

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Charles B. Curtis, Chairman;
Georgiana Sheldon, and George R. Hall.

Lawrence Hydroelectric Associates) Project No. 2800
and Essex Company) Docket No. ES78-44

ORDER ISSUING MAJOR LICENSE
AND AUTHORIZING NEGOTIATIONS FOR SALE OF SECURITIES

(Issued December 4, 1978)

On June 30, 1977, Lawrence Hydroelectric Associates ("Applicant" or "LHA") filed an application 1/ for a major license for the proposed Lawrence Hydroelectric Project, FERC No. 2800. The project would be located in Lawrence, Massachusetts, on the Merrimack River, a navigable waterway of the United States. 2/

Public Notice

Public notice of the application for Project No. 2800 was given. Eight organizations and governmental bodies filed petitions to intervene. Seven were granted intervention and the eighth petitioner was granted permission to withdraw its request for intervention. The issues and concerns raised by the various intervenors are addressed below.

The Secretary of the Commission requested comments on the application from appropriate federal and state agencies pursuant to Section 4(e) of the Federal Power Act. 3/ Applicant responded to these comments by letters dated June 21 and July 11, 1978. The significant issues raised in the various agency letters and Applicant's responses are also presented below.

1/ This proceeding was commenced before the Federal Power Commission (FPC). By regulation of October 1, 1977 (10 CFR 1000.0), it was transferred to the Federal Energy Regulatory Commission (FERC). In this order, the term "Commission" refers to the FPC for actions or statements that occurred before October 1, 1977; otherwise it refers to the FERC.

2/ Order Issuing License for Project No. 1893 (issued May 5, 1949) found the Merrimack River to be navigable.

3/ 16 U.S.C. 797(e).

Status of Applicant

Applicant, Lawrence Hydroelectric Associates, is a limited partnership organized pursuant to the laws of Massachusetts. LHA consists of a number of individual partners with limited liability and a general partner, the Essex Development Associates (EDA), also a Massachusetts partnership. As proposed in its application, Lawrence Hydroelectric Associates will be responsible for the construction of the project as well as the subsequent generation and sale of electric power.

The Essex Company (Essex), a Massachusetts' corporation, owns the water rights, flowage rights, and easements which are integral to the proposed project. Under the terms of an existing stock option agreement, EDA will acquire control of the Essex Company and make available to LHA all necessary properties and rights.

Given the relationships which exist among LHA, EDA, and Essex, any license for Project No. 2800 should be issued jointly to Lawrence Hydroelectric Associates and the Essex Company. LHA has indicated that it would take the steps necessary to make the Essex Company accept a joint license, if the Commission desires. Accordingly, we issue a joint license to LHA and Essex, effective for a period of 50 years, beginning December 1, 1978, and terminating November 30, 2028.

Project Description

The Lawrence Hydroelectric Project will provide 14.8 megawatts of capacity and an average annual generation of 91,100 megawatt hours. 4/ The project will consist of an existing dam, reservoir, and canal works plus a new powerhouse. The existing dam (known as the Great Stone Dam), the North Canal, and gatehouse were built between 1845 and 1848. In 1866 the South Canal and its gates were constructed and in 1896 the South Canal was expanded.

Safety

The Great Stone Dam has been analyzed for stability and found to be safe for loading conditions under maximum

4/ This hydroelectric energy production will be based primarily on a run-of-the-river operation and will save the equivalent of approximately 149,600 barrels of oil or 42,000 tons of coal per year.

flood flows, normal reservoir elevation with ice, and normal reservoir elevation with earthquake. Our staff has also inspected the existing portions of the project and found them to be in satisfactory condition. Applicant filed on March 2, 1978, an engineering consultant's field inspection and office report which found the dam to be sound and capable of continued use. The consultant suggested that additional subsurface explorations be made during excavation for the new powerhouse to ensure that the dam is founded on competent rock and to verify that there has been no undercutting at the contact of the dam with the foundation bedrock. Special Article 37 has been inserted in the license to require Licensees to make additional investigations by subsurface explorations during excavations for the powerhouse. If there is a need for remedial work, Article 37 also requires Licensees to submit a plan and schedule for such work to the Director of the Office of Electric Power Regulation.

