

REVIEW OF APPLICATION OF THE ANDROSCOGGIN PROJECT, LIHI #48 FOR RECERTIFICATION BY THE LOW IMPACT HYDROPOWER INSTITUTE

Jean Baldrige and Woody Trihey

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I. Introduction

This report reviews the application submitted by Eagle Creek Renewable Energy (ECRE) to the Low Impact Hydropower Institute (LIHI) on July 10, 2019 for Low Impact Hydropower recertification of the Androscoggin Project. The Androscoggin Project is composed of two Federal Energy Regulatory Commission (FERC) projects: Riley-Jay-Livermore Hydroelectric Project (FERC No. P-2375) and Otis Hydroelectric Project (FERC No. P-8277). Both of these Projects are operated by Andro Hydro, LLC, which is a wholly-owned subsidiary of ECRE. ECRE is the Licensee for both FERC projects. A LIHI intake report was submitted on August 29, 2019. The Applicant then provided additional information to support recertification. The Androscoggin Project Application, submitted by ECRE, was posted for public review on October 3, 2019.

II. Project Geographical Location

The Androscoggin Project is located on the Androscoggin River between River Mile (RM) 53 and 64. It is located near the towns of Canton, Jay and Livermore, Maine (Figure 1). The Androscoggin River drains a watershed of 3,550 square miles and is head-watered in Umbagog Lake in Coos County, New Hampshire. The river flows south for 164 miles and joins the Kennebec River before entering into the Gulf of Maine. Twenty-five major dams have been constructed on the Androscoggin River (Appalachian Mountain Club 2003¹); five downstream of the Project and 16 upstream of the Project (Application p 12). Five of the upstream dams form large storage reservoirs located primarily in northern Maine. These storage reservoirs are operated to provide a reliable uniform target flow during the summer of 1,550 cubic feet per second (cfs) at Berlin, New Hampshire (Final FERC EA 1998²). These releases, augmented by tributary inflow, provide water for the Androscoggin Project.

III. Project and Immediate Site Characteristics

The area in the immediate vicinity of the Project is relatively rural with several small towns (population less than 5,000) located along the river corridor. These small towns include: Livermore Falls (population 3,187) and Jay (population 4851). Based on a visual assessment of recent images from Google Earth, forested areas, farms, and residential developments are found on both sides of the river in the vicinity of the Project.

¹<https://www.outdoors.org/wp-content/uploads/pdf/Ecological-Atlas-of-the-Upper-Androscoggin-River-Watershed.pdf>

