Low-Impact Hydropower Institute

Updated Intake Application

Brooklyn Dam Hydroelectric Project

Northumberland, New Hampshire

FERC Project No. P-13806

Ampersand Brooklyn Dam Hydro LLC

717 Atlantic Avenue, Suite 1A

Boston, MA 02111

June 2018

Table of contents

1 Introduction

This is an application to the Low Impact Hydropower Institute ("LIHI") for the certification of the Brooklyn Dam Hydroelectric Project ("Brooklyn"), according to the most recent revised LIHI certification criteria described in the 2016 version of LIHI's certification handbook. Brooklyn is a 600 kW run-of-the river hydroelectric project that re-entered service in December 2015, and is located in Northumberland, New Hampshire.

The information provided in this updated application supports a new LIHI certification. The original intake application was submitted in April 2017.

2 Facility Description

2.1 Information Table

Table B-1. Facility Description Information for Brooklyn Dam Hydroelectric Project

Information Type	***Variable Description***	***Response (and reference to further details)***
Name of the Facility	Facility name (use FERC project name if possible)	Brooklyn Dam Hydroelectric Project
Location	River name (USGS proper name)	Upper Ammonoosuc River
	River basin name	Connecticut River Basin
	Nearest town, county, and state	Northumberland, Coos County, NH
	Geographic latitude	44.599995
	Geographic longitude	-71.505229
Facility Owner	Application contact names (IMPORTANT: you must also complete the Facilities Contact Form):	Amit Pinjani Stella Jhang
	- Facility owner (individual and company names)	Ampersand Brooklyn Dam Hydro LLC
	- Operating affiliate (if different from owner)	
	- Representative in LIHI certification	Amit Pinjani, Stella Jhang
Regulatory Status	FERC Project Number (e.g., P-xxxxx), issuance and expiration dates	P-13806 Issued: August 14, 2015
	FERC license type or special classification (e.g., "qualified conduit")	FERC Exempted

	Water Quality Certificate ("WQC") identifier and issuance date, plus source agency name	WQC #: 2015-FERCX-001 Issued: November 30, 2015 Source Agency: New Hampshire Department of Environmental Services
	Hyperlinks to key electronic records on FERC e-library website (e.g., most recent Commission Orders, WQC, ESA documents, etc.)	FERC Exemption: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14365874 FERC Environmental Assessment: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14365864 FERC Water Quality Certificate: https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14405027
Power Plant Characteristics	Date of construction	December 15, 2015
	Total name-plate capacity (MW)	0.6
	Average annual generation (MWh)	Projected between 2,500 – 2,800 MWh
	Number, type, and size of turbines, including maximum and minimum hydraulic capacity of each unit	Two 300-kW Double Regulated Kaplan turbine generating units Minimum of 33 cfs, maximum of 315 cfs per turbine
	Modes of operation (run-of-river, peaking, pulsing, seasonal storage, etc.)	Run-of-river
	Dates and types of major equipment upgrades	Following the Project's purchase by Ampersand Brooklyn Dam Hydro LLC on April 3, 2013, two 300 kW vertical Kaplan turbines, two induction generators, gearboxes, trash racks, and head gates have been installed
	Dates, purpose, and type of any recent operational changes	None since beginning of operation in December 2015
	Plans, authorization, and regulatory activities for any facility upgrades	N/A
Characteristics of Dam, Diversion, or Conduit	Date of construction	1912
	Dam height	14 ft
	Spillway elevation and hydraulic capacity	Spillway elevation of 878.73 ft Capacity of 52-acre-ft

	Tailwater elevation	866.9 ft
	Length and type of all penstocks and water conveyance structures between reservoir and powerhouse	60 ft long open forebay
	Dates and types of major, generation-related infrastructure improvements	No major infrastructure improvements since operation commenced in December 2015
	Designated facility purposes (e.g., power, navigation, flood control, water supply, etc.)	Power
	Water source	Upper Ammonoosuc River
	Water discharge location or facility	Upper Ammonoosuc River
Characteristics of Reservoir and Watershed	Gross volume and surface area at full pool	Impoundment volume: 52 acre-ft Impoundment surface area: 26-acre
	Maximum water surface elevation (ft. MSL)	881.23 ft
	Maximum and minimum volume and water surface elevations for designated power pool, if available	Max and min volume: 51.85 acre-ft, 52.15 acre-ft Max and min water surface elevations: 881.13 ft MSL, 881.33 ft MSL
	Upstream dam(s) by name, ownership, FERC number (if applicable), and river mile	"Old" Red Dam, 0.9 miles upstream, non-operational
	Downstream dam(s) by name, ownership, FERC number (if applicable), and river mile	N/A
	Operating agreements with upstream or downstream reservoirs that affect water availability, if any, and facility operation	None
	Area inside FERC project boundary, where appropriate	3.50 acres
Hydrologic Setting	Average annual flow at the dam	567 cfs (average)
	Average monthly flows (cfs, average)	JAN - 416 / FEB - 234 / MAR - 442 / APR - 1,290 MAY - 1000 / JUN - 791 / JUL - 407 / AUG - 223 SEPT - 208 / OCT - 305 / NOV - 395 / DEC - 477

