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FEDERAL ENERGY
REGULATION

DEPARTMENT OF COMMERCE, LABOR & ENVIRONMENTAL RESOURCES
DIVISION OF ENVIRONMENTAL PROTECTION

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Charleston, WV 25311-1088

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David C. Callaghan
Director
Ann A. Spaner
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February 4, 1994

Mr. Brooks K. Barkwill
Jackson & Kelly
256 Russell Avenue
Post Office Drawer 68
New Martinsville, West Virginia 26155

RE: Willow Island Hydroelectric Project,
FERC Project No. 6902.

Dear Mr. Barkwill:

By letter dated April 10, 1987 (copy attached), the West Virginia Department of Natural Resources issued State Certification pursuant to Section 401 of the Federal Water Pollution Control Act of 1977, as amended, for the Willow Island Locks and Dam Hydroelectric Project, FERC Project No. 6902. This Certification was amended by letter dated July 27, 1990 (copy attached.) The Project's Licensee, the City of New Martinsville, by letter dated August 23, 1990, directed to the Director of the Division of Natural Resources, pursuant to and under the authority of the West Virginia DNR Regulations for State Certification for Activities Requiring Federal Licenses and Permits, 47 CSR 5A, Section 8.1 (effective July 8, 1985), duly and timely appealed said Certification amendment (copy attached).

At the request of the City of New Martinsville, the West Virginia Divisions of Environmental Protection and Natural Resources have considered modifications to the State's Certification amendment which will facilitate project financing and operation of the project during the financing phase. These considerations were made possible by the information developed through the Water Quality Monitoring studies.

1. Licensee shall develop a plan to continuously monitor dissolved oxygen (DO) and water temperature of the Ohio River at the site for a minimum of two (2) June-October periods during construction. DO and temperature shall be measured both upstream and downstream of the dam in order to establish a record indicating the nature of conditions existing prior to construction. The plan shall be approved by

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the West Virginia Division of Environmental Protection (WVDEP) and the West Virginia Division of Natural Resources (WVDNR), and shall include a detailed description of the following:

- A. methods to measure DO and temperature;
- B. monitor locations;
- C. DO and temperature monitoring equipment and measurement frequency; and
- D. a schedule and methodology to validate accuracy of the monitors.

River flow and U.S. Army Corps of Engineers (COE) gate operations should also be recorded on a daily basis. The Licensee shall provide WVDEP with the data and results of the two (2) June-October sampling periods and of subsequent years' studies that may be undertaken at the direction of FERC or WVDEP for the Licensee's use in evaluating DO conditions in the river in the vicinity of the Project.

As river conditions resulted in existing studies generally limited to conditions when DO has been higher than 6.0 mg/l, continued studies to be accomplished during the construction period may provide the information necessary to determine the primary source of DO during periods where DO is less than 6.0 mg/l. Should information indicate that the controlling factor relative to DO is not related to dam passage, the Licensee may request reconsideration of DO requirements stipulated in this Certification amendment. Such request will be evaluated by WVDEP, based on the data provided by the Licensee and other pertinent data as available, and any revisions specified shall be based on the available data.

2. Prior to initiation of operation, the Licensee shall develop an interim operating plan, defining procedures to ensure that Project operation will maintain the DO concentration required by this Certification amendment. The plan shall be developed in coordination with the WVDEP, WVDNR, COE, FERC and Ohio River Valley Water Sanitation Commission (ORSANCO), but is not subject to the approval of agencies other than WVDEP and WVDNR. The plan will include measures to maintain the required DO concentrations using spill flows through the dam, cessation of generation or other mutually agreed methods to improve DO. Corrective action will be the responsibility of the Licensee and will be coordinated concurrently with the WVDEP, ORSANCO, COE and FERC. The

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WVDEP will retain final authority to instruct the Licensee to initiate mitigative measures should the Project operation be in violation of the water quality provisions of this Certification amendment. In the event of an upstream water quality emergency, the Licensee shall cooperate fully with the WVDEP, COE and ORSANCO to implement pollution abatement recommendations related to Project operation, including ceasing generation.

3. The Licensee shall prepare a plan to install permanent, continuous, automated monitoring equipment to measure temperature and DO concentrations for the life of the Project. The plan shall include:
 - A. monitoring methods;
 - B. monitoring locations (upstream and downstream of the Project);
 - C. monitoring equipment and measurement frequency;
 - D. data transmission methods;
 - E. monitoring maintenance and calibration schedule; and
 - F. a schedule and methodology to validate accuracy of the monitors during the June through October period.

Monitors, which shall be installed and operating sixty (60) days prior to initiation of hydrogeneration, shall be compatible with the ORSANCO monitoring network and equipped to electronically relay data to ORSANCO in a timely and reliable manner. The Licensee shall readily provide data to the WVDEP or WVDNR upon request and furnish both WVDEP or WVDNR access to electronically retrieve data from the monitors. Monitoring probes shall be located both upstream and downstream of the lock and dam structure. The upstream probe shall be located so as to provide DO and temperature data of the project intake waters. The downstream probe shall be located so as to provide DO and temperature data representative of the river, not just project discharge. All aspects of the monitoring plan shall be developed in coordination with WVDEP, WVDNR, FERC, COE and ORSANCO, but are not subject to approval of agencies other than WVDEP and WVDNR.

