

**LOW-IMPACT RECERTIFICATION
APPLICATION**

Jackson Mills Hydroelectric Project, LIHI # 54
(FERC NO.7590, exempt)

December 2020

Table of Contents

1.	FACILITY DESCRIPTION	3
2.0	STANDARDS MATRICES	12
3.0	SUPPORTING INFORMATION	13
A.	Ecological Flow Regimes	13
B.	Water Quality	14
C.	Upstream Fish Passage.....	15
D.	Downstream Fish Passage and Protection.....	16
E.	Shoreland and Watershed Protection	17
F.	Threatened and Endangered Species Protection	18
G.	Cultural and Historic Resources Protection	19
H.	Recreational Resources	19
4.0	FACILITY AND STAKEHOLDER CONTACTS FORMS	21
5.0	SWORN STATEMENT	25

1.0 FACILITY DESCRIPTION

The Jackson Mills Hydroelectric facility is owned by the City of Nashua, New Hampshire. The facility is located in downtown Nashua, New Hampshire approximately 700 feet downstream from the crossing of Main Street (old U.S. Route 3) on the Nashua River.

The mainstem Nashua River is 37.5 miles long and officially begins in Lancaster, Massachusetts at the confluence of its two major tributaries - the North and South Nashua Rivers. The mainstem river flows into the Merrimack River in Nashua approximately 1.25 miles downstream of the Jackson Mills facility (Figure 1).

The Nashua River basin has a total drainage area of 529 square miles, with 88 square miles being in New Hampshire, and 441 square miles in Massachusetts. From the central valley of the mainstem of the Nashua River to the limits of the watershed, the landscape is broad, forested, and rural, with small towns and cities scattered throughout.

The area in the vicinity of the Jackson Mills dam is urban in character and typical of an old New England manufacturing city. The Nashua public library is located on the south bank of the river. The former powerhouse on the north bank currently houses a restaurant, (the former powerhouse) which contains some of the features of the old operation. The new powerhouse was constructed adjacent to the old powerhouse with the turbine inlet located beneath the restaurant. The land uses along the north side of the river to the east of the restaurant are predominantly industrial and to the west they are commercial. On the south side of the river the land usage to the east of the library is predominantly urban residential with commercial uses lying to the west. Along both banks above and below the dam the vegetation consists of planted ornamentals and those types typical of disturbed ground.

The Federal Energy Regulatory Commission (FERC) regulates the facility with an exempt status as Project #7590, issued in 1984. The facility was first LIHI certified in 2010 for a five-year term and was recertified in 2015 for another five-year term.

The impoundment formed by the Jackson Mills dam impoundment is approximately 40 acres. The gross reservoir volume is 150 acre-feet.

The dam is designed as a gravity-type stone masonry spillway, with a concrete cap and a concrete extension and concrete-faced stone gravity-type abutments (Figure 2). The dam is 33 feet high, 180 feet long built in 1877. An 8-foot-high pneumatic crest gate system was added in 2014 on 140 feet of the spillway. The powerhouse built at the time of FERC exemption is located at the north dam abutment. The original powerhouse built in 1919 just to the east of the current powerhouse was converted into a restaurant prior to the FERC exemption. The facility also includes a tailrace channel; an upstream Denil fish ladder (Figure 3), and a transmission line and appurtenant facilities. Project features are shown in Figure 4.

A semi-Kaplan Turbelec turbine is installed in the powerhouse. The generating unit consists of one single-regulated propeller-type turbine. The installed capacity of the unit is 1,100 kW. The facility is operated as a fully automated run-of-river project. At times of non-generation, the project is authorized to release an outflow equal to an instantaneous minimum of 207 cfs which is 0.5 cfs for the 414 square mile drainage area above the project site. When inflows fall below 207 cfs, inflow is equal to outflow.

There have been no material changes during the current LIH term; however, the turbine is scheduled for replacement in 2021. The power output will remain at the present capacity of 1,000 kW. The replacement turbine will use the same river flow regime, and headwater and tailwater variations as the existing turbine.

As such, run-of-river operation will be maintained in accordance with the terms and conditions of the Project's FERC Exemption From Licensing.

