3/19/82

WATER QUALITY CERTIFICATION

(P.L. 92-500, Section 401)

In the matter of: Central Vermont Public Service Corporation
77 Grove Street
Rutland, VT 05701
Application for East Barnet Hydroelectric Project

In making the following findings, the Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering has examined several submittals made by Central Vermont Public Service Corporation (the applicant) including:

Exhibit #1 - Water Quality Certificate application dated November 20, 1981

Exhibit #2 - Water Quality Certificate application amendments dated January 18, 1982

Exhibit #3 - Comments dated February 25, 1982 regarding review of draft certificate

1. The applicant intends to develop the site of the former Roy Brothers and Wilder mills on the Passumpsic River in East Barnet Village for hydroelectric power generation. The approximate capacity utilizing two turbines is 2.2 mw. The dam is presently breached. The applicant intends to rebuild the dam, construct a new intake system, construct a new powerhouse, and excavate approximately 300 feet of tailrace. No flashboards are to be incorporated in the dam.

2. The design pool elevation is 487.3 feet NGVD, and the normal tailwater elevation is 459.3 feet NGVD. The tailrace would be excavated through the rapids at the base of the falls to discharge into the large pool directly downstream of the falls. The tailrace channel would be concrete-lined where it is not in bedrock.

3. The backwater resulting from this project will extend over two miles upstream to a point between the Water Andric and Joes Brook. The normal

backwater would be contained within the streambanks. Some inundation of Joes Brook will occur below the U.S. Route 5 bridge.

4. A U.S.G.S. gaging station (#113550) is located upstream at Passumpsic, Vermont and has a watershed area of 436 square miles. The estimated watershed area at the project location is 500 square miles. At the gage, the median flow is 400 CFS, the 90% exceedance probability flow is 160 CFS, and the 7Q10 value is 87 CFS. Using a direct drainage area proration, the median flow, the 90% exceedance probability flow, and the 7Q10 flow for the project would be 460 CFS, 180 CFS and 100 CFS, respectively. Low flows are regulated by upstream power facilities.

5. Except as provided in Finding 6 the system is to be operated in a strictly run-of-the-river manner, with a hydraulic capacity ranging from approximately 85 CFS to 1170 CFS. The surface area of the impoundment would be approximately 24 acres; however, the facility will not be operated from storage. The powerhouse would discharge into the pool located on the left of a large island at the base of the falls. The right channel on the south side of the island would be bypassed and only contain backwater from the main channel, except during periods of flooding.

6. The applicant intends to draw from storage under two conditions: (1) when the Power Pool (NEPEX) calls for "all-units-running", a condition which is likely to occur at a frequency of twice per year, and (2) during NEPEX audits of the facility at full capacity normally between November and February. The applicant has stated that the drawdown would generally fall between 9-30 inches. The applicant proposes to pass a minimum stream flow of either 100 CFS or the natural flow, whichever is less, at all times during the refilling of the impoundment. The stage in the downstream pool should not be significantly lowered, due to the channel control section downstream of the pool. The applicant concludes and the Department finds that a minimum stream flow in excess of 100 CFS for the infrequent periods of pool refill is not

warranted and that the principal interest is in an expeditious refilling of the impoundment.

7. The Department of Fish and Game reports that the species of fish in the area are primarily brook trout, brown trout, rainbow trout, and smallmouth bass, and that this reach of the Passumpsic River has good access and receives considerable fishing pressure. The applicant's studies show that there exists a mixed fishery ranging from trout to suckers. Other species of the pan fish groups are also in the area. The dam at East Barnet obstructs fish migration as does the Comerford dam on the main stem of the Connecticut River upstream of the Passumpsic River confluence.

It is expected that year around residency of salmonids and smallmouth bass occurs in the left-channel pool at the base of the falls and downstream. The pool at the base of the falls is considered to provide an important local fishery. The applicant's project shall maintain flows through the pool, and no alteration of the downstream river channel shall be allowed if it may significantly change the natural level of the pool. The applicant has stated that the control section for the pool level is about 1500 feet downstream.

8. The Passumpsic River is designated as a Class B, Water Management Type I or II stream. The minimum dissolved oxygen content of such streams is 6 mg/l. For protection of spawning, 7 mg/l at and near spawning areas may be required.

9. The applicant conducted a water quality monitoring program during the period August 24, 1980 to July 10, 1981. Sampling stations were located at the highway bridge upstream of the falls and directly below the riffle section downstream of the falls. A third station was located at the mouth of Joes Brook. On August 24, 1980, the sampling indicated that the falls and riffle section increased dissolved oxygen levels in the river from 7.0 mg/l to 8.6 mg/l, or from 80% saturation to 98% saturation. The average daily flow on that date is estimated at 174 CFS. The D.O. level at the mouth of

Joes Brook was measured at 8.5 mg/l, indicating an oxygen depletion of 1.5 mg/l in traveling through the existing impoundment. Due to the increase in impoundment size and the loss of aeration over the falls while generating, during late summer, low flow periods, D.O. levels below the falls will be substantially lower than the levels presently experienced. It is felt that there are sufficient reaeration opportunities downstream and that D.O. levels in the pool below the falls would continue to meet standards.

CONDITIONS

The Department of Water Resources and Environmental Engineering certifies that this project will meet Vermont Water Quality Standards with the following conditions:

A. The hydroelectric facility shall be operated to maintain instantaneous flows downstream of the tailrace equivalent to the instantaneous inflow into the impoundment. Any flows which either exceed the hydraulic capacity of the powerhouse or are less than the minimum capacity of the smaller turbine (85 CFS) shall be passed over the dam. The applicant shall provide the Department of Water Resources and Environmental Engineering with a description and plans detailing how releases will be made at the dam for review and approval.

The requirements of this condition shall be waived during NEPEX audits and NEPEX "all-units-running" periods, which are understood to be infrequent. During the refilling of the impoundment, if drawndown, instantaneous flows below the project shall be maintained at 100 CFS, or project inflow, if less. Drawdowns shall not exceed thirty (30) inches.

B. Excavation in the stream proper downstream of the dam shall be limited to only that necessary to construct the powerhouse and tailrace.

C. During the final engineering phase or earlier, the applicant shall file a comprehensive erosion and sediment control plan with the Department of Water Resources and Environmental Engineering for review and approval. The plan shall cover temporary and permanent measures to limit adverse impacts on water quality from turbidity and sedimentation with regard to construction activities. The plan shall also specify how flows will be managed during construction. It may be beneficial to consult with the Department for input during the development of the plan.

D. The intake shall be designed in such manner as to make silt buildup unlikely during power operation and any maintenance desilting of the

forebay possible without creating turbidity problems.

E. The applicant shall insure that every reasonable precaution is taken during construction to prevent the discharge of petro chemicals, wet concrete and debris to state waters.

F. Any debris removed from the project area during construction and later operation shall be disposed of properly.

G. Any significant changes to the project including the operational scheme must be submitted to the Department of Water Resources and Environmental Engineering for review and approval. Any proposal to alter the river channel downstream of the proposed tailrace is also subject to this condition.

H. Upon completion of the project, the applicant shall provide the Department of Water Resources and Environmental Engineering with an as-built set of plans for the record.

I. No construction may commence until the Department of Water Resources and Environmental Engineering has issued written approval under Conditions A, C, and G. Operational changes made after project completion are subject to Condition G and must be approved prior to effecting the change.

John R. Ponsetto

John R. Ponsetto, Commissioner
Department of Water Resources
and Environmental Engineering

Dated at Montpelier, Vermont this
19th day of March, 1982.

JRC/rh