Transmission Facilities

The electrical equipment associated with the turbine-generator units will be located in the powerhouse structure. No substations or switchyards will be constructed. Energy produced by the Lawrence Hydroelectric Project will travel approximately 2,500 feet via a 13.8 kV overhead power line to the existing Lawrence substation No. 1 of the Massachusetts Electric Company. The energy will then flow into the interconnected system of the New England Power Company. Thus, the transmission facilities to be included as part of Project No. 2800 consist of one 13.8 kV line approximately 2,500 feet long and appurtenant facilities to connect to the existing substation.

Fish and Wildlife

The National Marine Fisheries Service (NMFS) of the Department of Commerce, the Fish and Wildlife Service (FWS) of the Department of the Interior, the Office of the Secretary of the Department of the Interior (Interior), and the Division of Fisheries and Game of the Commonwealth of Massachusetts commented on the possible effects of the proposed project on fish and wildlife resources.

Interior noted that "[t]errestrial wildlife resources will not be affected by project construction or operation due to the fact that the project is located in an urban industrial area."

With regard to fisheries, Interior noted that Applicant had consulted with the Policy and Technical Committees for Anadromous Fishery Management of the Merrimack River. As a result, Applicant's proposal for fish passage and related facilities incorporated the comments and plans of the Massachusetts Division of Marine Fisheries, Massachusetts Division of Fisheries and Game, the New Hampshire Fish and Game Department, NMFS, and FWS.

NMFS expressed concern with respect to the protection and safety of adult shortnose sturgeon during downstream migration. Applicant met with officials from NMFS and provided that agency with sufficient information to demonstrate that adequate safeguards are incorporated in the project design. NMFS subsequently reported that, based on the additional information, it now concludes that the project will not have an adverse effect on any population of shortnosed sturgeon in the Merrimack River.

The FWS and the Massachusetts Division of Fisheries and Game both stated that no significant adverse impacts on fish species are expected from the construction or operation of Project No. 2800.

On January 27, 1978, Applicant filed an Exhibit S which incorporated the comments of the aforementioned agencies and which generally conforms to this Commission's Rules and Regulations. The Exhibit S, however, contains conceptual plans, and not functional design drawings for fish passage facilities. Therefore, the Exhibit S is approved only to the extent that it proposes measures to conserve and enhance fishery resources affected by the project and conceptual plans for fishways. Special Article 30 has been included in the license to require Licensees to file functional design drawings for fish passage facilities to be constructed at the project and to file "as-built" drawings following construction of the facilities.

Articles 15 and 16, 31 and 33 of the license for the Lawrence Hydroelectric Project also relate to fish and fish passage facilities. Articles 15 and 16 provide for the installation of additional fish passage facilities should they become necessary. Special Article 31 requires Licensees

to conduct operational studies and to file a final report to the Commission on the effectiveness of the proposed fish ladder. Special Article 33 provides for monitoring of the fish passage facilities for determining the presence of threatened or endangered species, and implementing any measures necessary to protect and conserve such species.

Navigation

The U.S. Army Corps of Engineers (Corps) reported that the proposed Lawrence Hydroelectric Project will not be in conflict with any existing or anticipated Corps projects; that it will have no effect on the navigability of the Merrimack River; and that the plans of the structures for Project No. 2800 are approved in accordance with the provisions of Section 4(e) of the Federal Power Act. 5/

Water Quality and Minimum Flow

Interior reported that "[t]here is a need for determining instantaneous minimum flow requirements at this and other upstream dams." Interior added that until the upstream minimum flows are determined, a minimum release of 400 cfs should be required from the Lawrence Project. Once minimum releases are set for upstream dams, Interior recommended increasing Project No. 2800's minimum flow from 400 cfs to 890 cfs.

