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

In the matter of: Westinghouse Electric Corporation
160 Tapley Street
Springfield, MA 01104
Application for Gilman Dam Project

By letter dated April 30, 1985, Multiple Resource Management filed on behalf of Westinghouse Electric Corporation (the applicant) an application for a Water Quality Certification for the Gilman Dam Project. The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering (the Department) judged this application to be incomplete and requested supplemental information be provided. The applicant responded by letters dated June 19, 1985; August 5, 1985; and October 15, 1985. Additionally, a draft Federal Energy Regulatory Commission license application dated November 20, 1985 was submitted by letter of the same date.

The material has been reviewed and the Department finds:

1. The dam is located on the Black River in the Village of Springfield just upstream of the Comtu Falls Dam. Presently there is no hydroelectric facility at this site. Use for this purpose was discontinued in 1960. On November 28, 1983, the Department certified a similar project proposed by Factory Falls, Inc. for Gilman Dam. Factory Falls Associates owns the site.

2. The dam is 190 feet long, 7 feet high, and extends from the left (east) bank to an island. The river section to the right of the island has not been dammed.

3. The project entails rehabilitation of the existing 125 kw electric generating facility.

4. Rehabilitation includes the remachining of the existing horizontal Francis turbine; testing and rewinding the belt-driven induction generator as required; and rebuilding the gate structure and trashracks. The forebay and tailrace area will be desilted.

5. The project is to be operated strictly run-of-the-river. Semi-automatic controls will be installed, with a manual start up. A level sensor will regulate flow through the unit with a limitation to spill a minimum depth of water at the dam of 1/2 inch across the crest length.

6. Free-flowing conditions will be maintained in the right channel. The applicant states that "greater than 50% of the water [bypasses] the dam during low flows" (letter of October 15, 1985).

7. The available head is about 23 feet. The dam crest and tailwater elevations are approximately 421.6' NGVD and 398' NGVD, respectively. A 175 foot long, four foot diameter steel penstock will be utilized. The impoundment surface area is about one acre, and the storage capacity is four acre-feet.

8. The single unit would have a capacity of 40 cfs to 140 cfs. The watershed area at the site is 189 square miles. Based on the U.S. Geological Survey gaging station at North

Springfield (gage No. 0115300; watershed area 158 square miles), the mean annual flow can be estimated at 350 cfs and the 7Q10 flow at 21 cfs. Substantial flow regulation occurs at this site on a daily basis due to storage cycling at Central Vermont Public Service Corporation's Cavendish plant. High flows are regulated by North Springfield Reservoir, a Corps of Engineers flood control facility.

9. The Vermont Water Resources Board has classified the Black River in Springfield as Class C waters. Class C waters are managed to provide habitat suitable for aquatic biota, fish and wildlife and for uses including recreational boating and any recreational or other water uses in which contact with the water is minimal and where ingestion of the water is not probable; irrigation of crops not used for human consumption without cooking; and compatible industrial uses.

The river in the reach is designated as a coldwater fish habitat. The dissolved oxygen minimum standard is 6 mg/l or 70 percent saturation at all times. Higher standards apply to areas which the Secretary of the Agency of Environmental Conservation determines are salmonid spawning or nursery areas important to the establishment or maintenance of the fishery resources.

10. During July and August, 1985, the applicant conducted a water quality sampling program to determine present river temperature/dissolved oxygen levels during the critical summer low flow periods. Five sampling stations were included in the study, the furthest upstream being above Fellows Dam and the furthest downstream being below Lovejoy Dam. Both midday and early morning samples were collected. Flow data for the site was not collected. Gage records for North Springfield were obtained, and approximate flows for the study area estimated.

On each of the sampling dates, the percent saturation of the early morning sample exceeded 80% at the uppermost station. All samples were at or near saturation leaving the project area. The lowest recorded upstream dissolved oxygen concentration was 7.2 mg/l on July 11 at about 5 A.M. Limited sampling in 1983 included a dissolved oxygen of 6.4 mg/l (77% saturation) on August 4 at 9 A.M.

In order to assure that the development of hydroelectric projects in Springfield does not conflict with the operation of the municipal wastewater treatment plant below the Village, it is desireable to maintain dissolved oxygen levels downstream of Lovejoy Dam at or near saturation. Based on the data provided to date, it appears that the proposed hydroelectric facilities will not reduce the river's ability to assimilate sanitary wastes.

