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May 31, 2018

Maryalice Fischer
Certification Program Director
Low Impact Hydropower Institute

Subject: Recertification Recommendation for the Newton Falls Hydroelectric Facility (FERC # 7000, LIHI #32)

Ms. Fischer,

This letter contains my recommendation for Recertification of the Newton Falls Hydroelectric Facility (the "Facility"). I completed a thorough review of the application materials and the public record for this Facility, and am recommending recertification for one new, five-year term. I am also recommending the following condition:

> *The Owner shall install, and develop a flow rating for, a staff gage or monument in the bypassed reach of the lower development and shall provide the rating to the resource agencies and FERC as provided for in FERC's Article 404 letter of November 4, 2008. Confirmation of completion shall be filed with LIHI by December 31, 2018.*

Please contact me if you have any questions.

Sincerely,

Peter Drown, President
Cleantech Analytics LLC

I. Background:

The 2.22 MW Newton Falls Hydroelectric Facility ("Facility") is located between river miles 99.1 and 99.6 of the Oswegatchie River, in the town of Clifton, St. Lawrence County, New York. The Facility consists of two developments – 1.55 MW Upper Newton Falls and 680 KW Lower Newton Falls – each with one dam, powerhouse and bypassed reach segment. Upper Newton Falls includes a 50-foot-high, 600-foot-long concrete gravity dam with a powerhouse on the north abutment containing three vertical Francis turbines operating in a store-and-release peaking mode with a one-foot drawdown. Lower Newton Falls includes a 24-foot-high, 350-foot-long concrete gravity dam with a powerhouse on the north abutment containing one vertical Francis turbine operating in a run-of-river mode. The impoundments have a combined surface area of 659 acres, with nearly the entire area located upstream of Newton Falls. The project is located approximately twelve miles downstream from the Cranberry Lake dam (the principle storage facility on the Oswegatchie River basin,) and approximately two miles upstream of the Brown Falls Development. There are seventeen hydroelectric facilities along the Oswegatchie River on its way to the river's confluence with the St. Lawrence River, 98 miles downstream of this Facility. The Facility operates under the terms and conditions contained in the most recent FERC License issued in 2003 and expiring in 2044, and the terms of the Newton Falls Settlement Agreement. The Facility was originally certified as "Low Impact" on February 29, 2008, and re-certified on December 29, 2012. On March 13, 2018, the Owner submitted a timely application for Recertification. This application review for recertification was conducted using the new, 2nd Edition Handbook that was published in March 2016.