Figure 1. Project Location and Watershed

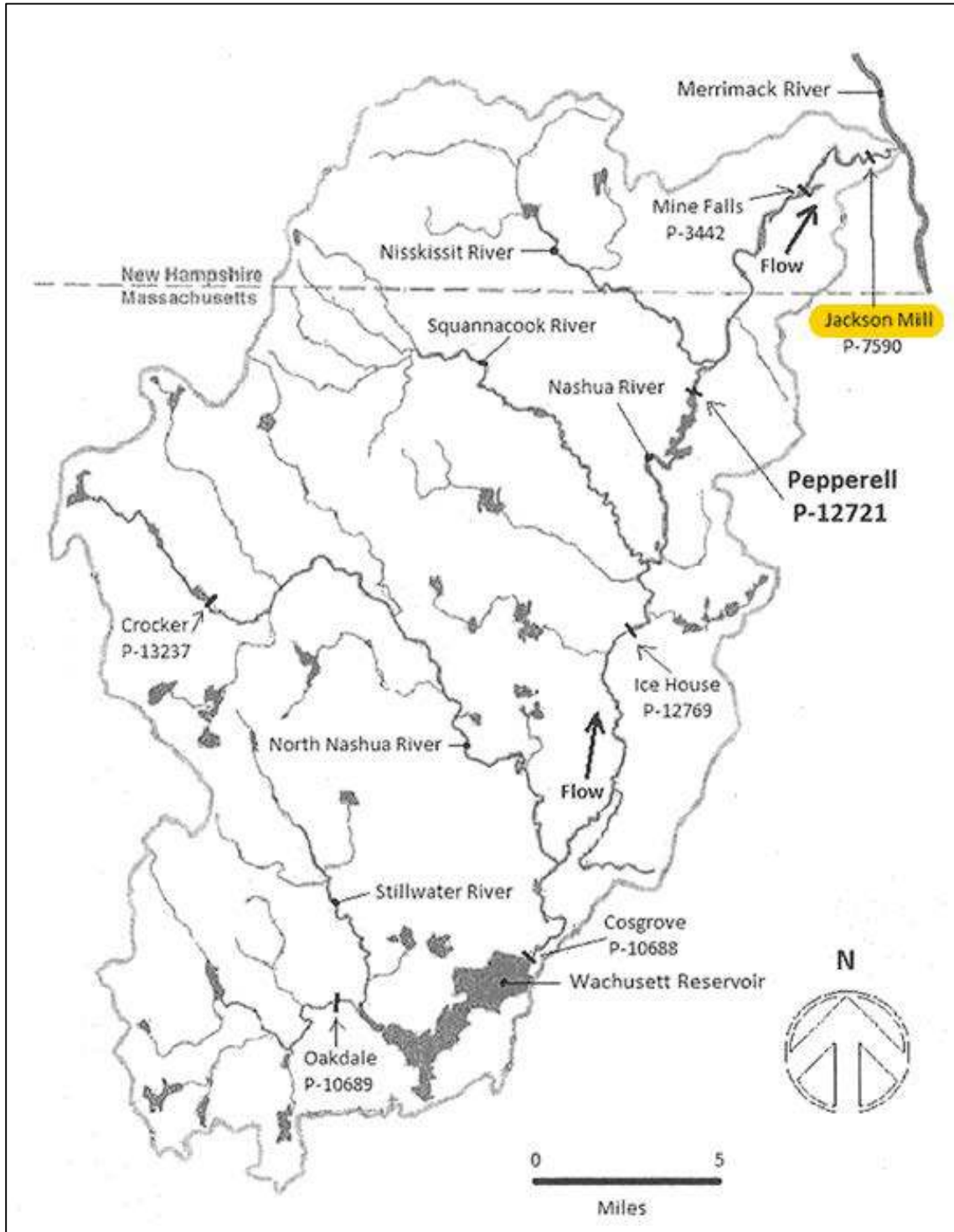


Figure 2. Dam and pneumatic crest gates



Figure 3. Spillway channel and top of fish ladder



Figure 4. Key project features



Table 1. Facility Description

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
Name of the Facility	Facility name (use FERC project name or other legal name)	Jackson Mills Hydroelectric Project
Reason for applying for LIHI Certification	<ol style="list-style-type: none"> 1. To participate in state RPS program 2. and specify the state and the total MW/MWh associated with that participation (value and % of facility total Mw/MWh). 3. To participate in voluntary REC market (e.g., Green-e) 4. To satisfy a direct energy buyer's purchasing requirement 5. To satisfy the facility's own corporate sustainability goals 6. For the facility's corporate marketing purposes 7. Other (describe) 	To participate in voluntary REC market and To satisfy the City's sustainability goals
	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	Annual generation is approximately 4,000MWh. RECs are received for 100% of generation.
Location	River name (USGS proper name)	Nashua 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: https://water.usgs.gov/wsc/map_index.html	Nashua River HUC-8 01070004
	Nearest town(s), county(ies), and state(s) to dam	Nashua, Hillsborough County, NH
	River mile of dam above mouth	River mile 1.25
	Geographic latitude of dam	42.763993
	Geographic longitude of dam	-71.463412
Facility Owner	Application contact names (Complete the Contact Form in Section B-4 also):	Deb Chisholm, Waterways Manager
	Facility owner company and authorized owner representative name. For recertifications: If ownership has changed since last certification, provide the effective date of the change.	City of Nashua, NH No change
	FERC licensee company name (if different from owner)	n/a

