat launch appear to be adequate to maintain and improve suitable use of the waters affected by the project for fishing and recreation in and on the water.

#### 8. HYDROELECTRIC POWER GENERATION

- a. Existing Energy Generation: The South Berwick Hydroelectric Project has the potential to generate an average of 4.5 million kilowatt hours (kWh) of electricity annually. This is the equivalent to the energy that would be produced by burning 8571 barrels of oil or 2085 tons of coal each year. All the power generated by the South Berwick Hydro Project is sold to Public Service of New Hampshire for use by its residential and commercial customers.
- b. Discussion: The applicant agrees to amend its proposal to provide year-round minimum flows of 44 cfs or inflow, whichever is less, through the Lower Great Falls and South Berwick Projects. Further, during the period June 1 - September 30 when the 3-day average of water temperature times river flow duration is greater than 1500, the projects will be operated in a strict run-of-river mode with all non-generation flows being passed as leakage or spillage at the Rollinsford and South Berwick Dams (exclusive of any flows required for fish passage facilities). Headpond cycling at South Berwick Project will be limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31. Headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode.

As proposed, the South Berwick Hydroelectric Project will continue to provide cost-effective indigenous and renewable electricity to the customers of Public Service of New Hampshire.

BASED on the above Findings of Fact, and the evidence contained in the application and supporting documents, and subject to the Conditions listed below, the Department makes the following CONCLUSIONS:

1. The continued operation of the project will not cause or contribute to the failure of the project waters to attain all Class B and Class SB designated uses provided that:
  - i. a minimum flow of 44 cfs or inflow, whichever is less, is maintained at all times, below the Lower Great Falls Project and the South Berwick Project;
  - ii. during the period June 1 - September 30, when the 3-day running average of water temperature times river flow duration is greater than 1500, the Lower Great Falls, Rollinsford and South Berwick Projects are operated run-of-river;
  - iii. during the period June 1 - September 30, all non-generation flows are passed as leakage or spillage at the Rollinsford and South Berwick dams;



CONSOLIDATED HYDRO MAINE, INC.	10	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

- iv. the applicant submits a plan to monitor temperature and flow in the Salmon Falls river for use in determining when summer run-of-river operations should be initiated;
  - v. water levels in South Berwick are maintained within 2 feet of full pond elevation (24.95 feet MSL) between the period October 1 - May 31; and within one foot of full pond elevation between the period June 1 - September 30, except when the 3-day running average of water temperature times river flow duration is greater than 1500, the project will be operated run-of-river;
  - vi. upstream and downstream fish passage facilities shall be installed at the South Berwick project within three years following the preparation and adoption of a formal anadromous fish restoration plan by the Maine Department of Marine Resources; and
  - vii. land is donated to the Town of South Berwick for assistance with the development of a park downstream of the powerhouse, and assistance with improvements to the existing Rollinsford boat launch are made.
2. The continued operation of the project will not cause or contribute to the failure of the project waters to attain all Class B and Class SB dissolved oxygen standards provided year-round minimum flows of 44 cfs or inflow, whichever is less, are passed through the Lower Great Falls and South Berwick Projects; further, during the period June 1 - September 30 when the 3-day average of water temperature times river flow duration is greater than 1500, the projects are operated in a strict run-of-river mode with all non-generation and/or fish passage facility flows being passed as leakage or spillage at the Rollinsford and South Berwick Dams; headpond cycling at South Berwick Project is limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31; headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode.
  3. The continued operation of the project will not cause or contribute to the failure of the project waters to attain all Class B and Class SB narrative standards for aquatic life provided that headpond cycling at South Berwick Project is limited to within 2 feet of the crest of the flashboards during the period October 1 - May 31; headpond cycling at the South Berwick Project will be limited to within 1 foot of the crest of the flashboards during the period June 1 - September 30, except when the 3-day average of water temperature times river flow duration is greater than 1500, the project will be operated in a strict run-of-river mode.
  4. The continued operation of the project will comply with the State's antidegradation policy provided that the project is modified and operated in accordance with the conclusions reached above.