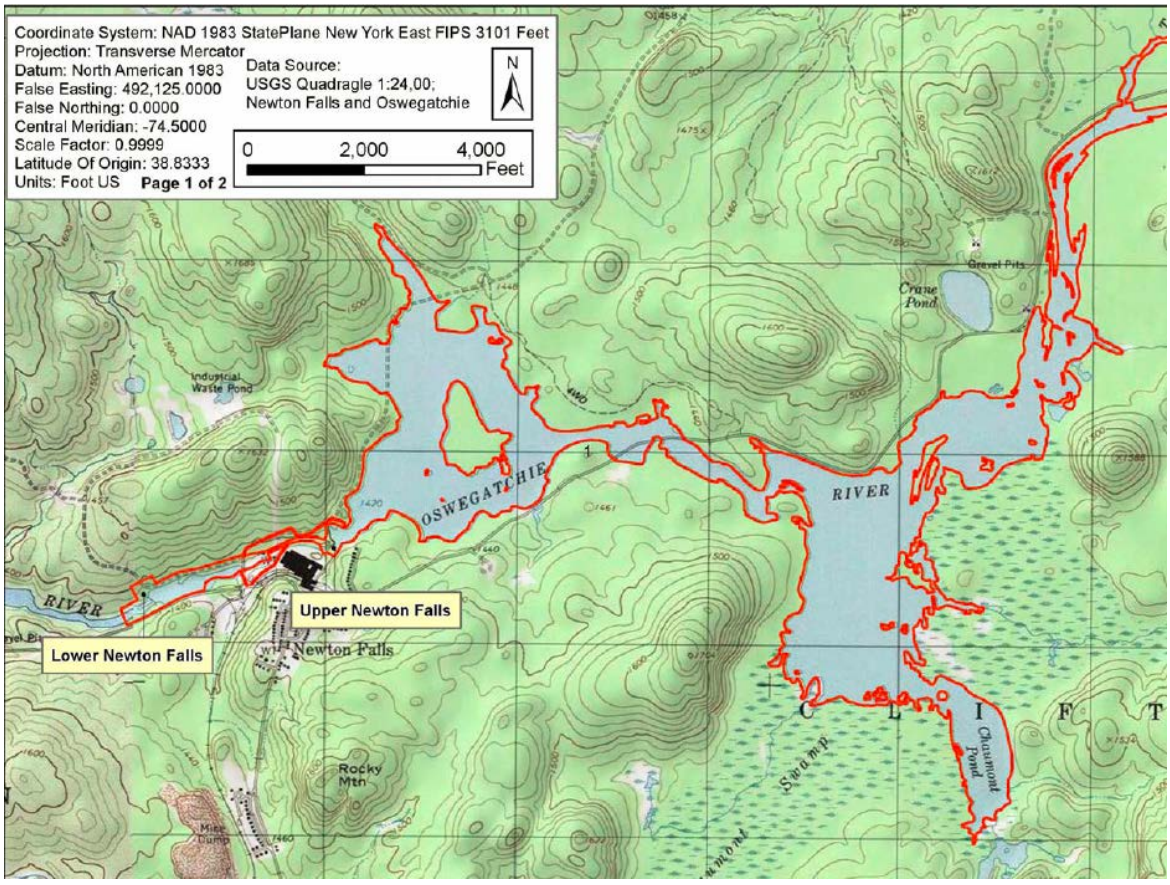


Figure 1 - Newton Falls total impacted area (all zones)

II. Recertification Standards

On May 8, 2017, LIHI notified the applicant of upcoming expiration of the Low Impact Hydropower Institute certification for the Facility. The letter included an explanation of procedures to apply for an additional term of certification under the 2nd Edition LIHI Handbook, including the new two-phase process starting with a limited review of a completed LIHI application, focused on three questions:

> *(1) Is there any missing information from the application?*
> *(2) Has there been a material change at the certified facility since the previous certificate term?*
> *(3) Has there been a change in LIHI criteria since the certificate was issued?*

If the answer to any question is "Yes," the Application must proceed through a second phase, which consists of a more thorough review of the application using the LIHI criteria in effect at the time of the recertification application. The letter noted that "because the new Handbook involves new criteria and a new process, the answer to question two for all projects scheduled to renew in 2017 will be an automatic 'YES.' Therefore, all certificates applying for renewal in 2017 will be required to proceed through both phase one and phase two of the recertification application reviews."

The Owner submitted an initial (Stage I) application for re-certification on October 09, 2017. LIHI reviewer Jeffrey Cueto conducted the review and noted several issues and deficiencies to address in the subsequent Stage II application. This Report comprises the Phase II review.

III. Adequacy of the Recertification Package

The Applicant provided an updated Recertification Application on March 6, 2018, which included additional supporting information and stated there have been "there have been no material changes in the facility design or operation since the most recent LIHI review that was concluded in December 2012." To verify this, I have reviewed the application package, supporting comments and documentation and public records on the FERC e-library posted since the original certification report (TRC Solutions, 2013). I also independently verified the submitted criteria were appropriate given the changes in the 2nd edition LIHI handbook.

The application was public noticed on March 13, 2018 and received no comments.