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates, or date of exemption	P-7590 exemption issued April 24, 1984
	FERC license type (major, minor, exemption) or special classification (e.g., "qualified conduit", "non-jurisdictional")	Exemption < 5 MW
	Water Quality Certificate identifier, issuance date, and issuing agency name. Include information on amendments.	No identifier NH Water Supply and Pollution Control Commission issued 05/21/1980
	Hyperlinks to key electronic records on FERC e-library website or other publicly accessible data repositories	FERC Exemption 04/24/1984, NH WQC 05/21/1980 and reaffirmed 05/06/1983, Exemption Application 09/01/1983, FERC Amendment 01/11/2013 Transfer of exemption to City, 02/19/2015 See all documents here: https://lowimpacthydro.org/wp-content/uploads/2020/07/Jackson-Mills-2015-Recert_Appendix-1-3.pdf
Powerhouse	Date of initial operation (past or future for pre-operational applications)	June 1984
	Total installed capacity (MW) For recertifications: Indicate if installed capacity has changed since last certification	1.1 MW No change
	Average annual generation (MWh) and period of record used For recertifications: Indicate if average annual generation has changed since last certification	3,596 MWh/year from 2016 through 2020
	<u>Mode of operation</u> (run-of-river, peaking, pulsing, seasonal storage, diversion, etc.) For recertifications: Indicate if mode of operation has changed since last certification	Run of river No change
	Number, type, and size of turbine/generators, including maximum and minimum hydraulic capacity and maximum and minimum output of each turbine and generator unit	One semi-Kaplan Turbelec turbine (single-regulated propeller-type) Hydraulic capacity: min 150 cfs/max 740cfs Turbine output: min 234kw/max 1,000kw
	Trashrack clear spacing (inches) for each trashrack	3-inch trashrack spacing, but a 1-inch overlay is added for downstream eel season

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
	Approach water velocity (ft/s) at each intake if known	Unknown
	Dates and types of major equipment upgrades For recertifications: Indicate only those since last certification	No major equipment upgrades since last certification.
	Dates, purpose, and type of any recent operational changes For recertifications: Indicate only those since last certification	No operational changes since last certification.
	Plans, authorization, and regulatory activities for any facility upgrades or license or exemption amendments	Planned turbine replacement and exemption amendment in 2021.
<i>Dam or Diversion</i>	Date of original dam or diversion construction and description and dates of subsequent dam or diversion structure modifications	1877, rebuilt circa 1930s.
	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	33 ft high, 180 ft long. 8-foot pneumatic flashboards operated in response to high flows.
	Spillway maximum hydraulic capacity	20,180 cfs
	Length and type of each penstock and water conveyance structure between the impoundment and powerhouse	n/a
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power supply
<i>Conduit Facilities Only</i>	Date of conduit construction and primary purpose of conduit	n/a – not a conduit facility
	Source water	n/a
	Receiving water and location of discharge	n/a
<i>Impoundment and Watershed</i>	Authorized maximum and minimum impoundment water surface elevations For recertifications: Indicate if these values have changed since last certification	116.1 ft NGVD normal elevation No change
	Normal operating elevations and normal fluctuation range For recertifications: Indicate if these values have changed since last certification	None, run-of-river No change