	Location and name of relevant stream gauging stations above and below the facility	Upper Ammonoosuc USGS 0113000
	Watershed area at the dam	254 sq. miles
Designated Zones of Effect	Number of zones of effect	ZOE 1: riverine section including the tailrace and river junction. ZOE 2: impoundment behind Brooklyn Dam
	Upstream and downstream locations by river miles	Facility is located approximately. 3.2 river miles above the confluence with the Connecticut River
	Type of waterbody (river, impoundment, by-passed reach, etc.)	Impoundment, downstream riverine
	Delimiting structures	Dam
	Designated uses by state water quality agency	Recreational, water supply, fish habitat, power.
Additional Contact Information	Names, addresses, phone numbers, and e-mail for local state and federal resource agencies	See Section 6 Contacts
	Names, addresses, phone numbers, and e-mail for local non-governmental stakeholders	See Section 6 Contacts
Photographs and Maps	Photographs of key features of the facility and each of the designated zones of effect	See Section 7 Photographs and Maps
	Maps, aerial photos, and/or plan view diagrams of facility area and river basin	See Section 7 Photographs and Maps

2.2 "New" Facilities Only

Questions for "New" Facilities Only: ***For Facilities that are considered "new" (i.e., an existing dam that added or increased power generation capacity after August of 1998 or conduit facility that is not yet operational).***	***Variable Description***	***Response (and reference to further details)***
Did the added or increased power generation capacity require or include any new dam or other diversion structure?	Identify if any changes were needed to the dam to accommodate the new generating units.	No physical features were changed due to the increased power generation capacity.

3 Standards Selection

3.1 Zone of Effect: Riverine & Bypass Zones Downstream of Dam

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

3.2 Zone of Effect: Impoundment Zone Upstream of Dam

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

4 Supporting Information

4.1 Riverine & Bypass Zones Downstream of Dam

4.1.1 Ecological Flow

The facility satisfies Standard A-2, Agency Recommendation, in the zone downstream of the dam.

Criterion	*Standard*	*Instructions*
A	2	Agency Recommendation: • 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 stringent). • 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.

Criterion	*Standard*	*Instructions*
		• Explain how the recommendation relates to 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).

Brooklyn operates "in a run-of-river mode, with inflow equal to outflow, resulting in a stable impoundment level. The project generates electricity using flows from 33 cfs (the minimum operating capacity of the project) to 630 cfs (the maximum operating capacity of the project). When the project is not operating, all flows pass over the spillway."[1] Analysis by FERC Office of Energy Projects determined that by "operating the project in a run-of-river mode, habitat in the project impoundment and habitat in the Upper Ammonoosuc River downstream of the project would essentially be unchanged compared to current conditions, and aquatic organisms, including fish and benthic macroinvertebrates, would be unaffected".[2]

Brooklyn cannot fulfill Standard A-1, Not Applicable, as the facility has a 100-foot-long reach of the Upper Ammonoosuc River from the dam to the downstream end of the tailrace, referred to as the bypass reach.[3]

Source: New Hampshire Department of Environmental Services, Water Quality Certificate, November 2015.

Recommendation: Perform a bypass reach assessment to determine the linear extent of habitat dewatered during periods of no spill. The assessment shall be developed in consultation with and require approval by New Hampshire Department of Environmental Services ("NHDES"), New Hampshire Fish and Game, and US Fish and Wildlife Services. If NHDES determines that a minimum flow in the bypass reach is necessary, the minimum bypass reach flow requirements shall be included in the Operation and Compliance Monitoring Plan and shall become a condition of this 401 Certification.

The basis for the recommendation is to analyze the dam's impact on the bypassed reach habitat. Additional bypass flows may be required to accommodate periods when there is no flow over the spillway or through the flood gates, and all inflows are entering through the forebay into the powerhouse. This may cause dewatering of the

[1] FERC. *Environmental Assessment for Small Hydroelectric Project Exemption*. August 2015.
[2] Ibid.
[3] FERC. *Order Granting Exemption from Licensing.* August 2015.

bypass reach area. This recommendation aligns with NHDES' goals of safeguarding the fish and wildlife habitat.