THEREFORE, the Department GRANTS certification that there is a reasonable assurance that the continued operation of the South Berwick Project, as described above, will not violate applicable water quality standards, SUBJECT TO THE FOLLOWING CONDITIONS:

CONSOLIDATED HYDRO MAINE, INC.	11	MAINE WATER QUALITY PROGRAM;
SOUTH BERWICK, YORK COUNTY, ME	)	FEDERAL CLEAN WATER ACT
SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

## 1. MINIMUM FLOWS

- A. Except as temporarily modified by equipment limitations and by emergencies beyond the applicant's control, as defined below, the Lower Great Falls and South Berwick Projects shall discharge the following minimum flows:

June 1 - September 30: Effective June 1, 1995, the projects shall discharge a minimum flow of 44 cfs or inflow, whichever is less. All non-generation flows (except those flows passed through minimum flow gates and/or flows for fish passage facilities) at Rollinsford and South Berwick shall be passed as leakage or spillage at the dams.

When the 3-day running average of water temperature times river flow duration is greater than 1500, Lower Great Falls, Rollinsford and South Berwick shall be operated in a run-of-river mode with outflow equal to inflow on an instantaneous basis.

October 1 - May 31: Effective October 1, 1995, the projects shall discharge a minimum flow of 44 cfs or inflow, whichever is less.

- B. Limitations in existing equipment and facilities and the installation of new automation equipment at the Lower Great Falls and South Berwick Hydroelectric Projects may make continuous compliance with the minimum flow requirements impossible. Therefore, compliance with the minimum flow of 44 cfs or inflow, whichever is less, at these dams will be on an "as best as can be reasonably achieved" basis until June 1, 1997, by which time any modifications necessary to comply with the minimum flow requirement shall be completed.
- C. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure, flashboard failure or other temporary abnormal operating condition, generating unit operation or interruption under power supply emergencies, and orders from local, state, or federal law enforcement or public safety authorities.
- D. The applicant shall, within three months of issuance of this certification, submit plans for providing and monitoring the minimum flow required by Part A of this condition. These plans shall be reviewed by and must receive approval of the DEP Bureau of Land and Water Quality.
- E. The applicant shall, on an annual basis, submit daily flow, temperature, and operational records encompassing the period June 1 - September 30 to the Department for review. Operational records must include identification of run-of-river vs. cycling operations.

## 2. WATER QUALITY CONDITIONS MONITORING PLAN

The applicant shall, within 15 days of the issuance of this certification, submit a plan to monitor temperature and flows in the Salmon Falls River during the period June 1 - September 30 annually. This plan shall be reviewed by and must receive approval of the Department prior to implementation of run-of-river operations.

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SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

### 3. WATER LEVELS

- A. Except as temporarily modified by (1) approved maintenance activities (2) inflows into the project area, or (3) by operating emergencies beyond the applicants control, as defined below, water levels in South Berwick impoundment shall be maintained according to the following schedule:

June 1 - September 30: Within 1 foot of full pond elevation of 24.95 feet (MSL), except when the 3-day average of temperature times flow duration product is greater than 1500, the project will be operated in a strict run-of-river mode.

October 1 - May 31: Within 2 feet of full pond elevation of 24.95 feet (MSL).

- B. Operating emergencies beyond the applicant's control include, but may not be limited to, equipment failure or other temporary abnormal operating condition, and orders from local, state, or federal law enforcement or public safety authorities.
- C. The applicant shall, in accordance with the schedule established in a new FERC license for the project, submit plans for providing and monitoring the water levels in South Berwick as required in Part A of this condition. These plans shall be reviewed by and must receive approval of the DEP Bureau of Land and Water Quality.