<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>																							
	Gross storage volume and surface area at full pool For recertifications: Indicate if these values have changed since last certification	Gross storage = 150 acre-feet Surface Area: 40 acres No change																							
	Usable storage volume and surface area For recertifications: Indicate if these values have changed since last certification	No net storage, run-of-river No change																							
	Describe requirements related to impoundment inflow and outflow, elevation restrictions (e.g., fluctuation limits, seasonality) up/down ramping and refill rate restrictions.	At times of non-generation the project is licensed to release outflow equal to an instantaneous minimum of 207 cfs.																							
	Upstream dams by name, ownership and river mile. If FERC licensed or exempt, please provide FERC Project number of these dams. Indicate which upstream dams have downstream fish passage.	Mine Falls RM 4.95, City of Nashua, FERC license P-3442 Pepperell RM 14.95, Pepperell Hydro Co., FERC license P-12721 Ice House RM 26.9, Ice House Partners, FERC exempt P-12769 All projects have downstream passage																							
	Downstream dams by name, ownership, river mile and FERC number if FERC licensed or exempt. Indicate which downstream dams have upstream fish passage	None on the Nashua River. Lowell project, Boott Mills, FERC licensed P-2790 is the next downstream dam on the Merrimack River has upstream passage																							
	Operating agreements with upstream or downstream facilities that affect water availability and facility operation	None																							
	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.	Project boundary																							
Hydrologic Setting	Average annual flow at the dam, and period of record used	742 cfs (1935-2020)																							
	Average monthly flows and period of record used	(1935-2020) (cfs) <table border="1"> <tbody> <tr> <td>Jan</td> <td>773</td> <td>July</td> <td>347</td> </tr> <tr> <td>Feb</td> <td>833</td> <td>Aug</td> <td>288</td> </tr> <tr> <td>March</td> <td>1386</td> <td>Sept</td> <td>304</td> </tr> <tr> <td>April</td> <td>1570</td> <td>Oct</td> <td>442</td> </tr> <tr> <td>May</td> <td>903</td> <td>Nov</td> <td>634</td> </tr> <tr> <td>June</td> <td>639</td> <td>Dec</td> <td>786</td> </tr> </tbody> </table>	Jan	773	July	347	Feb	833	Aug	288	March	1386	Sept	304	April	1570	Oct	442	May	903	Nov	634	June	639	Dec
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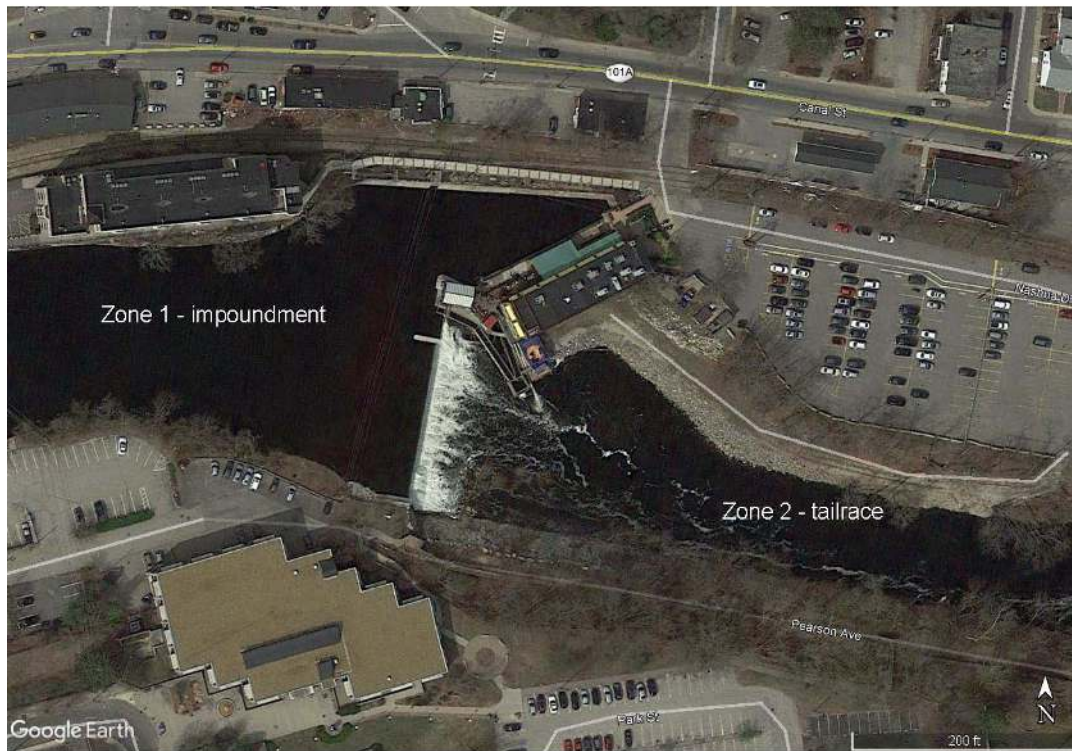
<i>Item</i>	<i>Information Requested</i>	<i>Response (include references to further details)</i>
	Location and name of closest stream gaging stations above and below the facility	Upstream: USGS 01096500 at East Pepperell, MA Downstream: none on the Nashua River
	Watershed area at the dam (in square miles). Identify if this value is prorated from gage locations and provide the basis for proration calculation.	414 square miles
	Other facility specific hydrologic information	n/a
<i>Designated Zones of Effect</i>	Number of zones of effect	3
	Type of waterbody (river, impoundment, bypassed reach, etc.)	Zone 1: impoundment Zone 2: tailrace/downstream reach
	Upstream and downstream locations by river miles	Zone 1: impoundment RM 1.7 – RM 1.25 Zone 3: tailrace/downstream reach RM 1.25 – RM 0 at Merrimack River
	Delimiting structures or features	Upstream of dam, bridge at the Millyard is the upstream extent of the impoundment Dam delimits zones 1 and 2 Merrimack River confluence is the downstream extent of Zone 2.

2. STANDARDS MATRICES

Table 2. Standard selections

Zone:		1: Impoundment	2: Tailrace / Downstream Reach
River Mile Extent:		RM 1.7 – 1.25	RM 1.25 – 0.0
Criterion		Standard Selected	
A	Ecological Flows	2	2
B	Water Quality	3	3
C	Upstream Fish Passage	1	2
D	Downstream Fish Passage	2	1
E	Shoreline and Watershed Protection	1	1
F	Threatened and Endangered Species	1	1
G	Cultural and Historic Resources	1	1
H	Recreational Resources	3	3

Figure 5. Zones of Effect



4. SUPPORTING INFORMATION

A. Ecological Flow Regimes

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
A	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> • 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). • 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. • Explain how the recommendation relates to formal agency management goals and objectives for fish and wildlife. • Explain how the recommendation provides fish and wildlife protection, mitigation and enhancement (including in-stream flows, ramping and peaking rate conditions, and seasonal and episodic instream flow variations). • Explain how flows are monitored for compliance.

Both zones qualify for Standard A-2.

The project is operated in a run-of-river mode and there is no impoundment storage or bypassed reach. The project maintains a 207 cfs minimum flow, or inflow if less. According to US Fish and Wildlife Service (USFWS) at the time of exemption (03/16/1983 letter), this flow level adequately maintains aquatic habitat in the river and is approximately equivalent to the New England default summertime aquatic base flow of 0.5 cfs per square mile of watershed area at the dam.