² <https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=12751062>

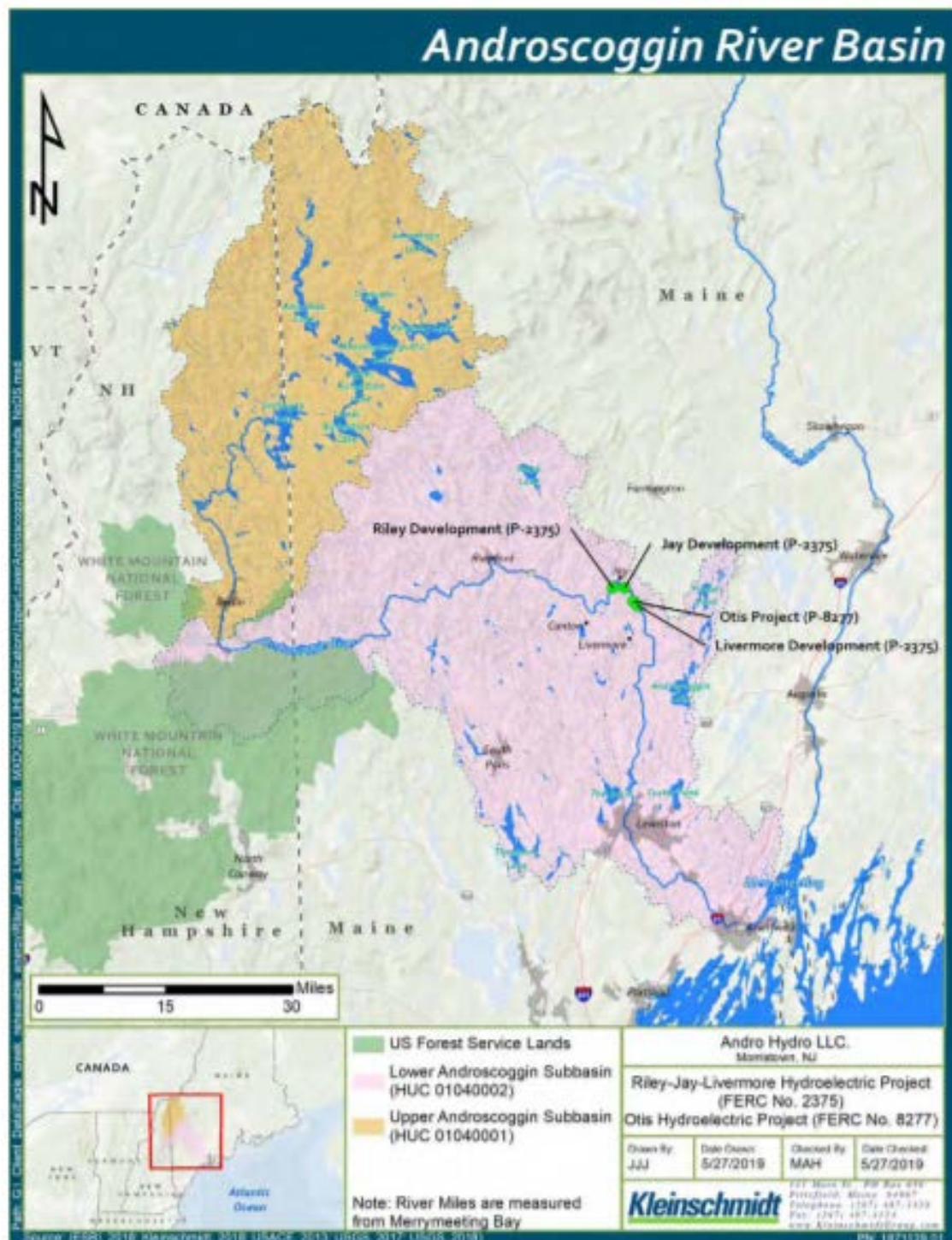


Figure 1. Upper and Lower Androscoggin River Basins

The Androscoggin Project consists of four separate facilities: Riley, Jay, Otis, and Livemore (Figure 2). Each facility has an impoundment zone and a downstream reach. The Jay Facility has a side channel within its downstream reach where instream flows are affected by the Project. The Livemore Development has a bypassed reach between its impoundment zone and downstream reach.



Figure 2. Locations of Project Facilities.

The Riley Development, located at RM 58, is the furthest upstream of the four projects. Riley Dam is 19.2 ft high by 757 ft long. The dam is topped with 48-inch high flashboards. A triangular forebay discharges through six turbines, each rated at 1.3 MW with a hydraulic capacity of 926 cfs. The maximum hydraulic capacity of the Riley Powerhouse is near 5,556 cfs. The minimum operational flow is 926 cfs, when all but one unit are off line. The Androscoggin Verso Pulp and Paper Mill, located adjacent to the Riley forebay, takes its process water from the Riley forebay.

Jay Development is located at RM 56.5. The Jay dam is 893 ft long and has three non-contiguous sections separated by two island areas. The two outer sections of dam are topped with 32-inch high flashboards. Jay has a 320-ft forebay leading to the Jay powerhouse. Each of the 6 turbine-generators have a minimum hydraulic capacity of 200 cfs and a maximum hydraulic capacity of 550 cfs. The powerhouse is rated for a maximum flow of 3,300 cfs. At this flow rate, it provides a total electrical output of 3.1 MW. Maximum available head at the turbines is 14.5 ft.

Otis Development is located at RM 54.0. The dam consists of two contiguous spillway sections totaling 577 ft in length. Otis Dam is topped with 24-inch high flashboards. A 95-ft long forebay leads to the powerhouse. The powerhouse has two turbines, each rated for 3,000 cfs at 26 ft of head. The generating capacity is 5.2 MW per turbine. The minimum hydraulic capacity of the Otis Powerhouse is 1,100 cfs

with one unit offline. Although the Otis dam is more than 100 years old, the Otis powerhouse and turbines were built in 1984.

Livermore Development is located at RM 53.2. The dam has two contiguous spillway sections totaling 599 ft in length and topped with 28-inch high flashboards. A 185-ft wide by 594-ft long forebay leads to two separate powerhouses. The original powerhouse has eight horizontal turbines with a total hydraulic capacity of 3,456 cfs and a total generation capacity of 7.8 MW. A second powerhouse was completed in 2004, which has a single vertical turbine that discharges into a rocky area at the side of the forebay. The turbine in the new powerhouse has a hydraulic capacity of 450 cfs and generating capacity of 1 MW. Maximum available head at Livermore is 33.3 ft.

VI. Project Operations

The four developments are operated in run of river mode. There have been no changes to facilities or operations, since the last recertification. The developments have a total annual generation of 120,983 MWh and a total installed capacity of 29.4 MW:

- Riley 7.1 MW,
- Jay 3.1 MW,
- Otis 10.4 MW, and
- Livermore 8.8 MW.

Under normal streamflow conditions, the flow rate through each powerhouse is regulated such that, impoundment water surface elevations are maintained at or near specific target elevations for each impoundment. Reach outflow is maintained near the inflow to each facility. The Project's impoundments do not significantly influence river flow rates because they have very little storage.

Impoundment water surface elevations cannot be controlled when streamflow exceeds the maximum hydraulic capacity of the powerhouses. The water surface elevations of the impoundments simply rise and fall in response to the amount of streamflow present that exceeds the maximum hydraulic capacity of the powerhouses. As flow increases, the flashboards eventually fail, and the impoundment water surface elevations will decrease. But, water surface elevations of the impoundments remain uncontrolled until streamflow becomes less than the maximum hydraulic capacity of the powerhouses. Target impoundment levels are not restored until the break-away flashboards are re-installed.