Brooklyn requested NHDES to review its WQC for any outstanding issues in January 2018. By letter dated March 14, 2018, NHDES listed the outstanding issues for Brooklyn's WQC. With regards to the bypass reach, NHDES requested the Facility to "provide more information regarding how the bypass reach field assessment will be conducted. I recommend that you first consult *with NHFGD and the USFWS and then submit a more detailed plan to NHDES, USFWS, and NHFGD for review and approval. Please note that measurements of dissolved oxygen and temperature in the bypass reach will be."*

The Facility reached out to NHDES, USFWS, and NHFGD on March 20, 2018 for clarification on the bypass reach. The Facility believes the area considered the bypass reach is not a true bypass reach as the toe of Brooklyn Dam always has 1' to 4' of water depth due to Weston Dam, 1 mile downstream of Brooklyn. As the bypass reach remains watered at all times, the only time the bypass habitat is at risk is when Weston Dam lowers impoundment water levels for repairs or flashboard repairs. By email dated March 22, 2018, NHDES and USFWS concurred that the bypass reach is adequately wetted due to the backwater from Weston Dam with flashboards in place. As a result, they concluded that a bypass assessment is not necessary. Email correspondence and relevant letters are attached in Appendix A.

In addition to the bypass reach, NHDES requested for updated versions of the Operation and Compliance Monitoring Plan ("OCMP") and the Water Quality Monitoring Survey. Revised documents were sent to NHDES and USFWS for review and approval on May 18, 2018. The OCMP is included in Appendix B and the water quality sampling plan is included in Appendix C.

Lastly, in the application for the WQC, a commitment was made to install a Programmable Logic Control ("PLC") system that assists Brooklyn's run-of-river operation. By monitoring water levels in the upstream impoundment during periods when river inflow is within the turbine operating range (33-630 cfs), the PLC adjusts the wicket gates to maintain a steady pond water level. Inflow levels below 33 cfs lead to all flow passing over the spillway, whereas inflow levels exceeding 630 cfs require the manual adjustment of flood gates to prevent a water level dipping below the top of the flashboards. The PLC system has been installed and functioning as per flow requirements.

4.1.2 Water Quality

The facility satisfies Standard B-2, Agency Recommendation, in the zone downstream of the dam.

Criterion	*Standard*	*Instructions*
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation. • Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

As per FERC, Brooklyn Dam is on the 2014 Section 303(d) list, which identifies waters violating state water quality standards and do not have an established Total Maximum Daily Load. The watershed assessment for the Upper Ammonoosuc River Brooklyn Dam impoundment yielded a "likely good" distinction for aquatic life. There is no data found concerning E. coli, pH, and chlorophyll-a levels, but dissolved oxygen levels are considered "good" while mercury (with respect to fish consumption) was deemed "poor".[4,5]

Source: FERC Office of Energy Projects, Environmental Assessment for Small Hydroelectric Project Exemption, August 2015.

Recommendation: Conduct water quality monitoring for at least 3 years after the project commences operation.

The basis for the recommendation is to monitor downstream water quality, especially dissolved oxygen content, to ensure identification of the dam's adverse effects. Currently, the Upper Ammonoosuc River is categorized under Class B according to New Hampshire's Department of Environmental Services. Class B indicates suitability for recreation and fish habitat, and also outlines a minimum dissolved oxygen level of 6 mg/L.

The most recent Water Quality Certificate was issued by NHDES on November 30, 2015:

https://elibrary.ferc.gov/idmws/file_list.asp?document_id=14405027

[4] New Hampshire Department of Environmental Services. *Watershed 305(b) Assessment Summary Report: Lower Tributaries*. 2014. <http://www2.des.state.nh.us/watershed_swqa/AttachmentViewer.aspx>

[5] Brooklyn Dam Water Quality Certification, November 2015.

On March 14, 2018, NHDES requested the Facility to update its Water Quality Sampling Plan which was prepared by Gomez & Sullivan Engineers in September 2013. NHDES gave three comments regarding the plan.

Source: NHDES, Outstanding WQC issues, March 2018.

Recommendation: Update the post operation water quality monitoring survey to include a third station in the bypass reach and to measure pH in addition to temperature and dissolved oxygen.

The basis for the recommendation is to (i) monitor water quality in the bypass reach to ensure minimum water quality standards are met for habitat life; and (ii) to include pH into the sampling plan as per the original requirements of the WQC. A revised sampling plan was sent to NHDES and USFWS on May 18, 2018 for review and approval.

4.1.3 Upstream Fish Passage

The facility satisfies Standard C-1, Not Applicable / De Minimis Effect, in the zone downstream of the dam.