When the pneumatic crest gates were installed, the 2013 exemption amendment paragraph I required submittal of a gate operations plan which was submitted on April 3, 2014. The plan requires the project to continue to operate in a run-of-river mode such that it maintains the normal water surface elevation of 116.1-foot National Geodetic Vertical Datum (NGVD) at the top of the spillway portion of the dam for flows up through the maximum turbine flow of approximately 800 cfs. The project passes river inflows in excess of 800 cfs over the spillway portion of the dam which includes a NCGS with a crest elevation of 116.1-foot NGVD. The gate system operates as a single unit and a programmable logic controller (PLC) controls the lowering and rising of the gate. The PLC control can be overridden using manual control. The plan discusses the operations of the pneumatic crest gate system for varying flow and drawdown conditions and describes procedures for refilling the reservoir.

During high flow conditions, when the flow of water over the spillway equals or exceeds 2.2 feet (elevation 118.3-foot NGVD), the crest gate lowers at a rate that keeps the river level near elevation 118.3 NGVD until the crest gate is fully lowered. The gate begins to rise again when the water level reaches 118.1-foot NGVD. This procedure attempts to maintain the pond within a 0.2-foot band as much as possible when flooding occurs. The procedure minimizes impacts on downstream and upstream fish passage since the crest gate operation maximizes the time that water levels are maintained above the bottom sill elevation of the fish passage (113.8-foot NGVD).

The plan is also integrated with the project's Emergency Action Plan for emergency drawdowns. An emergency drawdown begins at a lowering rate of 0.5 foot per hour using a combination of turbine flow and/or crest gate lowering. The plan requires consultation with federal, state, and city agencies 30 days

prior to any crest gate maintenance requiring a river drawdown. Scheduled maintenance is not allowed from April 15 through June 30 and October 1 through November 30 and typically occurs during low flow river conditions in August and September. During scheduled drawdowns and refills, only flows through the turbine are used. When lowering the impoundment, the flow is limited to 75% of the turbine's maximum hydraulic flow (600 cfs). When raising the pond, the flow is limited to 25% of maximum flow (200 cfs).

B. Water Quality

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
B	3	<p><u>Site-Specific Studies:</u></p> <ul style="list-style-type: none"> • Document consultation with appropriate water quality agency to determine what water quality parameters and sampling methods are required. • Present recent water quality data from the facility or from other sources in the vicinity of the facility (e.g., data collected from the state, watershed associations, or others who collected data under generally accepted sampling protocols and quality assurance procedures) and explain and demonstrate how it satisfies current applicable water quality standards including designated uses, or provide a letter from the appropriate state or other regulatory agency accepting the data.

Both zones qualify for Standard B-3.

As part of the original WQC, it was determined that the "construction, operation and maintenance of the project would not cause a violation of any applicable water standards".

The entire Nashua River within New Hampshire is considered Class B waters considered acceptable for fishing, swimming and other recreational purposes, and, after adequate treatment, for use as water supplies. However, the entire river is included in the state's 2020 draft impaired listing for aquatic life, fish consumption and swimming. In the project vicinity (assessment units NHIMP700040402-05 and NHRIV700040402-09), impairments are for mercury, E coli bacteria, and non-native aquatic plants.¹

Condition 1 of the current LIHI certification required water quality monitoring that was conducted in 2015, 2016, and 2017. On January 3, 2019, NH Department of Environmental Services (NHDES) provided a letter to LIHI that confirmed the river in the immediate project vicinity met water quality standards for temperature, total phosphorus, and chlorophyll-a. Dissolved oxygen (DO) data from 2015 and 2017 also met the DO standard. Due to an extreme drought in 2016, NHDES stated that the river was potentially not meeting water quality standards under low flow conditions (DO < 5 mg/l) and requested additional monitoring in 2017. The subsequent monitoring showed that DO standards were met under normal project operations. Since the most recent river impairments in the immediate project vicinity do not include low DO and the project operates in run-of-river mode, it is apparent that the project does not adversely affect water quality.

¹ <https://www.des.nh.gov/organization/divisions/water/wmb/swqa/2020/documents/draft-303d-2020.xlsx>

C. Upstream Fish Passage

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
C	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • 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. • Document available fish distribution data and the lack of migratory fish species in the vicinity. <p>If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.</p>
C	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> • 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). • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. <ul style="list-style-type: none"> • Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)

The impoundment zone qualifies for Standard C-1, since there are no project-related barriers to passage upstream of the dam. Zone 2 qualifies for Standard C-2.

Downstream dams on the Merrimack River at Lowell and Lawrence created barriers to upstream passage into the Nashua River when they were constructed in the 1800s. Both projects now provide upstream passage for alewife and blueback herring, American eel, American shad, Atlantic salmon, sea lamprey, and striped bass.