### 4. RECREATIONAL FACILITIES

- A. The applicant shall transfer land to the Town of South Berwick to assist in the development of a park downstream of the powerhouse; and assist the Town of Rollinsford, New Hampshire, with the repair of the existing boat launch site on Foundry Street.
- B. In accordance with the schedule established in a new FERC license for the project, the applicant shall prepare a plan for implementing the items required in Part A of this condition. The plan must be reviewed by and receive approval from the DEP Bureau of Land and Water Quality.

### 5. UPSTREAM AND DOWNSTREAM FISH PASSAGE FACILITIES

- A. Upstream and downstream fish passage facilities shall be installed and operated at the South Berwick project within three years following the adoption of a formal anadromous fish restoration plan for the Salmon Falls River by the Maine Department of Marine Resources.
- B. The applicant shall, within one year following the adoption of a DMR anadromous fish restoration plan for the Salmon Falls River, submit functional design drawings, a construction schedule, and operating and maintenance plans for the fish passage facilities required by Part A of this condition, prepared in consultation with state and federal fisheries agencies. These submittals shall be reviewed by and must receive approval of state and federal fisheries agencies and the DEP Bureau of Land and Water Quality prior to facilities construction.

CONSOLIDATED HYDRO MAINE, INC.	13	MAINE WATER QUALITY PROGRAM;
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SOUTH BERWICK HYDROELECTRIC PROJECT	)	
#L-17487-33-D-N (APPROVAL)	)	WATER QUALITY CERTIFICATION

6. LIMITS OF APPROVAL

This approval is limited to and includes the proposals and plans contained in the application and supporting documents submitted and affirmed to by the applicant. All variances from the plans and proposals contained in said documents are subject to the review and approval of the Board or Department prior to implementation.

7. COMPLIANCE WITH APPLICABLE LAWS

The applicant shall secure and appropriately comply with all applicable federal, state and local licenses, permits, authorizations, conditions, agreements and orders required for the operation of the project.

8. EFFECTIVE DATE

Except as otherwise noted in these conditions, this certification shall be effective on the date of issuance of a new project license by the Federal Energy Regulatory Commission (FERC) and shall expire with the expiration of this FERC license.

DONE AND DATED AT AUGUSTA, MAINE, THIS 23<sup>rd</sup> DAY OF MAY, 1995.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

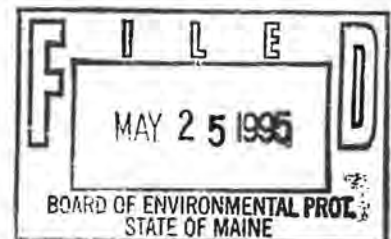
By: *Edward O. Sullivan*

Edward O. Sullivan, Commissioner

Date of initial receipt of application 6/8/94.

Date of application accepted for processing 6/8/94.

Date filed with the Board of Environmental Protection



## **APPENDIX D: MDEP CONSULTATION**



**From:** [Olcott, Kyle](#)  
**To:** [Kirk Smith](#)  
**Subject:** EXTERNAL EMAIL -RE: South Berwick Hydroelectric Project-LIHI Certification Application  
**Date:** Wednesday, April 27, 2022 2:13:38 PM

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**CAUTION: This email originated from outside of GSE. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Hi Kirk,

As far as Maine DEP staff is aware, the Water Quality Certification for the South Berwick Project is still valid and in effect for the facility.