IV. There have not been any "material changes" at the facility that would affect recertification

In accordance with the Recertification Standards, "material changes" mean non-compliance and/or new or renewed issues of concern that are relevant to LIHI's criteria. Based on my review of materials provided, review of FERC's public records, and consultation with the noted individuals, I found that there are no areas of noncompliance or new or renewed issues of concern. The previous LIHI Governing Board voted to certify the Newton Falls Project for a term of 5 years with the following specific condition:

> *"Brookfield Power shall install, and develop a flow rating for, a staff gage or monument in the bypassed reach of the lower development and shall provide the rating to the resource agencies and FERC as provided for in FERC's Article 404 letter of November 4, 2008. Confirmation of completion shall be filed with LIHI by December 1, 2013."*

This condition was apparently not complied with in the timeframe required. For this review, the Owner provided the following explanation: "Numerous prior attempts to install the minimum flow staff gage in the bypass reach were unsuccessful due to leakage and the inability to adjust the low level gate. The leakage and gate have now been addressed." The Owner stated they plan to install this gage in 2018, as river conditions allow. Given that

ten years have passed since the issuance of this requirement, I am recommending a condition that LIHI suspend or revoke certification if this requirement is not met by December 31, 2018.

V. LIHI certification criteria are satisfied in all zones

In my Opinion, the Owner properly selected six zones of effect for the Facility. Both the upper and lower developments have an impoundment zone, bypassed reach zone, and downstream river zone, and the total impacted area listed in the application extends from river mile 104.8 to river mile 99.0. The Owner currently lists Zone 1 of the lower development as a 0.1-mile stretch, and this was determined to be inadequate by the previous reviewer in the Stage I review. The reviewer stated that this zone "should start at the confluence of the tailrace with the lower end of the bypassed river reach and extend downstream to the point where the project does not influence the criteria, particularly ecological flows and water quality." However, from the aerial view, it is apparent that the downstream segment is limited because the downstream Brown's impoundment extends up to the tailrace of the lower Newton Falls development. Therefore, the Owner appropriately defined the extent of the project's impacts.

A. *Ecological Flow Regimes*

The Owner selected Standard A2, Agency Recommendations for all downstream reach zones and Standard A1, Not Applicable/De Minimis for all impoundment zones. LIHI's Handbook allows Standard A1 to be selected for all impoundment zones, provided the application includes a description of monitoring and management activities within the zone. The Owner described remote gaging equipment which records headpond elevations to the nearest 0.1 foot every minute, and sends that data to their North America System Control Center (NASCC) in Marlborough, MA.

Ecological flow regimes in the bypassed reach are required by Article 402 of the FERC License, the Water Quality Certificate (WQC) and the Settlement Agreement. These prescribe minimum flows released through the downstream fish passage facilities (to both the bypassed reach and downstream reach,) impoundment level fluctuation restrictions, and ongoing monitoring and data logging. The scientific and technical basis for these requirements is included in Demonstration Flow Studies conducted during the re-licensing period, and best professional judgement from the agencies who were party to the Settlement Agreement[1]. The most recent Agency Recommendations were included in the Stream Flow and Water Level Monitoring Plan, approved by FERC in 2006. This Plan provides eight procedures to ensure compliance with flow requirements, and was developed in consultation with both the USFWS and NYDEC. The ongoing monitoring and data collection requirements provide a substantial "scientific and technical basis" per LIHI's criterion for passing Standard A2, Agency Recommendations. The Owner self-identified one flow excursion on December 24, 2017, due to an alarm override impacting impoundment fluctuation which lasted for approximately 4 hours, but this was not determined to be a license violation by FERC. I spoke with NYDEC on May 25, 2018, and was told that the Owner always contacts their Agency when flow excursions occur, and is cooperative and compliant with Agency requirements. Furthermore, the NYDEC provided a letter dated March 5, 2018 confirming that the Owner is in compliance with the conditions of the WQC. Therefore, the Facility satisfies Standard A2, Agency Recommendations, for all downstream reach zones.

[1] Specifically, the bypassed reach flows were developed based on the flow study and USFWS engineering guidelines, and impoundment fluctuations were set using best professional judgement to reduce impact to fish spawning in the impoundment zones. The base flow requirement of 100 cfs below the Lower Falls Development (Zone 1) did not cite any scientific or technical basis in the Settlement Agreement, but was a continuation of a requirement in the prior FERC License.

