Petitioner's Exhibit No. __
Exhibit CJM No. 4
Vermont Water Quality
Certification

AGENCY OF ENVIRONMENTAL CONSERVATION

Montpelier, Vermont 05602
Department of Water Resources
and
Environmental Engineering

RECEIVED
FEB 03 1986

WATER QUALITY DIVISION
March 21, 1986

Mr. David R. Bristol
Vice President, Hydro Development
Hydra-Company Enterprises, Inc.
One Lincoln Center, Suite 1225
Syracuse, NY 13202

Re: Dodge Falls

Dear Mr. Bristol:

The enclosed Water Quality Certification for the Dodge Falls Project (FERC No. 8011) is being issued pursuant to your January 17, 1986 application in accordance with the Federal Clean Water Act. Please review the Certificate carefully and contact us if you have any questions. Because the project is very similar to the original project certified on July 9, 1982, we have waived the public warning.

Sincerely,

Jeffrey R. Cueto

Jeffrey R. Cueto, P.E.
Hydrologist

JRC/rh
Encl.

cc Stephen B. Sease, Director, Environmental Conservation Planning
Len Gerardi, Assistant Director, Fisheries
Harvey Hill, Dodge Falls Hydro Corporation
U.S. Fish and Wildlife Service, Concord
U.S. Environmental Protection Agency
Town Clerk, Town of Ryegate

VERMONT PUBLIC SERVICE BOARD
AUG 4 9 31 AM '88

pls file
D.F.

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

In the matter of: Dodge Falls Associates
One Lincoln Center, Suite 1225
Syracuse, NY 13202
Application for Dodge Falls
Hydroelectric Project

The Water Quality Division of the Vermont Department of Water Resources and Environmental Engineering (the Department) has reviewed the Federal Energy Regulatory Commission Application for Amendment-Exemption from Licensing (November, 1985) filed as supporting documentation for the Water Quality Certificate application dated January 17, 1986 and finds:

1. Dodge Falls Associates (the applicant) proposes to construct and operate a hydroelectric facility at the existing Dodge Falls dam on the Connecticut River at East Ryegate, Vermont. The dam was used until 1966 to provide water power to drive pulp grinders at the CPM, Inc. paper mill on the Vermont side. Presently, the impoundment furnishes process water to the paper mill. The dam, which is 485 feet long, consists of a grouted, rock-fill, timber crib with a timber crest and wood-plank facing. The crest elevation averages 421.4' NGVD and is about 15 1/2 feet above the bedrock streambed at the downstream toe.

2. A reinforced-concrete powerhouse with an integral intake is to be constructed on the left (east) end of the dam. A 60-foot section of the dam, including the left abutment, is to be removed and a 75-foot side spillway constructed along the right side of the forebay in order to compensate for the loss in

spillway capacity. A 60-foot tailrace would be excavated in rock to carry flows back into the main channel. The powerhouse is to contain a single horizontal turbine-generator unit with a total capacity of 5.0 megawatts at the rated head of 12 feet and a flow of 5800 cfs.

3. Based on a March 20, 1986 telephone conversation between Department engineer Jeffrey R. Cueto and David R. Bristol of HYDRA-CO Enterprises, Inc., the mode of operation is to be strictly run-of-the-river. The applicant intends to use 2.0 feet of flashboards across the spillway crest. Operation would use river flows as regulated by the upstream McIndoe Falls plant. The impoundment would be maintained within three inches of the dam crest or the flashboards when in place. Although the storage available behind the flashboards has been estimated at about 580 acre-feet, this storage will not be utilized to cycle the pond for power production purposes.

The applicant does not indicate any lag time which may effect downstream flows between plant shutdown and spillage over the boards. Leakage flow rates have not been estimated and provided to the Department.

The applicant proposes to provide a minimum instantaneous release of 1108 cfs (0.5 csm) or project inflow, if less, below the project. Strict run-of-the-river operation will minimize the project impact on the downstream flow regime. Upstream projects presently have a significant impact on flows.

The specific method of automatic operation will be reviewed by the Department before the start of operation. The intent is

to operate the project such that flows are not modified, within the limits of what is technologically feasible, and at least 1108 cfs is to be released when available.

4. The applicant has stated that no significant increase in the surface area of the impoundment (290 acres) or the extent of the backwater (nearly 4 miles) will result from the installation of flashboards. According to the applicant, operating records as recent as the 1960's indicate that two-foot flashboards were used historically. The head of the impoundment will be essentially at the tailwater of the McIndoe Falls plant. The estimated impoundment gross storage at the dam crest is 4360 acre-feet.

5. A U.S.G.S. gaging station (#113850) is located downstream at Wells River, Vermont. The drainage area at the gage is 2644 square miles and at the site is 2215 square miles. Flows at both the gage and the site are highly regulated by upstream reservoirs. Based on a direct drainage area proration, the mean annual flow and the 7Q10 value are 3960 cfs and 530 cfs, respectively.

6. Very little survey information on the existing fishery residing in the impoundment is available. It may be expected that both cold and warmwater species including trout and bass would be found.

7. The applicant will construct a fish trapping facility at this site by 1992 as part of the Atlantic salmon restoration program. The applicant will also cost share the trucking operation and provide downstream migrant bypass

facilities as prescribed by the U.S. Fish and Wildlife Service or the Vermont Department of Fish and Wildlife.