Kyle Olcott  
Hydropower Coordinator  
Bureau of Land Resources  
Maine Department of Environmental Protection  
207 641 9012

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**From:** Kirk Smith <[ksmith@gomezandsullivan.com](mailto:ksmith@gomezandsullivan.com)>  
**Sent:** Tuesday, April 19, 2022 3:44 PM  
**To:** Olcott, Kyle <[Kyle.Olcott@maine.gov](mailto:Kyle.Olcott@maine.gov)>  
**Subject:** South Berwick Hydroelectric Project-LIHI Certification Application

**EXTERNAL: This email originated from outside of the State of Maine Mail System. Do not click links or open attachments unless you recognize the sender and know the content is safe.**

Kyle,

Gomez and Sullivan Engineers, DPC is assisting Green Mountain Power (GMP) with the Low Impact Hydropower Institute (LIHI) certification application for GMP's South Berwick Hydroelectric Project (FERC No. 11163). The Project is the first dam located on the Salmon Falls River in South Berwick, ME. As part of this application process, if the Project's 401 Water Quality Certification (WQC) is older than 10 years, LIHI requires correspondence (letter or email) from the State 401 WQC agency stating "that the certification terms and conditions remain valid and in effect for the facility". Accordingly, GMP is respectfully requesting that MDEP provide confirmation that the 401 WQC terms and conditions are still valid. For your reference, attached is a copy of the current 401 WQC, which was issued in 1995, as well as a copy of the current FERC license for the Project.

Please let me know if you have any questions. Thanks.

Kirk Smith  
Gomez and Sullivan Engineers, DPC  
41 Liberty Hill Road - Building 1  
P.O. Box 2179  
Henniker, NH 03242  
Office Direct – 716-402-6792  
Mobile - 603-340-7667



## **APPENDIX E: USFWS INFORMATION FOR PLANNING AND CONSULTATION REPORT**

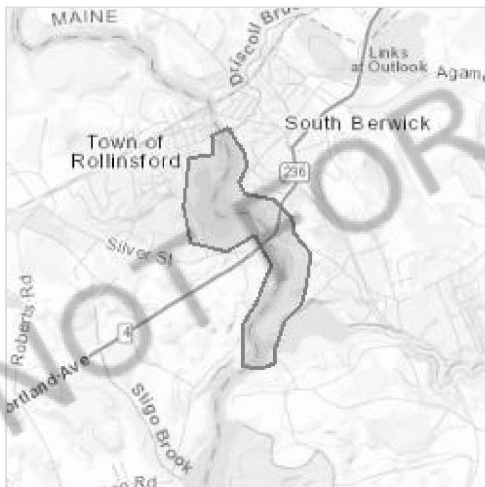
# IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

## Location

Maine and New Hampshire



## Local offices

New England Ecological Services Field Office

☎ (603) 223-2541

📠 (603) 223-0104

70 Commercial Street, Suite 300  
Concord, NH 03301-5094

<http://www.fws.gov/newengland>

Maine Ecological Services Field Office

☎ (207) 469-7300

📠 (207) 902-1588

MAILING ADDRESS

P. O. Box A

East Orland, ME 04431

PHYSICAL ADDRESS

306 Hatchery Road

East Orland, ME 04431

<http://www.fws.gov/mainefieldoffice/index.html>

NOT FOR CONSULTATION

# Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species<sup>1</sup> and their critical habitats are managed by the [Ecological Services Program](#) of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries<sup>2</sup>).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact [NOAA Fisheries](#) for [species under their jurisdiction](#).

- 
1. Species listed under the [Endangered Species Act](#) are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the [listing status page](#) for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
  2. [NOAA Fisheries](#), also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

The following species are potentially affected by activities in this location:

## Mammals

NAME

STATUS

Northern Long-eared Bat *Myotis septentrionalis*

Threatened

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9045>

## Insects

NAME

STATUS

Monarch Butterfly *Danaus plexippus*

Candidate

Wherever found

No critical habitat has been designated for this species.

<https://ecos.fws.gov/ecp/species/9743>

## Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

THERE ARE NO CRITICAL HABITATS AT THIS LOCATION.

## Migratory birds

Certain birds are protected under the Migratory Bird Treaty Act<sup>1</sup> and the Bald and Golden Eagle Protection Act<sup>2</sup>.

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described [below](#).