The Massachusetts Division of Water Pollution Control (MDWPC) commented on the effect of the proposed project on the water quality of the Merrimack River. MDWPC stated in its letter of July 5, 1978, that "the Division was concerned lest the regimen of the river would be so changed through the operation of the proposed facility that the Class B standard would be violated." MDWPC determined that a minimum of 951 cfs should be released from the Great Stone Dam to maintain the "B" classification for the Merrimack River. MDWPC then issued, in accordance with the Federal Water Pollution Control Act, 6/ a Water Quality Certificate. The certificate subjects the project to a minimum release of 951 cfs unless and until the reservoir water surface elevation is drawn below the crest of the dam; thereupon the required minimum release would be equal to inflow.

5/ We are not including a special article requiring the licensee to comply with the Federal Water Pollution Control Act Amendments of 1972, §404, because it would be superfluous.

6/ See Section 401 of the Federal Water Pollution Control Act Amendments of 1972.

Applicant noted in response that the ability to maintain minimum releases from the Great Stone Dam in excess of those recommended by Interior had been demonstrated to FWS and the Policy Committee for Anadromous Fishery Management of the Merrimack River. In reference to the minimum releases required by the Water Quality Certificate, Applicant stated that the project will be operated in a manner that will not cause a violation of applicable water quality standards.

Article 32 of the license requires Licensees to maintain a continuous minimum flow of 951 cfs unless and until the reservoir water surface elevation is drawn below the crest of the dam; thereupon the minimum release must equal inflow.

Recreation

Project No. 2800 will be located in a highly industrial area bounded by numerous light industries such as shoe and electronics manufacturers. ^{7/} The industrial nature of the area limits recreational development at the Lawrence Project. Notwithstanding this limitation, Applicant submitted an Exhibit R recreation plan which will allow public access and enjoyment of the historical aspects of the project area as well as the new power generating facility. In its Exhibit R, Applicant proposes to provide a parking area, sanitary facilities, access walkways to fish viewing facilities, picnic tables, and trash receptacles. Applicant also proposes to provide a multi-media slide/tape presentation on hydroelectric generation, the functioning of the fish passage facilities, and the history of the Great Stone Dam.

In these circumstances we conclude that the Exhibit R is adequate and should be approved.

Cultural Resources

The Great Stone Dam and the North Canal, two structures listed in the National Register of Historic Places, are part of the Lawrence Hydroelectric Project. The South Canal and its associated gatehouse structure are eligible, as determined by the Secretary of the Interior, for inclusion in the National Register. These cultural resources will not be adversely affected by the redevelopment and operation of hydroelectric facilities for Project No. 2800.

^{7/} These light industries occupy buildings that once housed the textile mills for which the Great Stone Dam and canal system was constructed. At the turn of the century, the Lawrence textile center was the largest in the world.

Pursuant to the National Historic Preservation Act of 1966, ^{8/} the Commission's Staff, in conjunction with the Massachusetts Historical Commission, determined that Project No. 2800 would not adversely affect the historical structures. The Massachusetts State Historical Preservation Officer concurred in the "no adverse determination" report and suggested that the Advisory Council on Historic Preservation (Advisory Council) be notified. By letter dated August 21, 1978, the Advisory Council reported that it does not object to the no adverse determination report and that the project may proceed.

Environmental Impacts

Redevelopment and operation of the Lawrence Hydroelectric Project will not significantly affect the human environment. The major project works - the dam, reservoir, and canal system - have been in existence for more than a century. Construction of the new powerhouse could cause some temporary turbidity of the river near the work site; this impact, however, will be short term and minor in nature. The project will be operated in a manner that duplicates the historical operation of the dam and canals. The operating procedures will permit the continuation of traditional uses of the river and adjacent lands. For the above reasons, approval of the application for major license for the Lawrence Hydroelectric Project does not constitute a major Federal action significantly affecting the quality of the human environment.

Exhibits

As part of its application for major license, Applicant filed exhibits F, J, K, L, M, R, and S. As previously discussed, the Exhibit R is approved and the Exhibit S is approved only to the extent that it proposes measures to conserve and enhance fishery resources affected by the project and shows conceptual fishway plans. The Exhibit J, which is a general map of the entire project area, complies with the Commission's regulations and is also approved.