Figure 2 - Upper Newton Falls Minimum Flow Outlet

Figure 3 - Lower Newton Falls Minimum Flow Outlet

B. *Water Quality*

The Owner selected Standard B2, Agency Recommendations, for all zones. The stretch of the Oswegatchie River impacted by all zones is not listed as impaired in the 2014 303(d) list for New York State. All water quality recommendations are included in conditions issued in the WQC. Those operational conditions in the WQC reference the Settlement Agreement, and are focused almost exclusively on flows and fish passage requirements. The scientific and technical justification and compliance with those requirements are included in Criteria A and D, above and below. The only water quality-specific requirements pertain to erosion and sediment control during routine operations and maintenance. The NYDEC provided a letter dated March 5, 2018 confirming that the Owner is in compliance with the conditions of the WQC. This is sufficient to demonstrate compliance with recommendations for water quality protection, and the Facility satisfies Standard B2, Agency Recommendations for all zones.

C. *Upstream Fish Passage*

The Owner selected Standard C1, Not Applicable/De Minimis for all zones. According to fishery surveys, there are no records of anadromous or catadromous fish species in this stretch of the Oswegatchie River (Carlson, 1992[2]). Resident fish species include largemouth and smallmouth bass, pike, sucker, several species of minnows, and brook, brown, and rainbow trout. The Settlement Agreement specifically excludes the Owner from any requirement to install upstream fish passage facilities, except as required by reserved authority of the Department of Interior under Section 18 of the Federal Power Act. Both conditions are met for Standard C1 for all zones, and the Facility satisfies that Standard for all zones.

D. *Downstream Fish Passage*

The Owner selected Standard D1, Not Applicable/De Minimis for both downstream river zones, and Standard D2, Agency Recommendations, for all impoundment and bypassed reach zones. The Settlement Agreement required the Owner install “downstream fish movement facilities” at both developments, with minimum

[2] Carlson, D. M. 1992. A fisheries management survey of the middle Oswegatchie River (Gouverneur to Cranberry Lake). New York State Department of Environmental Conservation, Albany, NY. September 25, 1992.

conveyance flow of 20 cfs within those facilities. The passage facility at the Upper Development includes a steel bulkhead notched to release the 20 cfs fish movement flow, allowing water to flow through the notch and down the spillway into a plunge pool at the base of the spillway (Figure 3). The passage facility at the Lower Development included a notch at an existing sluice gate, to release the 20 cfs fish movement flow to drop into an existing pool. The USFWS originally objected to the size of the release structure at the Lower Development, claiming the structure was too narrow to allow effective passage. The Owner revised the opening plan, and provided opportunity for USFWS to inspect the site post-installation and provide further recommendations for safe and effective passage. In addition, the Owner was required to replace existing trashracks with 1" clear spacing trashracks, and provide plunge pools, smooth transitions and channel modifications if and where necessary. Both NYDEC and USFWS concurred with these fish passage plans. The Settlement Agreement specifically excludes the Owner from any requirement for effectiveness testing or making qualitative or quantitative determinations of entrainment or mortality at the site.

The scientific and technical basis for these requirements is the Demonstration Flow Study, which assessed various flows into the bypassed reach to determine impact on fish habitat. As flows were increased to 30 cfs, macroinvertebrate, riffle-dwelling species and resident fish species (primarily smallmouth bass,) exhibited increased populations and use of habitat. The USFWS engineering guidelines prescribe a minimum flow of 20 cfs for fish habitat protection, and that was determined to be appropriate for the bypassed reach to provide forage for resident species. Further scientific basis is contained in the Stream Flow and Water Level Monitoring Plan, which was developed in consultation with USFWS and NYDEC. This Plan requires coordination with agencies on plunge pools and channel modifications for successful passage. I spoke with NYDEC on May 25, 2018, and was told that the Owner is fully cooperative and responsive to their Agency. Therefore, the Facility satisfies Standard D2, Agency Recommendations for the impoundment and bypassed reach zones.

