Water Quality Certification Amendment
(33 U.S.C. §1341)

In the matter of: North Hartland LLC
c/o Essex Hydro Associates, LLC
55 Union Street
Boston, MA 02108

APPLICATION FOR NORTH HARTLAND HYDROELECTRIC PROJECT

The Vermont Department of Environmental Conservation (the Department) has reviewed a water quality certification amendment application dated May 7, 2009 and filed by North Hartland LLC, the licensee for the North Hartland Hydroelectric Project (FERC Project No. 2816). The licensee seeks to change the approved reservoir operating band. The original licensee, the Vermont Electric Cooperative, Inc., was granted a water quality certification for the Project on March 18, 1981, and a federal license was granted on November 24, 1981.

The current application is subject to review under the Vermont Water Quality Standards adopted by the Water Resources Panel to become effective on January 1, 2008 (Standards). (Standards, Section 1-01. Applicability and Definitions)

The Department, based on the application and record before it, makes the following findings and conclusions.

Findings

1. The North Hartland Hydroelectric Project is located on the Ottauquechee River at the North Hartland Flood Control Project dam, which is owned by the U.S. Army Corps of Engineers (the Corps). A 40-year federal license was issued to the Vermont Electric Cooperative in 1981 to develop a hydroelectric facility at the dam. In 1983, the license was transferred to the Vermont Electric Generation and Transmission Cooperative, Inc., which completed construction of the facility in 1986 and operated it until 1996 when it filed for bankruptcy. Subsequently, ownership passed to the current licensee, which restarted operation of the station in November 2005.

2. The North Hartland Flood Control Project is part of a network of flood control dams that are utilized primarily to abate flooding caused by the Connecticut River in Massachusetts and Connecticut. Article 38 of the license required the licensee to enter into an agreement with the Corps "...specifying details on operational procedures and a power rule curve consistent with the overall project management objectives of the North Hartland Flood Control Project."

3. According to the license application (*Application For Major License – Existing Dam For The North Hartland Dam Project*, Vermont Electric Cooperative, December 1980, Section B.2.ii. *Area-Capacity and Proposed Rules Curves*), the Corps was maintaining the reservoir water level at elevation 425 feet (stage 35 feet) year around at the time of the application, and the

hydroelectric project would operate in a daily peaking mode with an average drawdown to elevation 423 feet. Levels would be restored to elevation 425 feet every 24 hours. Figure B.2-3 (*Modified Reservoir Regulation*) depicts the maximum limit of daily drawdown as elevation 422.0 feet and the average minimum daily drawdown varying by month but in all cases elevation 423.0 or higher.

4. The 1981 water quality certification described in Finding 6 the normal daily drawdown below elevation 425.0 feet as two feet (elevation 423.0 feet) and the maximum daily drawdown as three feet (elevation 422.0 feet).

5. The May 16, 1983, memorandum of agreement between the Vermont Electric Cooperative and the Corps is consistent with the license application proposal and the water quality certification. The operating band would be between elevation 422 feet and elevation 425 feet, with the limitation that the volume released for generation would be no greater than the volume that could be stored during the off-peak hours to return the pool to elevation 425 feet daily.

6. On September 9, 2005, the licensee entered into an agreement with the Corps for operation under its new ownership. Under this memorandum of agreement, the normal pool elevation is set at elevation 425.5 feet (stage 35.5 feet) with the operating band set mostly *above* this elevation:

   Summer (inflow 180-670 cfs) – 1.75-foot cycle between elevation 425.0 feet and elevation 426.75 feet; restored to at least elevation 425.5 feet by 10 a.m. each day

   Summer (inflow <180 or >670 cfs) – 1.5-foot cycle between elevation 425.0 feet and elevation 426.5 feet; restored to at least elevation 425.5 feet by 10 a.m. each day

   Winter – 3.0-foot cycle between elevation 425.0 feet and elevation 428.0 feet.

   The summer period is defined in the agreement as the period from the Saturday before Memorial Day weekend through the first Sunday after Labor Day.

   The agreement notes that the Corps had been operating the reservoir with a fixed normal pool elevation of 425.5 feet during the period when the hydroelectric station was idle.