Exhibits F, K, L, and M are incomplete. The Exhibit K does not define the project boundary line by a contour or a survey as required by our regulations. In addition, the Exhibit K does not indicate the owners of land adjacent to the project boundary. The Exhibit F does not fully

^{8/} 16 U.S.C. 470f, as amended, 90 Stat. 1320.

describe lands owned by Applicant or to be used as part of the project. Article 36 requires Licensees to file revised Exhibits L and M showing final designs and locations of project works prior to construction. Article 41 requires Licensees to file revised Exhibits F and K within three years from the date of issuance of this order.

Intervenors Comments

The Andover Village Improvement Society (AVIS), Massachusetts Municipal Wholesale Electric Company (MMWEC), Merrimack Valley Building Trades Council, New England Power Company (NEPCO), the Town of Andover, Massachusetts, the Town of Methuen, Massachusetts, and Mayor L. P. LeFebvre on behalf of the City of Lawrence, Massachusetts have been permitted to intervene in this proceeding. 9/ AVIS, the Town of Methuen, the Town of Andover, and the City of Lawrence all own or lease lands adjacent to the project. These intervenors are concerned with the possible impacts the hydroelectric facility may have upon the public's use and enjoyment of those lands. The municipalities also draw water for public consumption from the Merrimack River and they are concerned with potential impacts on the public water supplies. According to the petitions, AVIS and the municipalities have intervened in order to ensure that the Lawrence Hydroelectric Project will be operated in a manner which duplicates the historical operation of the dam and canals of the Essex Company. AVIS and the municipalities have each requested that a special article be included in the license to restrict Licensees' ability to alter the project's mode of operation. Except for emergencies, the operation of the Lawrence Hydroelectric Project would be carried out pursuant to Article 32 of this license. We would approve a change only after public notice and an opportunity for hearing. We believe that these procedures are adequate to protect the concerns of AVIS and the municipalities and, therefore, the suggested articles have not been inserted in the license. We further note that Article 13 of this license provides for the joint use of the project reservoir or other facilities by municipalities, industrial concerns, and others.

9/ Merrimac Paper Company and Aquamac Corporation filed a joint petition to intervene, but were permitted to withdraw that petition.

Intervenor New England Power Company had been in negotiations with Applicant concerning the purchase of electricity from Project No. 2800. In its petition, NEPCO alleged that the terms and conditions of any license obtained by Applicant may have an effect on the availability, reliability, and cost of power from the Lawrence Hydroelectric Project. Intervenor Massachusetts Municipal Wholesale Electric Company stated in its petition that it, too, had been negotiating the acquisition and use of the output of Project No. 2800. On October 27, 1978, Applicant filed with the Commission copies of a power contract dated October 25, 1978, between Lawrence Hydroelectric Associates and New England Power Company. That filing eliminates the issues and interests asserted in the petitions filed by NEPCO and MMWEC.

The final intervenor in the proceedings concerning the application for the Lawrence Hydroelectric Project is the Merrimack Valley Building Trades Council (Council). The Council intervened to show its support for the project and to request that a license be promptly issued to Applicant.

Economic Feasibility

The Commission's staff has estimated the annual cost of hydroelectric energy to be produced at Project No. 2800. Based on estimated costs in 1981, the year the project becomes operational, the total project cost would be \$23,413,000. Using a 50 year amortization period, the total estimated annual cost of energy produced at the Lawrence Hydroelectric Project would be \$4,274,000 which is equivalent to 46.9 mills per kWh. This estimated annual cost figure assumes that assets and mill powers owned by the Essex Company are not capitalized but carried as part of the annual variable charges.

On October 27, 1978, Applicant filed copies of a power contract between LHA and New England Power Company. Under the terms of the contract, NEPCO will make monthly payments sufficient to cover LHA's debt service obligations and to pay the cost of operating and maintaining the project during the term of the license. Accordingly, we find the proposed project economically and financially feasible. 10/

10/ This finding should not be construed as prejudging any Commission rate review that may be required in the future under Parts I or II of the Federal Power Act.