Since the last recertification review in 2014, there have been nine operational incidents when the impoundment water surface elevations and/or minimum stream flows have not been maintained (Table 1). Each of these incidents was of short duration. Each incident was promptly reported to state and federal authorities and, in their review of the incidents, FERC found that each one was not a violation of the FERC License or of the 401 *Water Quality Certification (WQC issued by the State of Maine on May 5, 1998)*. The cause of each incident was determined to be outside the control of the Owner at the time, and the current Owner (Applicant) who bought the Project in early 2016 recognized the issues and has worked to reduce such incidents, upgrading the PLC and enhancing automation for better control. The Applicant has taken timely and effective remedial action to lessen the duration and severity of incidents.

Table 1. Recent Compliance Incidents

Date of Incident	Date Reported	Incident Location	Nature of Incident	Cause of Incident
09/14/14	09/22/14	Livermore	Minimum Flow	Unit Tripped Offline at Riley
09/23/14	10/02/14	Livermore	Pond Level	Loss of Control Signal at Livermore
09/9-10/15	09/17/15	Livermore	Pond Level	Equipment Failure
08/31/16	09/09/16	Jay	Pond Level	PLC Malfunction
09/22/17	10/5/17	Livermore	Pond Level	PLC Failure at Otis
07/09/18	07/25/18	Livermore	Pond Level	PLC Failure & Unit Shutdown
07/16/18	07/25/18	Livermore	Pond Level	Unit Tripped Offline
01/20/19	01/24/19	Livermore	Pond Level	Unit Shut Down and Frozen Water Level Transducer
08/07/19	08/28/19	Livermore	Pond Level	Unit Tripped Offline

V. Zones of Effect

For the four developments that comprise the Androscoggin Project, there are eight Zones of Effect (Figure 3). They include:

1. Riley Impoundment
2. Riley Downstream Reach
3. Jay Impoundment
4. Jay Downstream Reach
5. Otis Impoundment
6. Otis Downstream Reach/Livermore Impoundment
7. Livermore Bypassed Reach, and
8. Livermore Downstream Reach

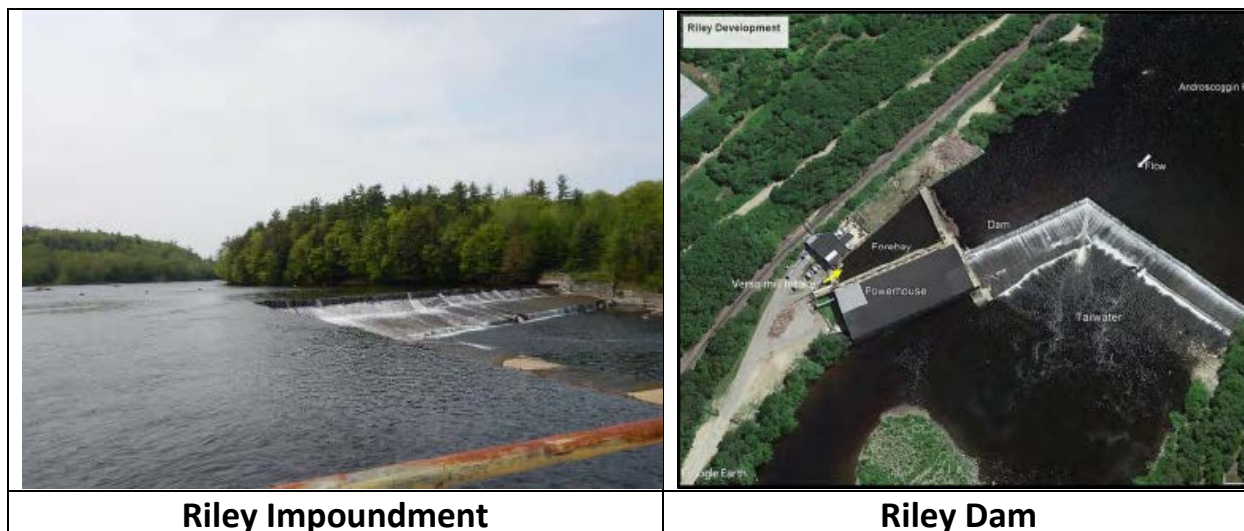
To determine whether the Project meets the certification requirements for a Low Impact Hydropower Project each of these zones of effects is evaluated relative to eight environmental and social resources criteria. All of the eight criteria and their respective goals must be satisfied by one or more hierarchical standards. If any one of the eight criteria cannot be satisfied by application of the LIHI published standards, then the Project cannot be certified as low Impact (LIHI Handbook, second edition- Revision 2.03, December 2018).

The criteria and standards applicable to the Androscoggin Project Zones of Effect are discussed below by development. In each of the matrix tables, where the Reviewer choice of the most appropriate Standard differed from that indicated in the application, that change is indicated by a **red X (X = Applicant-selected Standard; X= Reviewer-selected Standard)**.



Figure 3. Zones of effect for the Androscoggin Project facilities (source: Application Page A-1).