Criterion	***Standard***	***Instructions***
C	1	Not Applicable / De Minimis Effect

The facility does not create a barrier to upstream passage, and there are no migratory fish in the vicinity of the Project according to FERC's Environmental Assessment. There are no diadromous fish in the vicinity of Brooklyn Dam that can reach the Project site, as the dams downstream of Brooklyn (including the Weston dam) do not have fish passage facilities permitting migratory fish to travel upstream.[6]

Source: FERC Office of Energy Projects, Environmental Assessment for Small Hydroelectric Project Exemption, August 2015.

Recommendation: Install a trash rack that covers the full depth of the intake opening, with an approach velocity no greater than 2 fps and a clear spacing of no more than 1 inch. Keep the trash rack debris-free.

The basis for the recommendation is to ensure that, in the case of fish gaining access to the project site, they are not injured or killed when passing through the forebay and turbine. Trash racks should meet the US Fish and Wildlife Services' design criteria.

[6] FERC. *Environmental Assessment for Small Hydroelectric Project Exemption*. August 2015.

Historically, there has been the presence of Atlantic Salmon in the Upper Ammonoosuc River. Atlantic Salmon used to ascend the Connecticut River as far as West Stewartstown, NH, which is approximately 40 miles upstream of the confluence with the Upper Ammonoosuc River. The runs, however, were obstructed in the late 19th century by the construction of a dam below the mouth of the Miller River near Turners Fall, MA. Efforts on federal and state level to restore salmon in the Connecticut River basin have had limited success. Fish passage facilities have been constructed and are operating at Holyoke and Turners Falls, MA, and at Vernon, VT. In 1987, the Wilder fishladder opened, enabling salmon to travel as far as McIndoes Falls dam in Monroe, NH. In 2013, the US Fish & Wildlife announced it is ending its conservation effort to restore Atlantic salmon to the Connecticut River basin due to the lack of results.

4.1.4 Downstream Fish Passage and Protection

The facility satisfies Standard D-1, Not Applicable / De Minimis Effect, in the zone downstream of the dam.

Criterion	***Standard***	***Instructions***
D	1	Not Applicable / De Minimis Effect: • 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). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

As addressed in Section 4.1.3, no migratory fish species exist in the Brooklyn dam region due to the lack of passage facilities in surrounding dams. However, as also described in Section 4.1.3, recommendations have been made concerning Brooklyn's trash racks.

Source: FERC Office of Energy Projects, Environmental Assessment for Small Hydroelectric Project Exemption, August 2015.

Recommendation: Install a trash rack that covers the full depth of the intake opening, with an approach velocity no greater than 2 fps and a clear spacing of no more than 1 inch. Keep the trash rack debris-free.

The basis for the recommendation is to ensure that, in the case of fish gaining access to the project site, they are not injured or killed when passing through the forebay and turbine. Trash racks should meet the US Fish and Wildlife Services' design criteria.

FERC's Environmental Assessment also describes the benefits of an downstream pass facility. In the future, if migratory fish reach the Brooklyn dam, they would be attracted to flows over the spillway and entering the powerhouse. A downstream passage would provide an additional path for migrating fish and reduce entrainment in the intake area.

Appropriately designed trash racks have been installed as per the recommendation. As-built drawings were sent to USFWS and the agency concurred compliance of installing the 1" trash racks on April 18, 2018.

4.1.5 Watershed and Shoreline Protection

The facility satisfies Standard E-1, Not Applicable, in the zone downstream of the dam.

Criterion	***Standard***	***Instructions***
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 within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Land use in the watershed includes residential and agricultural areas, with most of the land being rural and some commercial and industrial regions.[7] There are no Shoreline Management Plans in effect, nor are there any existing protected buffer zones.

[7] FERC. *Environmental Assessment for Small Hydroelectric Project Exemption*. August 2015.

4.1.6 Threatened and Endangered Species Protection

The facility satisfies Standard F-2, No Negative Effects, in the zone downstream of the dam.

Criterion	*Standard*	*Instructions*
F	2	Finding of No Negative Effects: • Identify all listed species in the facility area based on current data from the appropriate state and federal natural resource management agencies. • Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.

Coos County is home to two threatened species according to the US Fish and Wildlife Service: the Canada Lynx, and the Northern long-eared bat.[8] In the environmental assessment for Brooklyn Dam, it was concluded that no lynxes occupy the immediate project vicinity, and no lynx habitat or prey are impacted. Furthermore, the presence of the long-eared bats in the project area is possible in the summer, but the dam would have no effect on habitat or food availability.