E. Watershed and Shoreline Protection

The Owner selected Standard E2, Agency Recommendation for the impoundment zone at Upper Newton Falls, and Standard E1, Not Applicable/De Minimis for all other zones. The Owner completed (and FERC approved) a Shoreline Erosion Monitoring Plan in 2005. This plan is focused entirely on the impoundment zone for Upper Newton Falls, and pertains to a specific area of concern identified by the New York State Office of Parks, Recreation, and Historic Preservation. This area consists of a flat stretch of land adjacent to the Oswegatchie River that has potential to impact archeological resources. The impoundment monitoring system (described in the Flows criterion above) provides data used to determine if follow-up reconnaissance monitoring of shoreline needs to occur. In such an event, the Owner is required to identify any signs of erosion, document significant changes with photographs, and consult with the SHPO within 30 days to determine if any further actions need to be taken. There were no such events identified on FERC e-library during the most recent LIHI certification.

Other than standard FERC articles pertaining to land disposal and acquisition, and standard terms in the WQC that require construction-specific erosion monitoring, there are no requirements for shoreline and/or watershed management. Therefore, the Facility satisfies Standard E1, Not Applicable/De Minimis for the remaining zones.

F. Threatened and Endangered Species

The Owner selected Standard F3, Recovery Planning and Action, for all zones. In May and June of 2017, the Owner queried the U.S. Fish and Wildlife Service and the New York Department of Environmental Conservation to determine the presence of both federal and state-listed species in the vicinity of the Facility. The Owner provided a map to the agencies showing the zones of impact used in the LIHI recertification application. On June 6, 2017, the USFWS responded with a threatened and endangered species list, which included the Northern long-

eared Bat as the only federally-listed species. The Owner provided the recovery plan for the Indiana Bat[3] and the final 4(d) rule that identifies habitat protection for the Northern long-eared bat as support for their F3 Criterion selection, because a formal recovery plan has not yet been developed for the Northern Long-eared bat. The Owner stated that operations of the Newton Falls Project, especially in regards to tree-clearing[4], adheres to the criteria of the 4(d) rule, and their preservation of woodline buffers meets criteria in the Indiana Bat recovery plan.

On June 14, 2017, the NYDEC responded with a report of rare or state-listed species, which included the Bald Eagle. The NYDEC developed a Conservation Plan for the Bald Eagle in 2016[5], which provides guidelines for management actions. The Owner stated their activities are consistent with the plan, for example with regard to preservation of woodland buffer areas. The NYDEC indicated by letter on June 14, 2017 that Bald Eagles have been documented nesting along the shore of the Oswegatchie River near the project boundary. I contacted Region 6 of the NYDEC in Watertown, NY to determine whether the project was in compliance with the Plan, and was informed that it was unlikely the ongoing operation of the project would have any impact on nesting Bald Eagles, and the population was "doing very well" in the state of New York.

One other state-listed species is present in the project vicinity, Northern reed grass *Calamagrostis stricta)* is, a state-threatened species. There is no state recovery plans for this species. The state report indicated that the common loon (*Gavia immer*) which is a species of special concern, nests along the shore of the Oswegatchie River at the edge of the FERC project boundary and that Northern reed grass was observed in a wetland among islands in the river. It is unlikely that project operations impact Northern reed grass at all. Since the Lower Development is run-of-river and the Upper Development impoundment is limited to a 0.5-ft drawdown during loon breeding season (May 1 – July 15), it is unlikely that project operations would flood or strand loon nests. Based on these responses and the information provided for Northern Long-eared bat, in my opinion the Owner provided adequate information to demonstrate compliance with the recovery plans and actions for state and federally-listed species, and the Facility satisfies Standard F3 for this Criterion.

G. *Cultural and Historic Resources Protection*

The Owner selected Standard G2, Approved Plan, for the impoundment zone at Upper Newton Falls, and Standard G1, Not Applicable/De Minimis for all other zones. The Owner completed (and FERC approved) a Shoreline Erosion Monitoring Plan in 2005, that is focused on an area of concern within the impoundment zone for Upper Newton Falls identified by the New York State Office of Parks, Recreation, and Historic Preservation. This area consists of a flat stretch of land adjacent to the Oswegatchie River that has potential to impact archeological resources. The impoundment monitoring system (described in the Flows criterion above) provides data used to determine if follow-up reconnaissance monitoring of shoreline needs to occur. In such an event, the Owner is required to identify any signs of erosion, document significant changes with photographs, and consult with the SHPO within 30 days to determine if any further actions need to be taken. There were no such events identified on FERC e-library during the most recent LIHI certification. Therefore, the Owner adequately demonstrated compliance with the Approved Plan and the Facility satisfies Standard G2.