8. The Connecticut River has been classified by the Vermont Water Resources Board as Class B from the Dodge Falls dam upstream to the Dalton, New Hampshire bridge, a distance of about 30 miles. From the dam to a point 500 yards downstream, the river is Class C in order to receive treated wastewater from the paper company. The river has been designated as coldwater fish habitat. Such streams have a technical standard for dissolved oxygen (D.O.) of 6 mg/l or 70 percent saturation unless a higher standard is set for salmonid reproduction.

9. The applicant conducted a water quality sampling program which entailed collection of samples on August 25, 1981 from 800 feet upstream of Comerford Dam downstream to a point 1800 feet upstream of the railroad bridge at Wells River. Samples were collected in the afternoon. Stream flow data was not provided. Neither was there any indication as to whether or not the McIndoe Falls plant was operating. The water quality data showed D.O. levels increasing from 7.85 mg/l (86% saturation) for a mid-depth sample just upstream of the Dodge Falls dam to 8.60 mg/l (94% saturation) for a sample taken 600 feet downstream of the dam.

10. The significance of the loss of reaeration at the dam during periods of generation cannot be fully evaluated with the limited water quality data available. Information on the passage of minimum flows from upstream facilities during periods of nongeneration was not provided by the applicant. It is the

Department's understanding that there are presently no minimum flow constraints at the Comerford, Moore or McIndoe Falls facilities.

11. A review of this project by the Vermont Department of Fish and Wildlife did not reveal any concerns with regard to the additional backwater to result from the installation of flashboards. One critical issue in terms of impact on downstream aquatic life, however, is any lag time and interruption in flows between shutdown of the plant and spillage over the flashboards. For example, if the plant shut down with the pool drawn to 6 inches below the top of the flashboards and if the inflow was 443 cfs (0.2 cfs/sq. mi.), it would take about 4.0 hours before spillage, without considering any leakage through the structure. By condition of this certification, the drawdown cycle shall be limited to no greater than 3.0 inches and a minimum stream flow of 7Q10 (530 cfs), or inflow, if less, shall be required until such time that all inflows can spill over the flashboards. Passage of 7Q10 flows for short periods for the purpose of refilling the impoundment should be adequate to maintain downstream aquatic life and meet water quality standards.

12. Strict run-of-river operation (outflow equal to inflow on an instantaneous basis) and maintenance of headpond elevation within 3.0 inches of the top of the dam crest (or flashboards, when in place) will maintain aquatic and fisheries habitat in the impoundment.

13. Project construction physically will be occurring in the State of New Hampshire. Temporary and permanent erosion control measures may be necessary in order to prevent a violation of the turbidity standard (10 nephelometric turbidity units). Authority for the review and approval of the project erosion control plan rests with the State of New Hampshire.

## 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 Dodge Falls plant shall be operated in a strict run-of-the-river mode where instantaneous flows below the tailrace shall be maintained equivalent to instantaneous inflow to the impoundment, except where the project has shut down following a drawdown of up to 3.0 inches. In such case, a continuous flow of 530 cfs shall be maintained below the project until spillage occurs. There shall be no impoundment cycling for generation purposes. The applicant shall submit a complete description, design calculations, and specifications for measures to be used to meet this condition, for the Department's review and approval.

B. The impoundment shall not be drawn down in excess of 3.0 inches below the dam crest for maintenance or operation purposes without the prior written approval of the Department.

C. In the first year of operation, at least once during the month of July and once during the month of August, the applicant shall conduct an intensive around-the-clock sampling program, collecting samples at the head of the Dodge Falls impoundment, just upstream of the dam and directly downstream of the project tailrace. Testing shall be timed to coincide with warm, low flow periods. Testing shall be done by a qualified laboratory, and the results shall include the date, time, both

air and water temperature, D.O. level, river flow and state of operation of the river power plants. Each sample run shall include duplicates. Results of the testing shall be reported to the Department on or before September 15 of the sampling year. The applicant should consult with the Department regarding details of the study, and the Department may require further testing if necessary in assessing the project's impact on downstream water quality. The Department may order mitigative measures, including but not limited to spillage during operation, if a problem is revealed.

D. Prior to construction, the applicant shall file an erosion and sediment control plan with the Department for its information. The plan shall cover temporary and permanent measures to limit adverse impacts on water quality from turbidity and sedimentation with regard to construction activities.

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 for review and approval.

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

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

J. Any desilting operations shall be carried out in accordance with the Agency of Environmental Conservation Desilting Policy, a copy of which is attached.

K. The applicant shall implement a plan for downstream fish passage by 1992, or sooner, if prescribed by the Vermont Department of Fish and Wildlife. The plan shall include provisions to 1) prevent or minimize the passage of fish through 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.

A conceptual plan should be developed in conjunction with the various state and federal fishery agencies prior to project construction. This would insure that the civil works will be technically adaptable for fish passage. The final plan and engineering design must be submitted to the Vermont Department of Fish and Wildlife for review and approval before implementation. For the record, the applicant shall file a copy

of the approved final plan with the Vermont Department of Water Resources and Environmental Engineering within two weeks of the Vermont Department of Fish and Wildlife's actions.

Jonathan Lash

Jonathan Lash, Commissioner
Department of Water Resources
and Environmental Engineering

3/29/86
Date

JRC/vjb
Attachment