11. The applicant has agreed to pass a minimum of 1/2 inch of water (about 9 cfs) over the full length of the dam continuously while the project is operating. This in combination with natural flows through the right channel and spillage at the other dam sites should maintain downstream dissolved oxygen standards. Flashboards will not be utilized at either Gilman Dam or Fellows Dam.

12. In order to confirm the project's conformance with standards, a follow up study of the dissolved oxygen levels during project operation will be required as a condition of this certification. If standards for dissolved oxygen are not being met or will not be met when the project is being operated as certified, the Department may order further mitigation including but not limited to additional spillage.

13. Cycling operation of Central Vermont Public Service Corporation's facility at Cavendish may artificially elevate dissolved oxygen levels at Springfield during the early morning hours by increasing flows during that period. This operation may be modified at some time in the future. If this does occur, early morning dissolved oxygen levels may be reduced. In such case, the Department may order the applicant to perform additional sampling and undertake mitigative measures, including but not limited to increased spillage.

14. The forebay area and tailrace will be desilted as part of project construction. A steel-frame and plywood cofferdam is to be used to dewater the forebay area. Sandbags

are to be used to isolate the tailrace excavation from the river. As an alternate to cofferdamming the intake structure, the applicant is considering the installation of sandbags at the head of the pool to divert all flows into the right channel and enable them to drain the impoundment. This option may or may not be acceptable depending on the habitat characteristics of the pool and the method of draining. The final proposal for desilting will be reviewed in detail under Condition D, which requires submittal of an erosion control and water management plan for construction.

15. No plan has been presented to provide for the safe passage of fish downstream at the dam. This certification is being conditioned to require the development and implementation of a plan which will 1) prevent or minimize the passage of fish throught the turbine unit, if significant injury or mortality can result; 2) prevent or minimize impingement of fish on screens, trashracks, or other such devices; and 3) convey fish safely and efficiently downstream past the dam.

CONDITIONS

Based on its review, the Department certifies that this facility will not violate Vermont Water Quality Standards provided that the following conditions are met:

A. The project shall be operated in a strict run-of-the-river manner with the instantaneous river flow below the facility maintained equivalent to the instantaneous river flow directly upstream. Whenever the project is operating, a minimum instantaneous flow of 40 cfs shall be maintained in the right channel bypassing the dam and a minimum of 0.5 inch of water shall be spilled over the full length of the dam crest. When the project is shut down, no flows shall be passed through the penstock. Flashboards shall not be used.

B. The impoundment shall not be drawn down below 0.5 inch above the dam crest or desilted without prior written approval by the Department. A copy of the Agency of Environmental Conservation, Desilting Policy is attached for the applicant's information.

C. Any debris associated with project construction or operation, including material removed from the trashracks, shall be disposed of properly.

D. The applicant shall file for review and written approval, prior to the start of construction, a comprehensive erosion control and water management plan to cover construction activities. This plan shall address the maintenance of stream

flow during construction and measures taken to prevent the discharge of sediment, wet concrete, and debris into State waters. It may be beneficial to consult with the Department during the development of this plan.

E. During the first summer of operation, the applicant shall conduct a water quality study to determine the effect the project has on dissolved oxygen levels in the river. Prior to undertaking the sampling program, the applicant shall submit a plan of study to the Department for review and approval before June 1 of that year. The study results shall be filed with the Department by the end of that year.

F. The applicant shall submit a plan for downstream fish passage to the Department of Fish and Wildlife for approval prior to project construction. This plan shall include the design of the screens, trashracks, or other such devices and the means for providing downstream passage of fish at the dam. The project shall not be operated without the approved passage plan in place. The applicant shall file a copy of the approval letter and approved plan with the Department within two weeks of the Department of Fish and Wildlife's action.

G. 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.

H. Any significant changes to the project, including project operation, must be submitted to the Department for prior review and written approval.

I. The applicant shall provide the Department with an as-built set of plans for the record and a copy of the turbine rating curves..

J. No construction may commence until after the Department has issued written approval under Condition D.

Jonathan Lash

Jonathan Lash, Commissioner
Department of Water Resources
and Environmental Engineering

Dated at Montpelier, Vermont
this 23 day of March, 1986.