1. The [Migratory Birds Treaty Act](#) of 1918.

2. The [Bald and Golden Eagle Protection Act](#) of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern <http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Measures for avoiding and minimizing impacts to birds <http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Nationwide conservation measures for birds <http://www.fws.gov/migratorybirds/pdf/management/nationwidestandardconservationmeasures.pdf>

The birds listed below are birds of particular concern either because they occur on the [USFWS Birds of Conservation Concern](#) (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the [FAQ below](#). This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the [E-bird data mapping tool](#) (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found [below](#).

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON (IF A BREEDING SEASON IS INDICATED FOR A BIRD ON YOUR LIST, THE BIRD MAY BREED IN YOUR PROJECT AREA SOMETIME WITHIN THE TIMEFRAME SPECIFIED, WHICH IS A VERY LIBERAL ESTIMATE OF THE DATES INSIDE WHICH THE BIRD BREEDS ACROSS ITS ENTIRE RANGE. "BREEDS ELSEWHERE" INDICATES THAT THE BIRD DOES NOT LIKELY BREED IN YOUR PROJECT AREA.)
<b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i> This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. <a href="https://ecos.fws.gov/ecp/species/1626">https://ecos.fws.gov/ecp/species/1626</a>	Breeds Oct 15 to Aug 31
<b>Blue-winged Warbler</b> <i>Vermivora pinus</i> This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds May 1 to Jun 30
<b>Bobolink</b> <i>Dolichonyx oryzivorus</i> This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31



**Canada Warbler** *Cardellina canadensis*

Breeds May 20 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Lesser Yellowlegs** *Tringa flavipes*

Breeds elsewhere

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

<https://ecos.fws.gov/ecp/species/9679>

**Prairie Warbler** *Dendroica discolor*

Breeds May 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Willet** *Tringa semipalmata*

Breeds Apr 20 to Aug 5

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

**Wood Thrush** *Hylocichla mustelina*

Breeds May 10 to Aug 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

## Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

### Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any

3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

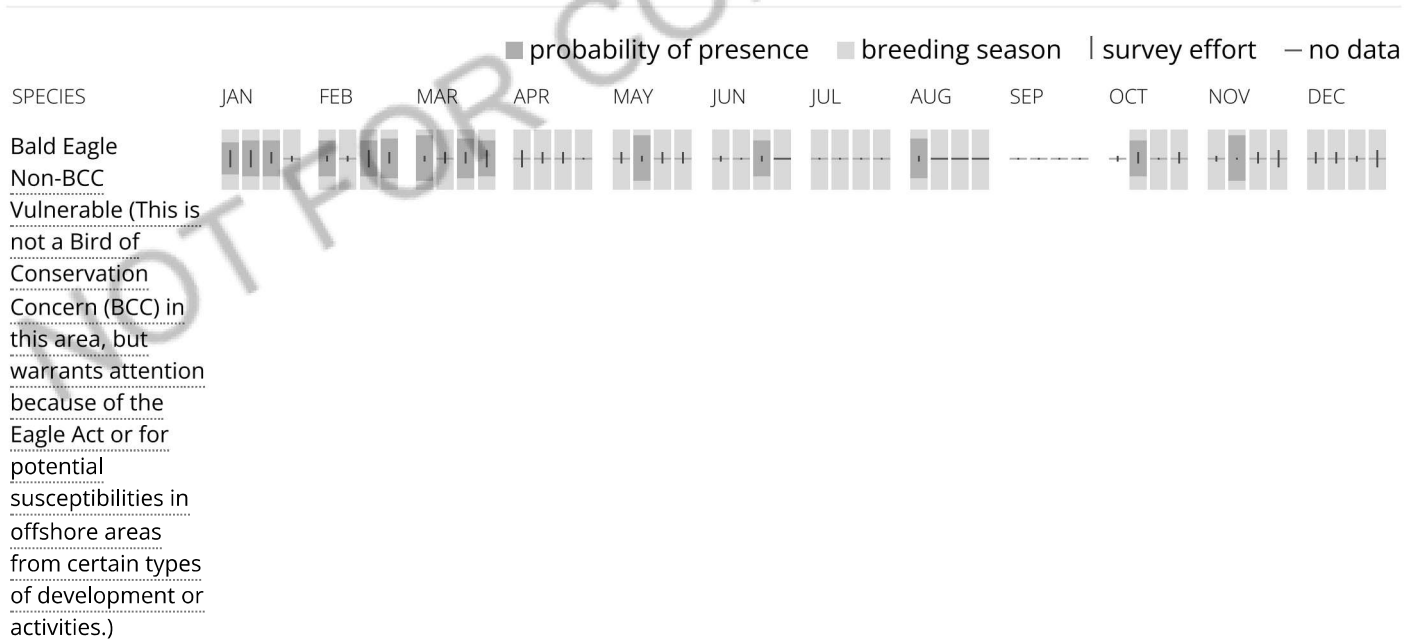
Breeding Season (■)