4.1.7 Cultural and Historic Resource Protection

The facility satisfies Standard G-1, Not Applicable, in the zone downstream of the dam.

Criterion	*Standard*	*Instructions*
G	1	Not Applicable / De Minimis Effect: • 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 adversely affected any cultural or historic resources that are present on facility lands.

Areas of potential effect on character or historic properties, as defined by the Advisory Council on Historic Preservation, include both the lands inside the project boundary

[8] FERC. *Environmental Assessment for Small Hydroelectric Project Exemption*. August 2015.

and the lands outside that are impacted by project operations. Historically, Coos County and the Upper Ammonoosuc River have been inhabited by the Abenaki tribe.[9]

Since the Brooklyn Dam had previously been used to power the Groveton Paper Mill, resuming operation in the present day does not change existing structures or disturb cultural resources. It is recommended that any changes to project operation and facilities are accompanied with a consultation with the New Hampshire State Historic Preservation Officer to maintain this status.

4.1.8 Recreational Resources

The facility satisfies Standard H-3, Assured Accessibility, in the zone downstream of the dam.

Criterion	***Standard***	***Instructions***
H	3	<u>Assured Accessibility:</u> • In lieu of existing recommendations and plans for recreational uses, document the facility's current and future commitment to accommodate reasonable requests from public interest groups 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.

Surface waters potentially affected by the Brooklyn Dam in the Upper Ammonoosuc River are classified as Class B waterbodies, a category that requires suitability for primary and secondary contact recreation.[10] As such, public access is granted. These designated uses are assessed in the 2014 Section 303(d) list, where chlorophyll-a and E. coli are the parameters considered for recreational activities. Unless no data was found, the assessment units associated with the Upper Ammonoosuc River were rated "likely good" or "good".[11] For the Upper Ammonoosuc River – Brooklyn Dam assessment unit specifically, no data was found concerning E. coli levels and contact recreation. No significant issues related to recreation were found by the Commission in the FERC Environmental Analysis.

FERC's license exemption nor the WQC require recreational facilities at Brooklyn. However, the site contains a canoe portage and the impoundment pond is freely

[9] Ibid.

[10] Water Quality Certification for the Redevelopment and Operation of the Brooklyn Hydropower Dam, WQC #2015-FERCX-001.

[11] New Hampshire Department of Environmental Services. *Watershed 305(b) Assessment Summary Report: Lower Tributaries*. 2014. <http://www2.des.state.nh.us/watershed_swqa/AttachmentViewer.aspx>

accessible for recreational fishing. Reasonable requests from public interest groups, regarding recreational use of the land and water, will be taken into consideration.

4.2 Impoundment Zone Upstream of Dam

4.2.1 Ecological Flow

The facility satisfies Standard A-2, Agency Recommendation, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
A	2	Agency Recommendation: • 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 stringent). • 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 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).

As discussed in Section 4.1.1, Brooklyn cannot fulfill Standard A-1, Not Applicable, as there was an agency recommendation to perform a bypass reach assessment. However, NHDES and USFWS concurred the area is adequately wetted and did not impose on performing the assessment. Detailed information in found in Appendix A.

4.2.2 Water Quality

The facility satisfies Standard B-2, Agency Recommendation, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
B	2	Agency Recommendation: • If facility is located on a Water Quality Limited river reach, provide an agency letter stating that the facility is not a cause of such limitation.

		• Provide a copy of the most recent Water Quality Certificate, including the date of issuance. • Identify any other agency recommendations related to water quality and explain their scientific or technical basis. • Describe all compliance activities related to the water quality related agency recommendations for the facility, including on-going monitoring, and how those are integrated into facility operations.

As discussed in Section 4.1.2, Brooklyn complies with Standard B-2. ON May 18, 2018, a revised sampling plan was sent to NHDES and USFWS which incorporated NHDES' comments from March 14, 2018.

4.2.3 Upstream Fish Passage

The facility satisfies Standard C-1, Not Applicable / De Minimis Effect, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
C	1	Not Applicable / De Minimis Effect: • If known, identify any such species, including eel, that may have been historically present.

The facility does not create a barrier to upstream passage, and there are no migratory fish in the vicinity of the Project according to FERC's Environmental Assessment.

4.2.4 Downstream Fish Passage and Protection

The facility satisfies Standard D-1, Not Applicable / De Minimis Effect, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
D	1	Not Applicable / De Minimis Effect: • 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). • For riverine fish populations that are known to move downstream, explain why the facility does not contribute adversely to the sustainability of these

		populations or to their access to habitat necessary for successful completion of their life cycles. • Document available fish distribution data and the lack of migratory fish species in the vicinity. • If migratory fish species have been extirpated from the area, explain why the facility is or was not the cause of this.