Riley Development



Zone of Effect: 1 - Riley Impoundment

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Zone of Effect: 2 - Riley Downstream

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Jay Development



Jay Dam Facilities



Jay Dam Impoundment

Zone of Effect: 3 - Jay Impoundment

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Zone of Effect 4 – Jay Downstream

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime		X			
B	Water Quality		X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Otis Development



Otis Dam Aerial Facility Details



Otis Impoundment

Zone of Effect: 5 - Otis Impoundment

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Livermore Facility



Livermore Development Aerial



Livermore Impoundment

Zone of Effect: 6 - Otis Downstream/Livermore Impoundment

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Zone of Effect: 7 - Livermore Bypassed Reach

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime		X			
B	Water Quality		X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

Zone of Effect: 8 - Livermore Downstream

Criterion		Alternative Standards				
		1	2	3	4	Plus
A	Ecological Flow Regime	X	X			
B	Water Quality	X	X			
C	Upstream Passage	X				
D	Downstream Passage	X				
E	Watershed and Shoreline Protection	X				
F	Threatened and Endangered Species	X	X			
G	Cultural and Historic Resources		X			
H	Recreational Resources		X			

A. Ecological Flow Regime


Goal: The flow regime occurring in the river reaches (Zones of Effects) associated with the Development support habitat and other conditions suitable for healthy fish and wildlife resources.

For the Androscoggin Hydroelectric Project, the Applicant selected the A-2 Ecological Flow Standard for all Zones of Effect within the Project reaches.

Standard A-2 Agency Recommendation: The flow regime at the facility was developed in accordance with a science-based agency recommendation.

The Application and/or the FERC licenses include the following statements regarding Project operations in support of selection of the A-2 Standard:

(i) The Maine Department of Environmental Protection (MDEP) issued a WQC (Appendix B of the Application) for the Riley, Jay, Livermore, and Otis Developments. These developments are run-of-river operations under normal (non-flood) conditions and maintain development-specific impoundment levels for each development. Under the WQC, outflows that approximate inflows are maintained for each development at all times.

(ii) Per License Article 401 for the Riley, Jay, and Livermore developments, the licensee is required to operate in run-of-river mode with minimal impoundment fluctuations. 

(iii) Per License Article 401 for the Otis Development, the licensee operates the Project in a run-of-river mode.

(iv) Per License Article 402 for the Riley, Jay and Livermore Developments, the Licensee maintains:

- minimum flows of at least 5 cfs below the Jay Development from June 15 through September 15 of each year to improve water quality during the low flow season and enhance fish spawning and habitat in the southern bypassed reach of the Jay Development.
- minimum flows of 150 cfs during the months of May, June, and October and maintains 100 cfs during the remainder of the year from Livermore Dam into the upper portion of the Livermore Bypassed Reach. These flows are needed to maintain dissolved oxygen (DO) levels at or above the minimum state standard and to maintain the brown trout and bass fishery.
- minimum flows of 550 cfs (consisting of the upper bypass flow, plus minimum flow turbine releases) from the Livermore Dam and Powerhouse into the lower bypassed reach to improve water quality and fishery habitat.

Project facilities are operated in compliance with the Water Quality Certification (WQC) from the State of Maine and with FERC License Articles, which satisfies the A-2 Standard for all Zones of Effect. Minimum flow levels were determined based on site-specific studies on water quality and macroinvertebrates requirements. These studies, conducted in 1995 and 1996, were intended, in part, to mitigate for permitted industrial withdrawals from the Riley impoundment and wastewater discharges from the Verso paper mill into the Jay impoundment (FERC EA, 1998). The Reviewers selected the A-1 Standard for all reaches except the Jay Downstream and Livermore Bypassed reaches.

The Jay Downstream and Livermore Bypassed reaches were assigned the A-2 Standard as these reaches meet the flows requirements prescribed by the WQC.

Standard A-1. Not Applicable/De Minimis Effect: The development operates in a true run of river operation mode and there are no bypassed reaches or water diversions associated with the development

The Reviewers provide the following statements to support selection of the A-1 Standard for all reaches except the Jay Downstream Reach and the Livermore Bypassed Reach.

(i) The four impoundment reaches (Riley, Jay, Otis, and Livermore) meet the criteria for an A-1 designation as explained in the LIHI Handbook (refer to Page 7), which states that A-1 can be applied to all impoundment zones.

(ii) The Riley, Otis, and Livermore downstream reaches are single thread channels subject to true run-of-river operation. There are no bypassed reaches or water diversions associated with these Project facilities. Thus, these reaches also qualify for an A-1 designation.

For the Jay Downstream and the Livermore Bypassed reaches, the Reviewers agree with the Applicant that Standard A-2 is the appropriate standard, as the bypass flows provided meet agency recommendations for these reaches. The remainder of the streamflow is diverted through the respective powerhouses.

Based on review of the Application and supporting documentation, the Project continues to meet the Ecological Flow Regime criterion by satisfying the A-1 or A-2 Standard for all reaches.

B. Water Quality

Goal: Water quality is protected in all Zones of Effects associated with the Project.

The Applicant selected the B-2 Standard for all Zones of Effect. The Reviewers concur with the selection of B-2 for the two bypassed reaches but selected the B-1 Standard for all other zones.

