

WATER QUALITY CERTIFICATION AMENDMENT
(P.L. 92-500, Section 401)

In the matter of: Missisquoi Associates
c/o Boise Cascade Corporation
Specialty Paperboard Division
P.O. Box 498
Brattleboro, Vermont 05301
Application to Amend the Sheldon
Springs Hydroelectric Power Project
Water Quality Certification

The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering (the Department) has reviewed an application dated July 18, 1985 from Missisquoi Associates (the applicant) to amend their project's Water Quality Certification because of changes to project design. The applicant has provided the Department with supplemental information on this amendment in a letter dated October 9, 1985. The Department has made the following findings:

1. The project was certified on March 30, 1984. This Certification was amended by the Department on October 19, 1984 because of changes to project design. Construction has not yet commenced.
2. The applicant has again changed project design to include the following:
 - a. A small powerhouse would be constructed in Bay 22 of the existing dam to house a 165 kw turbine-generator unit. This unit would generate with the project's 70 cfs minimum flow

requirement set under Condition A of the March 30, 1984 Certification. According to information provided by the applicant, the construction of this facility would involve minimal disturbance to the streambed and no tailrace construction.

b. A full-capacity (70 cfs) turbine-bypass system would be installed at the dam. This bypass would consist of a closed piping system terminating with a fixed-cone dispersion (Howell-Bunger) valve. This valve would discharge to the atmosphere at or near the downstream face of the dam. The expanding conical jet discharging from the valve is intended to provide efficient aeration of the flow.

c. The 70 cfs minimum flow requirement would be released through the generating unit except when that unit is undergoing maintenance, or when, as shown by a water quality study conducted by the applicant under summer critical low flow conditions, additional aeration is required to maintain Vermont Water Quality Standards downstream.

3. The water quality study and installation of the turbine-bypass system with a Howell-Bunger valve is proposed by the applicant to satisfy concerns expressed by the Department regarding the effect on downstream water quality of diverting

the 70 cfs through a turbine rather than over the dam, thereby losing the reaeration provided by spillage over the dam. As stated in Finding #14 of the project's original Certification "Because of the required spillage at the dam and the minimum flow through the units, the project should result in an improvement to dissolved oxygen concentrations downstream during critical summer low flow months." This is as compared to present operating conditions.

4. In response to the Agency's concerns regarding the aesthetic impact of diverting the minimum flow requirement through the turbine or bypass system rather than over the dam, the applicant has agreed to maintain enough flow over the dam at all times to satisfy these concerns. The exact amount of this flow has not been specified but flow will be spilled across the entire length of the dam crest at all times. The Department finds this flow should also be beneficial to downstream water quality because of the aeration provided by this spillage.

CONDITIONS

Based on its review and findings, the Department hereby amends the Sheldon Springs Water Quality Certification by adding Condition M and N:

M. The applicant shall design a water quality study, to be submitted to the Department for review and approval, to determine under what conditions it is necessary to pass the 70 cfs minimum flow requirement through the turbine-bypass system for aeration to maintain Water Quality Standards downstream of the project.

This study shall be conducted during the first summer of project operation. Based on this study, the applicant shall propose to the Department an operating mode that will meet dissolved oxygen standards. This mode of operation shall be subject to Department approval.

N. A continuous flow shall be spilled over the entire length of the dam crest at all times. The applicant shall provide the Department, for review and approval, with a description, hydraulic calculations and plans for the method to be used to pass this flow.

and amending Condition K:

K. No construction may commence until the Department has issued written approval under Conditions A, F, I, and N. Operational changes made after project completion are subject to Condition I and must be approved prior to effecting the change.


Jonathan Lash, Commissioner
Department of Water Resources
and Environmental Engineering

Dated at Montpelier, Vermont
this 13 day of Feb., 1986.

AMD/rh