As discussed in the Section 4.1.3, no migratory fish species exist in the Brooklyn dam region due to the lack of fish passage facilities in surrounding dams. However, as part of FERC's license exemption and WQC conditions, 1" trash racks were installed in 2014 to prevent the loss of, or damage to, fish and wildlife resources.

4.2.5 Watershed and Shoreline Protection

The facility satisfies Standard E-1, Not Applicable, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
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 within the project boundary). • Document that there have been no Shoreline Management Plans or similar protection requirements for the facility.

Land use in the watershed includes residential and agricultural areas, with most of the land being rural and some commercial and industrial regions.[12] There are no Shoreline Management Plans in effect, nor are there any existing protected buffer zones.

4.2.6 Threatened and Endangered Species Protection

The facility satisfies Standard F-2, No Negative Effects, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
F	2	Finding of No Negative Effects: • Identify all listed species in the facility area based on

[12] FERC. *Environmental Assessment for Small Hydroelectric Project Exemption*. August 2015.

		current data from the appropriate state and federal natural resource management agencies. • Provide documentation of a finding of no negative effect of the facility on any listed species in the area from an appropriate natural resource management agency.

In the Environmental Assessment for Brooklyn Dam, it was concluded that no threatened nor endangered species occupy the immediate project vicinity, and no habitat or prey are impacted.

4.2.7 Cultural and Historic Resource Protection

The facility satisfies Standard G-1, Not Applicable, in the zone upstream of the dam.

Criterion	***Standard***	***Instructions***
G	1	<u>Not Applicable / De Minimis Effect:</u> • 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 adversely affected any cultural or historic resources that are present on facility lands.

Areas of potential effect on character or historic properties include both the lands inside the project boundary and the lands outside that are impacted by project operations. Historically, Coos County and the Upper Ammonoosuc River have been inhabited by the Abenaki tribe.[13]

Since the Brooklyn Dam had previously been used to power the Groveton Paper Mill, resuming operation in the present day does not change existing structures or disturb cultural resources. It is recommended that any changes to project operation and facilities are accompanied with a consultation with the New Hampshire State Historic Preservation Officer to maintain this status.

4.2.8 Recreational Resources

The facility satisfies Standard H-3, Assured Accessibility, in the zone downstream of the dam.

[13] Ibid.

Criterion	*Standard*	*Instructions*
H	3	<u>Assured Accessibility:</u> • In lieu of existing recommendations and plans for recreational uses, document the facility's current and future commitment to accommodate reasonable requests from public interest groups 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.

As discussed in section 4.1.8, the Brooklyn site contains a canoe portage and access to the impoundment pond for recreational fishing. Reasonable requests from public interest groups, regarding recreational use of the land and water, will be taken into consideration.

5 Sworn Statement and Waiver

As an Authorized Representative of Ampersand Brooklyn Dam Hydro LLC, 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 certification of the applying facility is issued, the LIHI Certification Mark License Agreement must be executed prior to marketing the electricity product as LIHI Certified.

The undersigned Applicant 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: Ampersand Brooklyn Dam Hydro, LLC

Authorize Representative Name: Amit Pinjani Title: Asset Manager

State of New Hampshire

County of Coos

On this, the 1 day of June, 20 18, before me a notary public, the undersigned officer, personally appeared_____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he executed the same for the purposes therein contained. In witness hereof, I hereunto set my hand and official seal.

Notary Public _____

6 Contacts

6.1 Facility

Project Name: Brooklyn Dam Hydroelectric Project
FERC Project No. 13806-004 **LIHI Cert. No.** N/A

Project Owner/Operator: Ampersand Brooklyn Dam Hydro, LLC
Name and Title Greg Cloutier, Operator
Company Ampersand Brooklyn Dam Hydro LLC
Phone (603) 443-7610
Email address watrpwr@gmail.com
Mailing Address 717 Atlantic Avenue, Suite 1A Boston, MA 02111 USA

Consulting firm that manages LIHI program participation (if applicable):
Name and Title Amit Pinjani, Asset Manager
Company Ampersand Brooklyn Dam Hydro LLC
Phone (416) 643-6621
Email address amit@ampersandenergy.com
Mailing Address 717 Atlantic Avenue, Suite 1A Boston, MA 02111 USA

Name and Title Stella Jhang, Project Manager
Company Ampersand Brooklyn Dam Hydro LLC
Phone (416) 643-6615
Email address stella@ampersandenergy.com
Mailing Address 717 Atlantic Avenue, Suite 1A Boston, MA 02111 USA