STANDARD B-2. Agency Recommendation: The development is in compliance with all water quality conditions contained in a recent Water Quality Certification or science –based resource agency recommendation providing reasonable assurance that water quality standards will be met for all water bodies that are directly affected by the development. Such recommendations, whether based on a generally applicable water quality standard or one that was developed on a site-specific basis, must include consideration of all water quality components necessary to preserve healthy fish and wildlife populations, human uses and recreation.

The Androscoggin River has a long history of poor water quality conditions and high levels of contamination from past industrial actions unrelated to the Androscoggin Project (WQC 1998). Because of the high levels of contamination, there is a prohibition on consumption of fish from the Androscoggin River (Maine Dept. of Environmental Protection [MDEP] letters of May 14, 2019 to Kayla Easler, Kleinschmidt, and October 30, 2019 to Shannon Ames, LIHI). In these letters, (Appendix A), MDEP stated that *“The project does not cause or contribute to non-attainment of Maine’s water quality standards.”* With the run-of-river operations employed by the Androscoggin Project, it is likely that the current operation of Project Facilities does not alter water quality in any zone of effect, with the exception of

the two bypassed reaches: the Jay Downstream Reach and the Livermore Bypassed Reach. In these reaches, the Project reduces river flows in these two Zones of Effect and thus, has the potential to alter water quality conditions. In both the Jay Downstream Reach and the Livermore Bypass Reach, the Applicant operates the Project in conformance with agency standards to comply with the applicable FERC Licenses.

In addition to the MDEP letters (Appendix A), a review of the FERC record indicates that the Project is in compliance with its WQC. No information was found in the FERC Record to indicate that project operations contribute to poor water quality conditions found in the Project reaches. The only reaches where Project Operations could influence water quality conditions, i.e. water temperatures, and/or dissolved oxygen, would be the bypassed reaches, Jay Downstream and the Livermore Bypass reaches. In these reaches, the instream flows were set based on Agency recommendations and these reaches are in compliance with Agency recommendations. Therefore, the Project meets the B-1 Standard for water quality in all reaches except Jay Downstream and Livermore Bypassed reaches. In these reaches the Project operates according to agency guidance and qualifies for the B-2 Standard.

Based on review of the Application and supporting documentation, the Project continues to satisfy the Water Quality criterion by meeting the B-1 Standard for impoundments and downstream reaches and the B-2 Standard in the two bypassed reaches.

C. Upstream Passage

Goal. The Project allows for the safe, timely and effective upstream passage of migratory fish. (Migratory fish may be anadromous, diadromous, or catadromous). This criterion is intended to ensure that migratory species can successfully complete their lifecycles and maintain healthy sustainable fish populations in areas affected by the Project.

The Applicant selected Standard C-1 for all Zones of Effect, and the Reviewers concur with this selection.

STANDARD C-1. Not Applicable / De Minimis Effect: The development does not create a barrier to upstream passage or there are no migratory fish in the vicinity of the development and the development is not the cause of the extirpation of species that were present historically.

The Reviewers agree with the Applicant's selection of Standard C-1 for Upstream Passage for all zones.

(i) No anadromous, diadromous, or catadromous species have been found in the Project Area. This is likely due to an impassible waterfall (Lewiston Falls) located twenty miles downstream of the Project and the existence of multiple migration barriers downstream of the waterfall. Previously, it was thought that American eels may have been present historically in the vicinity of the Project (FERC EA²). However, a recent study³ found that the Lewiston Falls likely restricted the distribution of anadromous and catadromous fish to the basin below the Lewiston Falls. Eels have not been documented in the Project Reach, nor in the River upstream of the Project (LIHI Application 2018, p 31).

(ii) An October 30, 2019 letter from MDEP to the LIHI indicates, that based on a recent study, no anadromous or catadromous fish are found in the Project reaches or for several miles downstream

³ <https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=15201288>

because of the historical passage barrier of Lewiston Falls, located downstream of the Androscoggin Project.

(iii) While resident species are present in the Project reaches including smallmouth bass, rainbow trout, brook trout, brown trout, bass, perch, and sunfish, agencies have not made a recommendation for measures to ensure upstream movement for these fish between the various Zones of Effect within the Project reaches. Also, it is thought that in most instances, resident fish can use habitat in their reach of residence to complete their life cycle and do not require access to upstream habitat to successfully complete their life cycle (Brautigam and Pellerin 2014 in Appendix D of the LIHI Application).

The above information regarding a historical passage barrier (Lewiston Falls) indicates that the C-1 Standard is applicable to all Zones of Effect. The license includes the standard reservation of authority to prescribe fishways in the future, under Section 18 of the Federal Power Act.

Based on review of the Application and supporting documentation, the Project continues to satisfy the Upstream Fish Passage criterion by meeting the C-1 Standard in all reaches.

D. Downstream Passage

Goal: The development allows for the safe, timely, and effective downstream passage of migratory fish. For riverine (resident) fish, the development minimizes loss of fish from reservoirs and upstream river reaches affected by development operations. All migratory species can successfully complete their life cycles and to maintain healthy sustainable fish and wildlife resources in the areas affected by the development.