4. Licensee shall evaluate the interim operating plan for a minimum of the initial two (2) years of project operation so as to demonstrate the effectiveness of mitigative measures required by the License and this Certification amendment. Following the completion of the two-year study, the Licensee shall submit to WVDEP, WVDNR,

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FERC, ORSANCO and COE, a comprehensive evaluation of the interim operating plan. The evaluation should include, but not be limited to, conditions in which DO concentrations fell below the critical levels of this Certification amendment; frequency, duration and extent of non-compliance; corrective measures implemented and their effectiveness; and recommended revision to project operation and/or additionalmitigative measures to be employed to meet the requirements of this Certification amendment. The plan shall include clearly-defined criteria and procedures for diverting flow from power generation to bypass through the dam gates and for shutdown of the project. The criterion for diverting flow shall be DO concentrations recorded by the continuous monitors below the values specified in Condition 5 of this revised Certification amendment. The diversion shall be initiated after verifying the validity of the continuous monitoring data in accordance with a water quality emergency response plan approved by WVDEP and FERC. Verification of monitoring data will occur when DO levels are below 6.5 mg/l and falling over a twenty-four (24) hour period. The revised operating plans as approved by WVDEP and WVDNR shall be placed in effect the first day of June in the third year of Project operation. In all cases, the Licensee shall either shut down the plant, spill any necessary portion of river flow through the dam, or take other mutually-agreed measures to improve DO as necessary to meet the requirements of this Certification amendment. As in the case of the interim plan, the revised plan shall include provisions that in the event of an upstream water quality emergency, the Licensee shall cooperate fully with WVDEP, COE and ORSANCO to implement pollution abatement recommendations related to project operation, including ceasing generation.

5. The following criteria shall be used to determine corrective action to mitigate conditions of low DO when such conditions are identified by the Licensee's measurement of DO during project operation:
 - A. Until such time as evaluation of water quality data collected during periods when DO is less than 6.0 mg/l sufficiently indicates no significant contribution of DO from dam passage between DO conditions of 6.0 mg/l and 5.0 mg/l, the Licensee shall be required to modify operations by diverting all flow through the dam when dissolved oxygen is less than 6.0 mg/l for three (3) consecutive twenty-four (24) hour periods. Once all flow has been diverted through the dam as a result of being triggered by the foregoing condition, such flow shall continue until such time as the DO level equals or exceeds 6.0 mg/l for three (3) continuous twenty-four (24)

hour periods. When dissolved oxygen falls below 5.5 mg/l, flow will be diverted immediately.

- B. The spill flow criteria proposed for the project, when dissolved oxygen (DO) is above 6.0 mg/l, are based on DO measurements made during 1991 and 1992, with prevailing river conditions and existing structures and operating programs of the COE at the Willow Island Locks and Dam. These measurements indicate that the dam does not aerate under the conditions studied, which were generally at or near saturation and above 6.0 mg/l. Ongoing water quality data acquisition at the site, which will continue for the life of the project, will add to the knowledge of aeration relationships at navigation dams. There will be additional data on DO uptake from studies at other projects and from government-sponsored studies. Factors which could, in the future, further define aeration potential at the Project are: (1) new data that show significant aeration by the dam during low DO conditions; (2) analysis of existing data that shows significant aeration by the dam; and (3) revision to the dam gate operation or gate configuration by the COE that can be shown to cause significant aeration.

Based on the information available to date, the Licensee will not be required to make releases for water quality enhancement when DO levels are measured to be above 6.0 mg/l. If, however, the ongoing studies provide substantial evidence that there will be no significant aeration through the Willow Island Dam when DO is less than 6.0 mg/l, the Licensee may request a modification and the WVDEP will consider such request to modify the operation rules for the Project to provide for additional generation capability based on available data provided by the Licensee.

- C. If the DO level is in the range between 6.0 mg/l and 6.5 mg/l and rising over a twenty-four (24) hour period, no action will be required. If the DO level is between 6.0 mg/l and 6.5 mg/l and falling over a twenty-four (24) hour period, the Licensee will initiate any monitor verification methods necessary to ensure the accuracy of monitoring data prior to the DO level dropping below 6.0 mg/l.

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- D. Once the permanent finance debt has been retired in full, the provisions of S.A. above will be subject to modification taking into consideration accumulated monitoring data and the State's water quality standards. The modified DO conditions provided for in this Certification amendment are applicable for only one financing period. This Certification amendment is not applicable for any refinancing period or extension of the original financing period. The Licensee shall notify the Division of Environmental Protection of the permanent finance debt term within one (1) year following obtaining that financing.

These water-quality conditions replace those conditions of the July 27, 1990 Certification amendment and shall become effective fifteen days after receipt of this Certification amendment, unless appealed pursuant to Section 8.1 of the WVDEP Regulations for State Certification Requiring Federal Licenses and Permits. All other conditions of the original April 10, 1987 certification remain in force.

Sincerely,

OFFICE OF WATER RESOURCES



Lardley Eli McCoy, Chief

LEM/fps

Enclosures

Copies provided:

Federal Energy Regulatory Commission

U.S. Army Corps of Engineers

U. S. Fish and Wildlife Service

Burgess & Niple, Ltd.

Terradon Corporation

WVDNR-Wildlife Resources Section - Elkins

WVDEP-Office of Water Resources - Charleston, MacArthur