Party responsible for compliance with LIHI program requirements:
Name and Title Amit Pinjani, Asset Manager
Phone (416) 643-6621
Email address amit@ampersandenergy.com
Mailing Address 717 Atlantic Avenue, Suite 1A Boston, MA 02111 USA

Party responsible for accounts payable:
Name and Title Amit Pinjani, Asset Manager
Phone (416) 643-6621
Email address amit@ampersandenergy.com
Mailing Address 717 Atlantic Avenue, Suite 1A Boston, MA 02111 USA

Authorized Representative Signature **Date** June 4, 2018

6.2 Agencies

Agency Contact (Check area of responsibility: Flows _X_, Water Quality _X_, Fish/Wildlife Resources _X_, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation _X_):	
Agency Name	US Department of the Interior, Fish and Wildlife Services
Name and Title	Melissa Grader, Fish and Wildlife Biologist
Phone	(413) 548-8002 ext. 8124
Email address	Melissa_grader@fws.gov
Mailing Address	103 East Plumtree Road, Sunderland, MA 01375

Agency Contact (Check area of responsibility: Flows_X_, Water Quality _X_, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation __):	
Agency Name	New Hampshire Department of Environmental Services, Watershed Management Bureau
Name and Title	Gregg Comstock, Water Quality Planning Supervisor
Phone	(603) 271-2983
Email address	Gregg.Comstock@des.nh.gov
Mailing Address	29 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095

Agency Contact (Check area of responsibility: Flows__, Water Quality __, Fish/Wildlife Resources __, Watersheds __, T/E Spp. __, Cultural/Historic Resources __, Recreation _X_):	
Agency Name	NH Department of Resources and Economic Development
Name and Title	Jeffrey Rose, Commissioner
Phone	(603) 271-2411
Email address	Jeffrey.Rose@dred.nh.gov
Mailing Address	172 Pembroke Road P.O. Box 1856 Concord, NH 03302-1856

7 Photographs and Maps

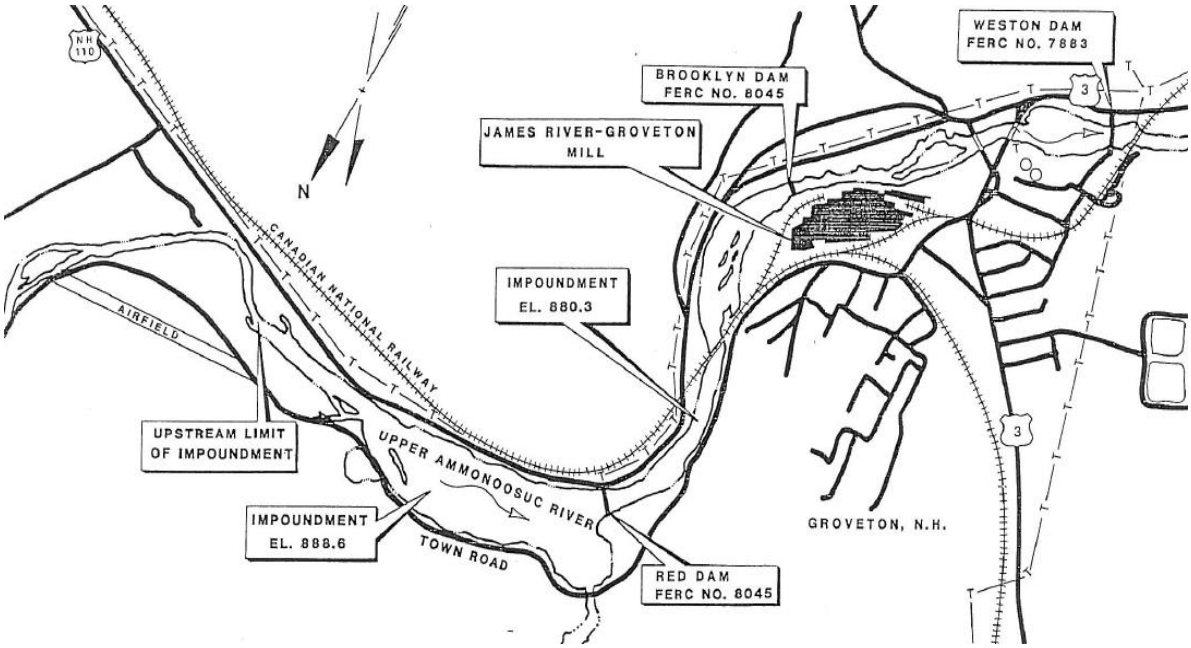

Figure 1. Location of the Brooklyn Dam

Figure 2. Overview of the Brooklyn Dam, including powerhouse, spillway slab, flood gates & timber crib spillway