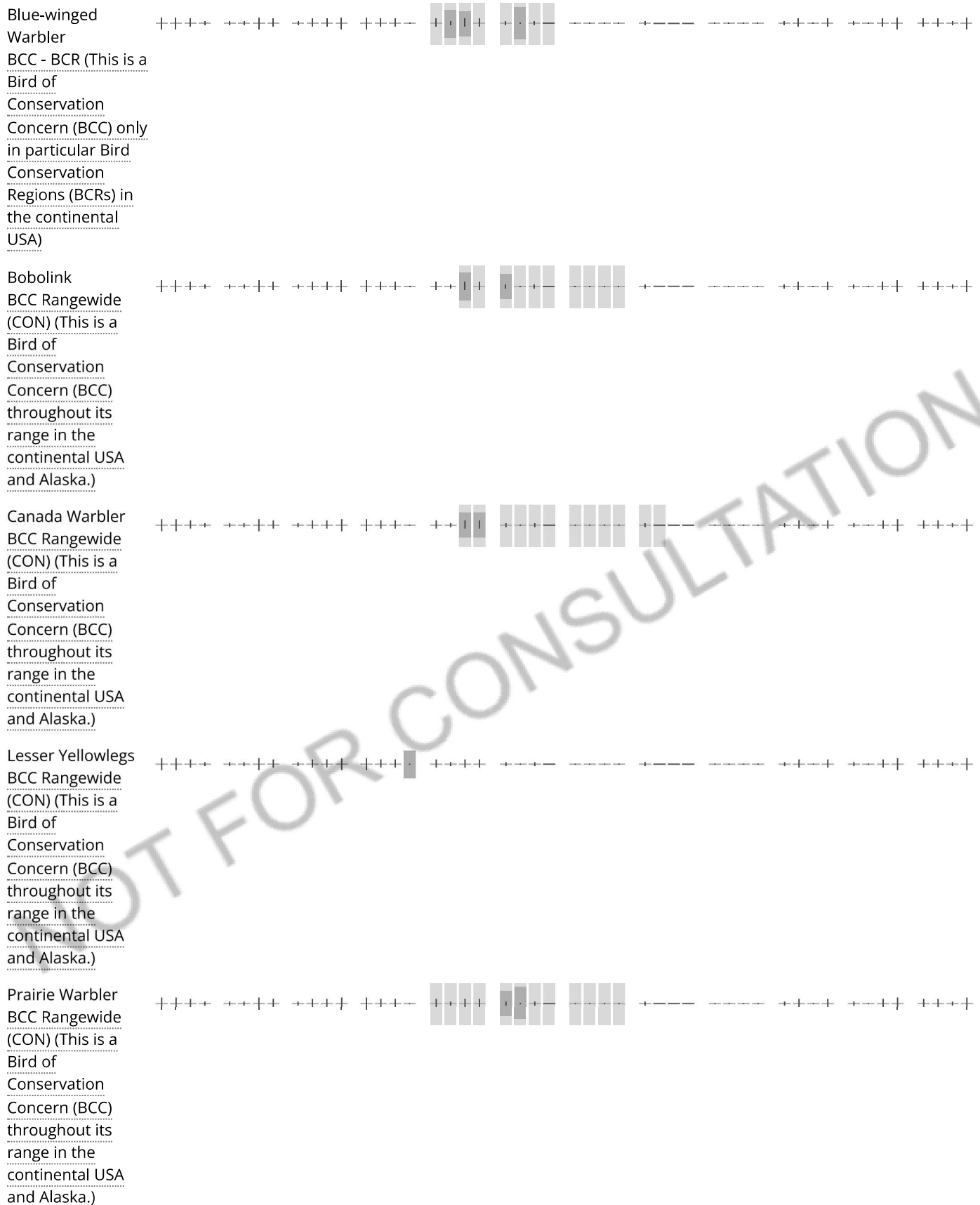
### Survey Effort (I)