A Denil fishway with two entrances (tailrace and spillway) was constructed in 1984 at the site and operates annually. The City has continued to work collaboratively with NH Fish and Game Department, NOAA, and USFWS to optimize fishway operations. USFWS inspects the fish passage facilities on an annual basis and makes recommendations for modifications to the fishway structures and operations if needed. Typical upstream fish passage occurs from May 1 through June 30, and upstream eel passage is supported at the completion of upstream fish passage from approximately July 1 through September 15, once the Denil ladder is fitted with the eel trap.

The Ladder’s upstream passage system consists of three entrances. Looking upstream, two are located to the left of the draft tube and one is located on the right base of the dam spillway. Each entrance is manually adjusted through the use of stop logs to establish a 4” to 6” differential between the water level in the fishway and lower pond elevation (by referencing staff gauges at the entrance). See Figure 1 on the prior page for a plan view.

Attraction flow provided by gravity flow at the Denil ladder exit at the top of the dam feeds the upper leg of the fishway while the lower leg, specifically the resting pool and entrance chamber, is fed by a gravity-

fed valved pipe from the intake impoundment. The lower leg of the fishway requires the supplemental water system to be able to operate at the same water level as the upper leg of the fishway.

The exit flow at the top of the dam is controlled by a hydraulic gate that can be opened or closed. The lower leg pipe is controlled by a knife gate that can be manually adjusted by a hand crank.

Video cameras are located at each fish entrance and at the exit. Each camera can be accessed remotely and footage is recorded to a hard drive for later viewing. Cameras are run continuously during the upstream season.

D. Downstream Fish Passage and Protection

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
D	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • 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. • 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. • Document available fish distribution data and the lack of fish species requiring passage in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is not or was not the cause of the extirpation.
D	2	<p><u>Agency Recommendation:</u></p> <ul style="list-style-type: none"> • 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). • 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. • Describe any provisions for fish passage monitoring or effectiveness determinations that are part of the agency recommendation, and how these are being implemented. <p>Provide evidence that required passage facilities are being operated and maintained as mandated (e.g. meets season, coordination with agencies)</p>

Zone 1 qualifies for Standard D-2 and Zone 2 qualifies for Standard D-1 since there are no project-related barriers downstream of the powerhouse discharge.

Resident species in the Nashua River upstream of the project include the following species observed in 2015: black crappie, bluegill, brown bullhead, chain pickerel, golden shiner, largemouth bass,

pumpkinseed, rock bass, white sucker and yellow perch.² In addition, river herring and American eel have been observed using the fish elevator at the upstream Mine Falls project.

Typical downstream fish passage occurs from May 1 through July 31 and August 15 through November 15. Downstream eel passage is supported between August 15 and November 15. The downstream fish passage facility is designed to pass American Shad, Alewife and Atlantic salmon. Facing downstream, it is located at the upper right side of the turbine intake and consists of a surface bypass system with a 36” wide by 24” deep entrance with 8” bar grating to screen debris. The entrance flows into a transition chamber to a 24” bypass pipe that discharges to the project tailrace. The transition chamber is a full 24-foot by 4-foot area with varying water depth (2’ to 5’) depending on head pond levels and the number of stop logs installed controlling flow into the transition chamber.

Downstream eel passage includes the use of a ramp trap that utilizes the downstream fish passage entrance, chamber and piping. In addition, night-time turbine shutdowns are instituted for three nights after a significant rain event from August 15 through November 15 or until the river temperature drops below 10 degrees Celsius. A significant rain event is defined as 0.5 inches or more of rain during a 24 hour period.

E. Shoreland and Watershed Protection

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
E	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • 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 FERC project or facility boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Both zones qualify for Standard E-1.