The Reviewers agree with the Applicant selection of the D-1 Standard for all Zones of Effect.

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

Although the information provided in the Application indicates that there is no fish screening on any of the diversions into the forebays or into the Project's penstocks, no anadromous, diadromous, or catadromous species have been found in the Project area. Resident fish are present in the reservoirs and may be present in the forebays. These fish may be entrained in water passing into the penstocks and through the powerhouses and generation units. State and federal agencies have not required the installation of fish screens or other equipment to deter resident fish from entering the penstocks or passing through the turbines. Based on surveys conducted in the vicinity of the Project. Brautigam and Pellerin (2014; Appendix D of the LIHI Application) concluded that resident fish currently have available habitat for spawning and rearing in the vicinity of the Project.

Therefore, based on review of the Application and supporting documentation, the Project meets the D-1 Standard for downstream passage in all reaches and thus, continues to satisfy the Downstream Passage and Protection criterion.

E. Shoreline and Watershed Protection

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

The Applicant selected E-1 for all Zones of Effects.

Standard E-1 Not Applicable De Minimis Effect: 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 with the Project boundary). Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Based on a review of the Application, the FERC license and supporting documentation, there appears to be no requirements for shoreline buffers or shoreline protection. The area surrounding the Impoundments, Bypassed Reaches and Downstream Zones of Effects support myriad land uses. The area in the vicinity of the Androscoggin Project is mostly composed of forested land, rural and residential housing, small towns, and some industrial and commercial areas. Between the Riley and Jay facilities, the Androscoggin Verso Paper Mill is located in Jay, Maine. This Development encompasses 580 acres and employs approximately 500 individuals. The FERC boundary encompasses only the immediate shoreline and lands around project facilities (a total of 29 acres over 12 river miles including two islands). Beyond the FERC boundary there are forested areas on both sides for the river. There are no requirements for a buffer zone, shoreline protection fund, shoreline management plan or equivalent for facilities included the two FERC licenses for the Androscoggin Project (Application; page 35).

Based on review of the Application and supporting documentation, the Project satisfies the E-1 Standard in all reaches and continues to satisfy the Shoreline and Watershed Protection criterion.

F. Threatened and Endangered Species Protection

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

The Reviewers concur with the Applicant-selected Standard F-1: Not Applicable/ De Minimis Effect for all Zones of Effects for protection of threatened and endangered species that may occur near the Project.

Standard F-1 Not Applicable/De Minimis Effect: If listed species are known to exist in the facility area in the past, explain why the facility was not the cause of the extirpation of the species.

The only species listed under the Federal Endangered Species Act that is reported to occur in the area is the Northern Long-eared bat. The most common disturbance of bats and their habitat are tree-clearing activities and corridor maintenance activities. As described in the Application (page 37), neither of these actions are anticipated to occur as a direct or indirect result of the Project operations or maintenance activities. There is no evidence in the FERC record that the Project has adversely affected long-eared bats and is not expected to adversely affect bats in the future.

	
Northern Long Eared Bat (<i>Myotis septentrionalis</i>)	Bald Eagle (<i>Haliaeetus leucocephalus</i>)

Bald eagles, which are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty, may occur in the area. The Project has no maintenance activities or operations that might result in adverse effects to eagles, migratory birds, or their habitats. Like the Northern long-eared bats, eagles do not commonly occur in the vicinity of the Project, per the FERC EA².

In addition to bats and eagles, two rare plants have been reported near the Project: Spotted Wintergreen (*Chimaphila maculate*) and Silver Maple (*Acer saccharinum*) Floodplain Forest. Spotted wintergreen is state-listed as threatened and was found between the Riley and Jay developments. In their letter of May 6, 2019, the Maine Dept. of Agriculture, Conservation and Forestry (MDACF) noted that, neither the Silver Maple Floodplain Forest nor the Spotted Wintergreen would be affected by the continued operation of the Androscoggin Project. (See MDACF letter dated May 6, 2019 in Appendix C of the Application.)

Based on a review of the application and supporting documents, the Project meets the Threatened and Endangered Species Protection F-1 Standard and continues to satisfy this criterion.

G. Cultural and Historic Resource Standards.

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

The Applicant selected G-2, Approved Plan for all Zones of Effect. The Reviewers concur with the Applicant's selection.

Standard G-2. Approved Plans. The Facility is in compliance with approved state, federal, or recognized tribal plans for protection, enhancement, or mitigation of impacts to cultural or historic resources affected by the facility.

Based on archeological surveys that were conducted along the Androscoggin River prior to issuance of the FERC license indicate that the area around the Projects is "culturally rich" (FERC EA²). Over 60 aboriginal sites were identified. These studies found that humans entered the Androscoggin River basin

headwaters between 9000 and 7000 BC. Six prehistoric sites have been identified in the basin, at least two of these sites were recorded near Canton Point which is located on the Riley Impoundment. Canton Point was identified as the center of native activities for the entire Androscoggin River (FERC EA, page 5-136). The protection measures of various groups in the basin, including the Androscoggin Land Trust and those implemented by the facilities owners, will provide protection of cultural resources with the AEP (FERC EA2; page 5-139).