7. The revised operation was implemented without an amendment of the Project water quality certification having been sought. The licensee attributes the change to the Corps. A public beach was constructed on the reservoir in 1986 or 1987. Use of the swimming area was deemed unsatisfactory under the old operating rule. The licensee states in its amendment application that the operating band was raised at that time, although neither the water quality certification nor the agreement was amended to reflect the change. The licensee was unable to provide operating records showing how the pool was actually managed between 1986 and 1996. A graph of 2004 operating levels was provided and shows that the Corps was consistently maintaining the pool elevation between 425.0 feet and 426.0 feet during the summer period when the hydroelectric station was idle. The licensee also provided a graph of 2008 operating levels that show summer ranges consistent with the agreement

8. Noting that the reservoir has been managed with the higher operating band for more than 23 years, the licensee contends that a reversion to the former operating band would be deleterious to recreational use, the reservoir bed, water quality, and the shoreline. The licensee states that a reduced reservoir level would alter the balance between the beach area and the swimming area, substantially limiting swimming potential. The licensee states that extensive depositional areas at the head of the reservoir would be exposed if the reservoir is drawn to elevation 422 feet, increasing erosion and degrading aesthetics. The licensee further states that recreational boating would also be degraded due to shallower depths.

9. North Hartland Dam normally impounds the river for a distance of almost 3½ miles, reaching upstream to a cascade just below Quechee Gorge.

10. On May 8, 2009, staff from the Department and the Department of Fish and Wildlife performed a reconnaissance survey of the reservoir shoreline. The level was at about elevation 425 feet. The area subject to fluctuation water levels under current hydropeaking operations is devoid of vegetation and most topsoil has been lost due to erosion, exposing ledge or mineral subsoils. Since the change occurred several years ago, there was limited evidence of active erosion beyond what one would expect to find around an artificial waterbody managed in this fashion.

Analysis and Conclusions

11. The 2008 Department *List of Priority Waters Outside the Scope of Clean Water Act Section 303(d)* includes North Hartland Reservoir and the downstream 0.9-mile segment of the Ottauquechee River as Part F surface waters altered by flow regulation, in this case primarily related to hydropeaking and deficient minimum flows. The reservoir is considered to not fully support the designated uses of aquatic biota and secondary contact recreation. The river segment is considered to not fully support aesthetics, aquatic biota, and secondary contact recreation. The Department's current plan is to address the lack of full use support as part of the relicensing process, which should terminate in 2021. The Department may, however, opt to address use support earlier through a petition to FERC under Article 15 of the license (Form L-2 standard articles).

12. The proposed change apparently was implemented over two decades ago. Consequently, concerns regarding the potential for shoreline erosion and related degradation of water quality by increased sediment loading and turbidity have been rendered moot.

13. The increased water level extends the reservoir further upstream, but the presence of a cascade at the upstream limit reduces the inundation of riverine resources.

14. The normal reservoir volume has been increased but only slightly. The reservoir is fairly small relative to the contributing watershed size, a condition that is favorable to a short residence time, limiting the risk of thermal stratification and depleted dissolved oxygen conditions.

15. Boating and swimming use in the reservoir will be enhanced by the higher summer water levels.

16. The proposed modification will not increase the level of non-support for the designated uses of aesthetics, aquatic biota, and secondary contact recreation in the reservoir and downstream.

Decision and Certification

Based on its review of the applicant's proposal and the above findings, the Department concludes that there is reasonable assurance that the proposed operating modifications at the North Hartland Hydroelectric Project will not cause a violation of Vermont Water Quality Standards and will be in compliance with sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, 33 U.S.C. §1251 et seq., as amended, and other appropriate requirements of state law. In making this determination, the Department amends the original certification to include the following condition:

G. **Water Level Management.** The Project shall be operated in accordance with the water level management schedule contained in Finding 6 above.

Dated at Waterbury, Vermont this
20th day of July, 2009

Justin Johnson, Commissioner
Department of Environmental Conservation

By _____
Larry R. Fitch, Director
Facilities Engineering Division

c: Distribution List

LRF/JRC