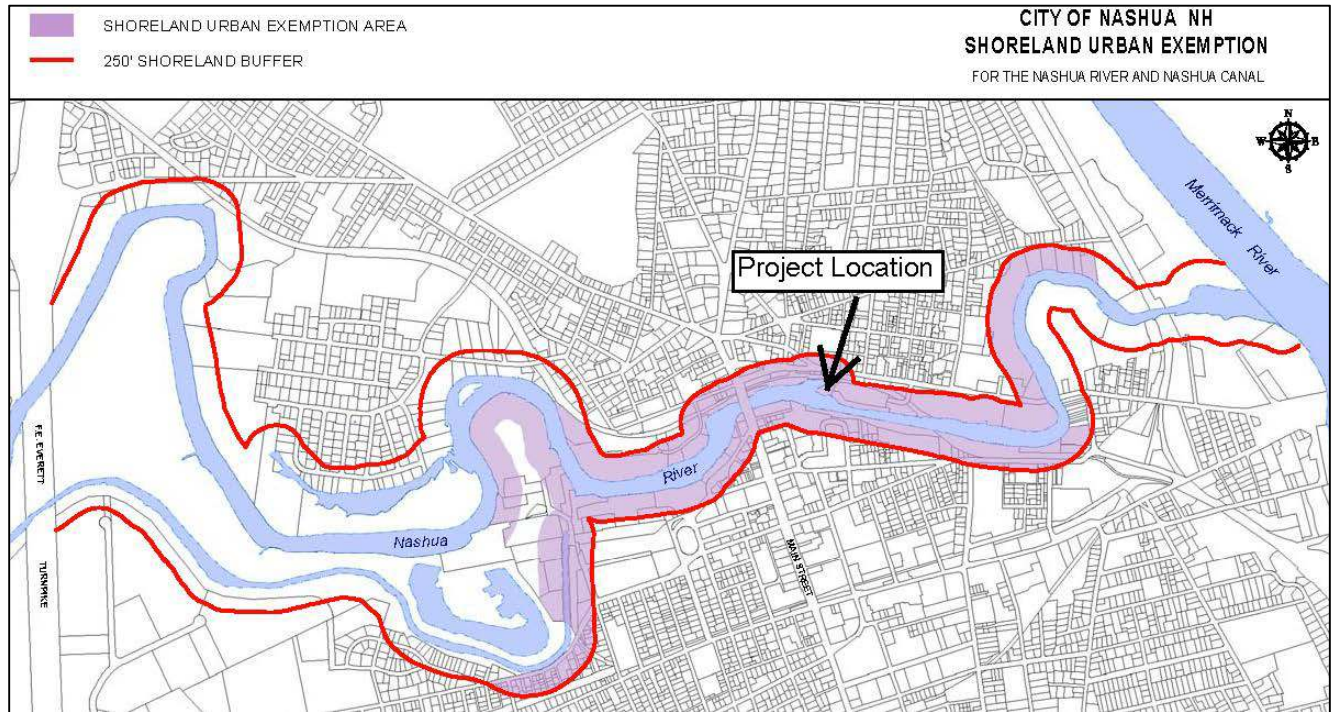
All of the land in the immediate vicinity of the dam is urban in character, highly developed and privately owned. The run-of-river operation results in flows above and below the project that have minimal effect on shoreline erosion, particularly downstream where the substrate is predominantly granite and gravel in the tailrace area.

The City has been actively managing aquatic invasive species in the Nashua River upstream of the Mine Falls dam, Mill Pond and Nashua Canal. To date, aquatic invasive species have not been observed in the river near the Jackson Mills dam, but the City continues to evaluate the entire river to minimize the potential for impacts from exotic species.

There are no lands of ecological significance nor any critical habitats for sensitive species. The project is not required to have a shoreline protection plan. In addition, the immediate shoreline in the impoundment and for all but the lowest 0.7 miles to the Merrimack River confluence is exempted from the NH Shoreland Water Quality Protection program as urbanized shorelands (Figure 6). In that lower reach, most of the shoreline consists of vegetated buffer and little development, and is owned by Eversource and Liberty Utilities. Residential is the predominant use where the Nashua River meets the Merrimack.

² <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=14985027>

Figure 6. Urban shoreland exemption area



F. Threatened and Endangered Species Protection

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
F	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • Document that there are no listed species in the facility area or affected riverine zones downstream of the facility. • If listed species are known to have existed in the facility area in the past but are not currently present, explain why the facility was not the cause of the extirpation of such species. • If the facility is making significant efforts to reintroduce an extirpated species, describe the actions that are being taken.

Both zones qualify for Standard F-1.

A US Fish and Wildlife Service IPaC online data check on October 29, 2020 (see Attachment 1) indicates that only the Northern long-eared bat could be present. The report lists several protected migratory bird species including the bald eagle. None of the species are state-listed.³

Given the urbanized nature of the project area and the lack of trees within the project boundary that might require cutting, the project has no effect on these species.

A data check of the New Hampshire Natural Heritage Bureau indicated the Bald Eagle and Peregrine Falcon have been observed near the project, in addition to the Blanding’s Turtle and Wood Turtle

³ <https://www.wildlife.state.nh.us/nongame/endangered-list.html>

observed upstream in the oxbow of the Nashua Canal. None have been documented to exist within the project boundaries.

G. Cultural and Historic Resources Protection

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
G	1	<p><u>Not Applicable / De Minimis Effect:</u></p> <ul style="list-style-type: none"> • Document that there are no cultural or historic resources located on facility lands that can be affected by construction or operations of the facility. • 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.

Both zones qualify for Standard G-1.

As part of the license exemption process the State Historic Preservation Officer (SHPO) provided a finding of "no effect" because there are no known properties of cultural or historic significance within the project boundary.⁴ No Historic Properties Management Plan (HPMP) or Cultural Resources Management Plan (CRMP) was required.

Upstream of the project, the Mine Falls project gatehouse and the Nashua Power Canal are part of the Nashua Manufacturing Company Historic District which is listed on the National Register of Historic Places. The original canal extended to the Merrimack River but was filled in around the time of the First World War from a point upstream of the Jackson Mills impoundment to the river mouth.⁵

H. Recreational Resources

<i>Criterion</i>	<i>Standard</i>	<i>Instructions</i>
H	3	<p><u>Assured Accessibility:</u></p> <ul style="list-style-type: none"> • In lieu of existing agency recommendations and plans for recreational uses, document the facility's current and future commitment to accommodate reasonable requests from recreation interests for adequate public access for recreational use of lands and waters of the facility, including appropriate recreational water flows and levels, without fees or charges.