The FERC EA noted that project operations and the management of the impoundments have protected cultural resources by stabilizing water surface elevation and facilitating additional deposition of fine sediments. However, the artifacts that are near the water/land interface may be exposed to shoreline erosion from high flows or surface runoff. Sedimentation may also adversely affect these areas.

As required by the FERC Licenses Article 410 (Otis) and Article 413 (Riley, Jay, and Livermore), the Licensee entered into, and implemented, a Programmatic Agreement (PA)⁵ with FERC, the Advisory Council on Historic Preservation, and the Maine State Historic Preservation Office (SHPO) for managing historic properties that may be affected by the Project. The Programmatic Agreement requires the Licensee or SHPO to notify the FERC if it is determined that a Project activity will, or is currently, adversely affecting cultural resources.

The Licensee implemented the PA and developed a Cultural Resources Management Plan (CRMP). The applicant filed annual reports from 2000 to 2004. An Environmental inspection was completed in July 2007, which determined the Project was in compliance with the FERC approved CRMP.

Based on review of the Application, the FERC record, and supporting documents, the Project meets the Cultural and Historic Resources Protection G-2 Standard and continues to satisfy this criterion.

H. Recreation Resources

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

The Applicant selected H-2 Standard, Agency Recommendation for all Zones of Effect and the Reviewers concur with this selection.

Standard H-2 – Agency Recommendation: The facility demonstrates compliance with resource agency recommendations for recreational access or accommodation (including recreations flow released or any enforceable recreation plan in place for the facility).

Per license article 411 of the FERC License for Riley, Jay, and Livermore, the Licensee is monitoring recreational use of the Project lands to determine if the facility is meeting the recreational needs. The Licensees are to provide reports on recreational use every 6 years. FERC concluded that the methodology used in the most recent March 15, 2015 Recreational Use Monitoring Report for Riley, Jay, and Livermore Facilities (which included spot counts and on-site observations on representative days) was reasonable⁴. The next recreation report is due to FERC in 2021.

⁴ <https://elibrary-backup.ferc.gov/idmws/common/opennat.asp?fileID=13876266>

The Applicant's 2015 report noted that while the Riley facilities received the most daytime use, the Jay facilities received the least. For the Jay recreational facilities, utilization was low throughout the Project; ranging from 1 to 18 percent. The report concluded that existing recreation facilities were sufficient due to the light use and the declining population of the area. FERC noted that the report fulfilled the requirement under article 411.

Recreation enhancement measures include the following day –use facilities for Riley, Jay, and Livermore Developments:

1. Gated informal trailered boat launch area below Riley Village	13. Seven Mile Stream bridge trailered launch
2. Shoop site carry-in boat access (below the Androscoggin Mill)	14. Informal fishing area and canoe access
3. Pine Island carry-in boat access and picnic area	15. Informal fishing area and canoe access (road culvert)
4. Overlook at Livermore Falls Dam	16. Informal fishing and canoe access
5. Livermore Dam angler and kayak access	17. Informal canoe access above Riley Dam
6. Town of Livermore Falls recreation area (outside of Project Boundary)	18. Riley Dam carry-in boat access and canoe portage (outside Project boundary)
7. Town Park and gazebo	19. Dixfield carry-in boat access and fishing area
8. French Falls Battlefield	20. Informal canoe access and fishing area (Grassy Point)
9. Powerline hiking trail	21. Meadowview canoe access and fishing area
10. Informal fishing area/canoe access adjacent to the powerline hiking trail	22. IF&W Riley Boat launch (off Rich Road
11. Multipurpose Trail	23. Foundary site-Carry- in Boat Access.
12. Informal fish area/canoe access adjacent to the powerline hiking rail	

For the Otis Development, License Article 408 required the Applicant to monitor recreational use of the Project area to determine if existing recreational facilities were able to meet the recreational need. The recent monitoring report filed with FERC in March 25, 2015 found that capacity utilization is only 13 per cent⁵. With such light use and declining population in the region, the report found that the existing recreations facilities and resources were sufficient to meet the current demand.

In accordance with Article 409 (Otis Development), the Licensee constructed in consultation with State and federal fish and wildlife agencies, and now operates and maintains recreational facilities at Pine Islands. These facilities include a summer day-use on Pine Island adjacent to the Jay Dam consisting of a carry in boat launch, parking area, toilet facilities, picnic table, a play area, a fishing dock accessible to persons with disabilities, and walking trails. The Licensee also maintains a 13.5-mile multi-use trail along the north side of the Otis Impoundment. On June 20, 2002, FERC approved the as-builts for the Otis recreation facilities.

⁵ <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=6001622>

Based on the review of the application and supporting documents, the Project meets the Recreational Resources H-2 Standard and continues to satisfy this criterion.

VIII. General Conclusions and Review Recommendations

Based on this review, the Androscoggin Project continues to satisfy the LIHI criteria for certification as a Low Impact Hydropower Project and a new 5-year term is recommended. No conditions are recommended.