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

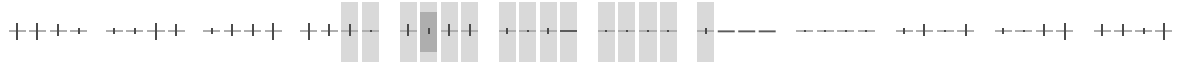
A week is marked as having no data if there were no survey events for that week.

Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

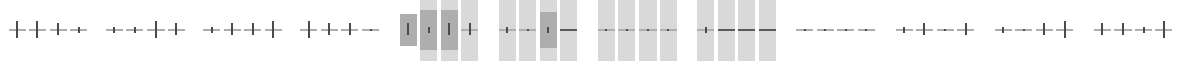




Willet  
BCC Rangewide  
(CON) (This is a  
Bird of  
Conservation  
Concern (BCC)  
throughout its  
range in the  
continental USA  
and Alaska.)



Wood Thrush  
BCC Rangewide  
(CON) (This is a  
Bird of  
Conservation  
Concern (BCC)  
throughout its  
range in the  
continental USA  
and Alaska.)



**Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.**

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

**What does IPaC use to generate the migratory birds potentially occurring in my specified location?**

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the AKN Phenology Tool.

**What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?**

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

### **How do I know if a bird is breeding, wintering, migrating or present year-round in my project area?**

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may refer to the following resources: [The Cornell Lab of Ornithology All About Birds Bird Guide](#), or (if you are unsuccessful in locating the bird of interest there), the [Cornell Lab of Ornithology Neotropical Birds guide](#). If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

### **What are the levels of concern for migratory birds?**

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are [Birds of Conservation Concern](#) (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the [Eagle Act](#) requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

### **Details about birds that are potentially affected by offshore projects**

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the [Northeast Ocean Data Portal](#). The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the [NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf](#) project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the [Diving Bird Study](#) and the [nanotag studies](#) or contact [Caleb Spiegel](#) or [Pam Loring](#).

### **What if I have eagles on my list?**

If your project has the potential to disturb or kill eagles, you may need to [obtain a permit](#) to avoid violating the Eagle Act should such impacts occur.

### **Proper Interpretation and Use of Your Migratory Bird Report**

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring

in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

## Facilities

### National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS AT THIS LOCATION.

### Fish hatcheries

THERE ARE NO FISH HATCHERIES AT THIS LOCATION.

## Wetlands in the National Wetlands Inventory

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

WETLAND INFORMATION IS NOT AVAILABLE AT THIS TIME

This can happen when the National Wetlands Inventory (NWI) map service is unavailable, or for very large projects that intersect many wetland areas. Try again, or visit the NWI map to view wetlands at this location.



## **Data limitations**

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

## **Data exclusions**

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

## **Data precautions**

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.