Both zones qualify for Standard H-3.

The FERC Exemption does not require the facility to provide recreational access, accommodations or facilities. The majority of the perimeter of the impoundment is bordered by mill buildings, shopping malls and houses. The reach of river immediately downstream of the facility is bounded by high steep banks,

⁴ <http://elibrary.ferc.gov/idmws/common/OpenNat.asp?fileID=13092026>

⁵ <https://www.nashuanh.gov/DocumentCenter/View/18957/Nashua-Downtown-Riverfront-Draft-Concept-Plan>

topped by industrial and commercial buildings. The 2020 updated plan to redevelop the riverfront includes installation of a 10-foot wide path to extend from the section of riverfront at the existing pedestrian way at Margarita's restaurant and continuing to along the edge of the BAE Systems parking lot to the railroad/pedestrian bridge. This new plan focuses on connectivity, environmental stewardship, access to the river, recreation and greenspace, flood resiliency, and economic development all along the river, both upstream and downstream of the Jackson Mills project.

The facility has an agreement with the restaurant located immediately adjacent to the powerhouse which allows them to hold a limited number of public receptions on the powerhouse roof during the summer.

6. FACILITY AND STAKEHOLDER CONTACTS FORMS

Project Owner:	
Name and Title	Deb Chisholm, Waterways Manager
Company	City of Nashua, NH
Phone	603-589-3092
Email Address	chisholmd@nashuanh.gov
Mailing Address	PO Box 2019, Nashua, NH 03061
Project Operator (if different from Owner):	
Name and Title	Andrew Locke
Company	Essex Power Services
Phone	617-367-0032
Email Address	alocke@essexhydro.com
Mailing Address	55 Union Street, Boston, MA 02108
Consulting Firm / Agent for LIHI Program (if applicable):	
Name and Title	n/a
Company	
Phone	
Email Address	
Mailing Address	
Compliance Contact (responsible for LIHI Program requirements):	
Name and Title	Deb Chisholm, Waterways Manager
Company	City of Nashua, NH
Phone	603-589-3092
Email Address	chisholmd@nashuanh.gov
Mailing Address	PO Box 2019, Nashua, NH 03061
Party responsible for accounts payable:	
Name and Title	Janet Graziano, Senior Finance Manager
Company	City of Nashua, NH
Phone	603-589-3174
Email Address	grazianoj@nashuanh.gov
Mailing Address	PO Box 2019, Nashua, NH 03061

Current and relevant state, federal, and tribal resource agency contacts with knowledge of the facility (copy and repeat the following table as needed).

Agency Contact		Area of Responsibility
Agency Name	US Fish and Wildlife – Fish/Wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Melissa Grader – Fish and Wildlife Biologist	
Phone	413-548-8002 x 8124	
Email address	Melissa_grader@fws.gov	
Mailing Address	103 East Plumtree Road Sunderland, MA 01375	

Agency Contact		Area of Responsibility
Agency Name	NOAA – flows and fish/wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Bjorn Lake	
Phone		
Email address	Bjorn.lake@noaa.gov	
Mailing Address		

Agency Contact		Area of Responsibility
Agency Name	NOAA – flows and fish/wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Bryan Sojkowski	

Phone		
Email address	Bryan_sojkowski@fws.gov	
Mailing Address		

Agency Contact		Area of Responsibility
Agency Name	NOAA – flows and fish/wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Sean McDermott	
Phone		
Email address	Sean.mcdermott@noaa.gov	
Mailing Address		

Agency Contact		Area of Responsibility
Agency Name	NH Fish and Wildlife – flows and fish/wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Carol Henderson	
Phone		
Email address	carol.henderson@wildlife.nh.gov	
Mailing Address		

Agency Contact		Area of Responsibility
Agency Name	NH Fish and Wildlife – flows and fish/wildlife	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Matt Carpenter	
Phone		
Email address	Matthew.A.Carpenter@wildlife.nh.gov	
Mailing Address		

<i>Agency Contact</i>		<i>Area of Responsibility</i>
Agency Name	NH DES – water quality	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Gregg Comstock – Supervisor, Water Quality Planning Section	
Phone	(603) 271-2983	
Email address	gregg.comstock@des.nh.gov	
Mailing Address	29 Hazen Drive, P.O. Box 95 Concord, NH 03302-0095	

<i>Agency Contact</i>		<i>Area of Responsibility</i>
Agency Name	Ko’asek Traditional Band of the Sovereign Abenaki Nation Cultural/historic	<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 type="checkbox"/> Cultural/Historic <input type="checkbox"/> Recreation
Name and Title	Paul Bunnell - Chief	
Phone		
Email address	bunnellloyalist@aol.com	
Mailing Address	49 Pleasant Street #106 Alstead, NH 03602	

8. SWORN STATEMENT

As an Authorized Representative of the City of Nashua, 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 marketing the electricity product as LIHI Certified®.

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.

Company Name: City of Nashua

Authorized Representative

Name: Deb Chisholm

Title: Waterways Manager

Authorized Signature: 