[3] In my opinion, this is a reasonable substitute in lieu of a recovery plan for the Northern Long-eared bat, because the species often spend winters in the same hibernaculum and are observed living near or adjacent to other species of bats, including the Indiana bat.

[4] The Application cited prohibitions on tree-clearing applying to the Lower Newton Falls impoundment, but I confirmed with the Owner that the same prohibitions apply to both impoundments.

[5] http://www.dec.ny.gov/docs/wildlife_pdf/nybaldeagleplan.pdf

According to the 2003 Environmental Assessment, there are no properties currently listed on the National Register of Historic Places, and the State Historic Preservation Office previously stated they had no concerns of potential impacts to historic structures or buildings within the project's vicinity. This applies to all zones outside of the impoundment zone referenced above. Therefore, the Owner appropriately selected, and the Facility satisfies Standard G1, Not Applicable/De Minimis for these zones.

H. *Recreation*

The Owner selected Standard H2, Agency Recommendation, for all zones. During licensing, the Owner was required to file a Recreation Management Plan which prescribes requirements to construct, operate and maintain recreational facilities within the project's boundaries. These include a car-top boat launch, parking area and canoe put-in and take-out area, and requirements to provide public access to safe areas within the project boundaries at both developments. The plan was developed with USFWS and NYDEC consultation. The USFWS approved the plan as-is, and NYDEC recommended two additional measures which the Owner implemented. The Owner stated they maintain these facilities as needed. On December 29, 2016, the Owner submitted public safety plans for all owned hydroelectric projects on the Oswegatchie River, and FERC had no comments. In my opinion, the Owner provided sufficient information to determine that they are in compliance with Agency Recommendations for all zones and the Facility satisfies this criterion.

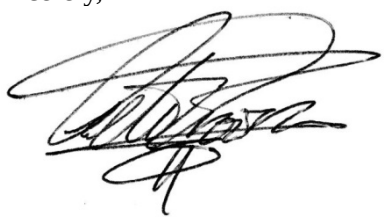
VI. Conclusion

In my opinion, the materials provided and referenced above are sufficient to make a recertification recommendation, and no further application review is needed. In conclusion, I recommend Recertification of the Newton Falls Hydroelectric Facility to one new, five-year term, with the following condition:

> *"The Owner shall install, and develop a flow rating for, a staff gage or monument in the bypassed reach of the lower development and shall provide the rating to the resource agencies and FERC as provided for in FERC's Article 404 letter of November 4, 2008. Confirmation of completion shall be filed with LIHI by December 31, 2018."*

Please contact me if you have any questions.

Sincerely,



Peter R. Drown, President
Cleantech Analytics LLC

Attachment 1
Agency and Applicant Communications

Date: May 25, 2018
Contact Person: Stephanie Larkin, Ecologist
Agency: New York Department of Environmental Conservation

I contacted the Agency to determine whether any issues of noncompliance impacting LIHI's criteria have occurred at the site, and what their overall experience with the Owner has been to date. Stephanie Larkin informed me that the Owner has been fully cooperative and responsive to their Agency, and no issues present. She reviewed the LIHI Application and noted one discrepancy regarding the flashboard height – the record on LIHI's website should be revised to read 3 foot-high flashboards, not 2.3 foot-high.

Date: May 21, 2018
Contact Person: Region 6 Office Main Number, Waterford, NY
Agency: New York Department of Environmental Conservation

I notified the Agency that the Owner was applying for re-certification, and requested how to determine whether the project was in compliance with the Species Recovery Plan for Bald Eagles in New York State. The Agency informed me that the plan is technically a conservation plan, and that the population of Bald Eagles in New York State is "doing very well." They were not familiar with any proposed hydroelectric projects. I informed them that this project was not new, but an ongoing operation. They did not foresee any potential impacts and stated the Owner was probably accurate to conclude there would be no impacts on nesting Bald Eagles.