Figure 3. Side view of the dam's flood gates, spillway slab & timber crib spillway

Figure 4. View of the pedestrian bridge, facing downstream of Brooklyn Dam

Figure 5. Brooklyn dam's forebay and powerhouse

Figure 6. Aerial Photograph of Brooklyn Dam

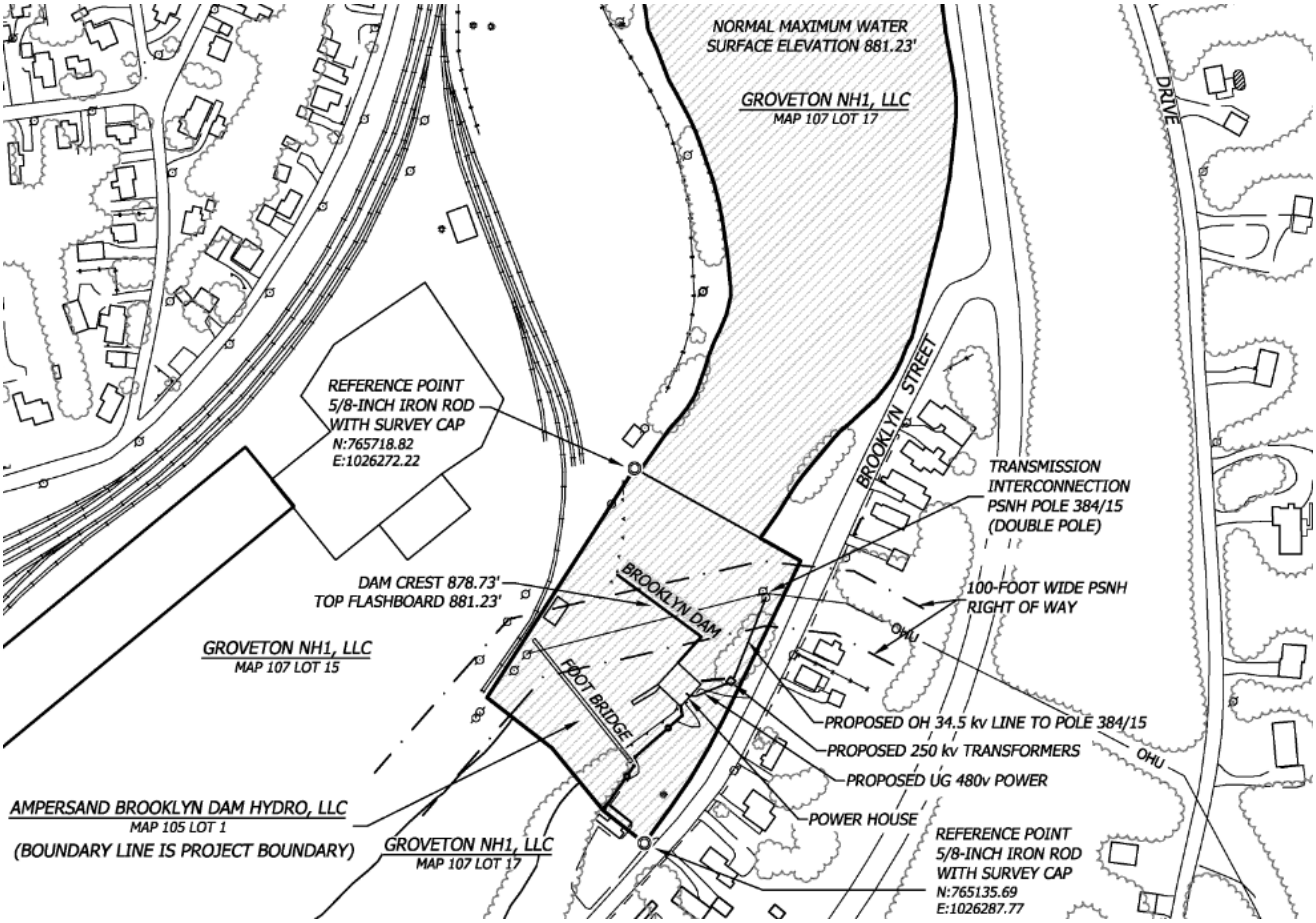

Figure 7. Project Boundary of Brooklyn Dam

Figure 8. As-built drawing extracted from FERC submission (p.1 of 7)

8 List of Appendices

Appendix A: Email and letter correspondence with NHDES RE: Dewatered Bypass Habitat Survey and the Water Quality Monitoring Survey

Appendix B: Operation and Compliance Monitoring Plan (May 2018)

Appendix C: Brooklyn Dam Water Quality Sampling Plan