Appendix A

Letters from

Department of Environmental Protection, State of Maine

Regarding Water Quality



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



GERALD D. REID
COMMISSIONER

May 14, 2019

RE: LOW IMPACT HYDROPOWER INSTITUTE STAGE II APPLICATION FOR RECERTIFICATION FOR THE RILEY, JAY, LIVERMORE (FERC No. 2375) AND OTIS (FERC No. 8277) HYDROELECTRIC PROJECTS; LIHI CERTIFICATE NO. 48

Kayla A. Easler
Kleinschmidt Associates
141 Main St.
Pittsfield, Maine

The Riley Jay and Livermore Project (RJL) consists of three separate hydroelectric developments located between river miles 53 and 65, in the towns of Canton, Jay, Livermore and Livermore Falls within Oxford, Franklin and Androscoggin Counties, on an approximately 12-mile-long reach of the Androscoggin River. The Otis project is located between the Jay and Livermore developments at river mile 54 in the Towns of Jay in Franklin County and Livermore in Androscoggin County, Maine. The RJL Project has a total installed capacity of 19,725 kilowatts (KW) and Otis has a total installed capacity of 10,350 KW. The existing LIHI Certification for these Projects expires on September 25, 2019.

On April 9, 2019, the Maine Department of Environmental Protection received and reviewed the 2018 Water Quality Study conducted by Kleinschmidt and Eagle Creek to ascertain whether the RJL and Otis Hydroelectric Projects operate in compliance with Maine's water quality standards. The RJL and Otis Projects are licensed for run of river operations and the state of Maine classifies the main stem Androscoggin River near the Project as Class C (38 MRS § 465(4)(A)(B)). The Department reviewed the 2018 Water Quality Study Report for the Projects and finds no evidence to suggest that the continued operation of the project will negatively impact the designated uses, numeric or narrative criteria of its classification standards (Class C).

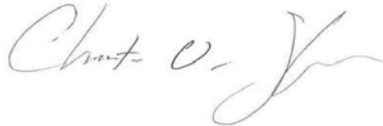
The water quality study erroneously states that the pH and Secchi disk transparency limits are in the draft rule, when in fact pH is established by statute at 38 MRS § 464(4)(A)(5) and the Secchi disk transparency limit is established by rule at 06-096 CMR 581. Other than a few exceedances of the total phosphorus criterion and one exceedance of the chlorophyll-a criterion in the Department of Environmental Assessment draft nutrient rule, the transparency readings for Secchi disk, which is the only limit promulgated, are all within the criteria specified in 06-096 CMR 581. Therefore, the project does not cause or contribute to non-attainment of Maine's water quality standards.

The 2016 Integrated Water Quality and Assessment Report (305b Report) indicates that the main stem of the Androscoggin River in the area of the Project is categorized as '4-B: Rivers and Streams Impaired by Pollutants – Pollution Control Requirements Reasonably expected to Result in Attainment'. This section shows that this reach of the river did not attain standards and

was impaired by dioxins, PCB legacy pollutants and by mercury, non-point source pollutants that are the basis of a statewide fish consumption advisory for all freshwaters. The presence of a fish consumption advisory due to dioxins, PCB's and mercury, for the waters of the RJL and Otis Project prevents attainment of Maine's Water Quality Standards, specifically the designated use of "fishing" which requires that fish are safe for human consumption. However, non-attainment status from these contaminants is not a result of the operation of the Project. No fish passage facilities are present at any of the project developments, however, there are no diadromous fish species found in the project waters between the Riley Dam and the Gulf Island Dam. Therefore, the Department supports the recertification for the RJL (FERC No.2375) and Otis (FERC No. 8277) Projects; LIHI Certificate No. 48.

Please feel free to contact me at (207) 446-1619 or via email at Christopher.Sferra@maine.gov if you have any questions regarding this project.

Sincerely,

A handwritten signature in cursive script, appearing to read "Chris O. Sferra".

Christopher O. Sferra, Project Manager
Bureau of Land Resources



JANET T. MILLS
GOVERNOR

STATE OF MAINE
DEPARTMENT OF ENVIRONMENTAL PROTECTION



GERALD D. REID
COMMISSIONER

October 30, 2019

RE: LOW IMPACT HYDROPOWER INSTITUTE STAGE II APPLICATION FOR RECERTIFICATION FOR THE RILEY, JAY, LIVERMORE (FERC No. 2375) AND OTIS (FERC No. 8277) HYDROELECTRIC PROJECTS; LIHI CERTIFICATE NO. 48

Shannon Ames
Low Impact Hydropower Institute
329 Massachusetts Ave. Suite 6
Lexington, MA 02420

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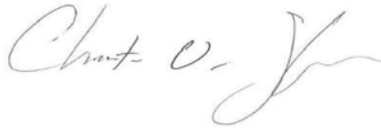
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Please feel free to contact me at (207) 446-1619 or via email at Christopher.Sferra@maine.gov if you have any questions regarding this project.

Sincerely,

A handwritten signature in dark ink, appearing to read "Chris O. Sferra", with a stylized flourish at the end.

Christopher O. Sferra, Project Manager
Bureau of Land Resources