Issuance of Securities

On June 1, 1978, LHA, Applicant in Docket No. ES78-44, filed a petition with the Federal Energy Regulatory Commission seeking a declaratory order disclaiming jurisdiction pursuant to Section 204 (16 USC 824c(a) and 20 (16 USC 813) of the Federal Power Act and Part 34 of the Commission's Regulations under the Federal Power Act (18 CFR Part 34), requiring prior Commission authorization for the issuance of securities to finance the project. Alternatively, the Applicant requested Commission authorization to engage in negotiations for the sale or underwriting of securities pursuant to Section 34.2(f)(2) of the Commission's Regulations (18 CFR 34.2(f)(2)).

On November 20, 1978, LHA renewed its petition for a declaratory order disclaiming Commission jurisdiction over the issuance of securities to finance the project.

Sections 34.1a(a)(4) and 34.2(f)(2) of the Commission's Regulations under the Federal Power Act (18 CFR 34.1a(a)(4) and 34.2(f)(2)) require Commission authorization for the negotiation for the sale or underwriting of securities. Section 34.1 of the Commission's Regulations (18 CFR 34.1) applies the requirement of prior Commission authorization for the sale or underwriting of securities to "...licensees and others seeking authority under Section 19 and 20 of the Federal Power Act...in accordance with Part 20 11/ of the subchapter..." and to "... public utilities seeking under Section 204 of the Federal Power Act."

Applicant, becoming a licensee by issuance of this order, is required to file an application for the issuance of securities pursuant to Section 204 of the Federal Power Act.

11/ Section 20.2 of the Commission's Regulations (18 CFR 20.2) states that licensee or other person issuing or proposing to issue securities shall comply with the same requirements as the Commission would administer to it as if it were a public utility issuing securities pursuant to Section 204 of the Federal Power Act.

LHA's alternative request for Commission authorization to engage in negotiation for the issuance of securities states that the proposed financing would require complex arrangements with the equipment supplier, the general contractor and the sources of debt and equity funds. Applicant further states that this project is its first venture and believes that financing could not be arranged other than on a negotiated basis and therefore requests that the Commission exempt it from the competitive bidding requirements of Part 34 of the Commission's Regulations.

Upon good cause shown the Commission has determined that the LHA should not be precluded by the second clause of Section 34.2(f)(2) or the next to the last sentence of Section 34.1(a)(4) of the Commission's Regulations under the Federal Power Act from applying for and obtaining an order of the Commission exempting the proposed underwriting and sale of securities from the competitive bidding requirements of Part 34 of the Commission's Regulations. Therefore, LHA is hereby authorized, pursuant to its request, to engage in negotiations for the sale of securities subject to the following:

- (1) Licensees will be required to file a separate application requesting Commission approval for the issuance of securities pursuant to final negotiated terms;
- (2) The authorization granted by this order is solely for the purpose of engaging in negotiations and shall have no other or further effect, and shall be without prejudice to the consideration on the merits of any application which may be filed; and
- (3) The provisions hereof shall not be construed as dispensing with the necessity for full compliance with any of the applicable requirements of the Securities Act of 1933, the Securities Exchange Act of 1934, or any order, rule or regulation thereunder.

Comprehensive Development

The Great Stone Dam is situated within the Merrimack River Basin which has a drainage area of 5,015 square miles of which 4,460 lie above the dam. The average flow of the river in the vicinity of the Great Stone Dam is 7,430 cfs varying from an approximate average of 2,300 cfs in September to about 17,200 cfs in April. Applicant proposes to install two, high efficiency, bulb type turbine generator units each rated at 7,400 kw.

The Lawrence Hydroelectric Project would reasonably develop the usable head at the project site. Located about 11 miles upstream of the Great Stone Dam is the Pawtuckett Dam, FERC No. 2790. Between the two dams the land on both sides of the Merrimack River is heavily developed by commercial and industrial concerns. In this stretch of the river there is approximately 10 feet of undeveloped head. Increasing the height of the Great Stone Dam, and thereby flooding additional land in order to develop that 10 feet of head would not be economically feasible. Accordingly, we conclude that the project as conditioned in this order is best adapted to a comprehensive plan of development of the waterway.

The Commission orders:

(A) This license is issued under Section 4(e) of the Federal Power Act to Lawrence Hydroelectric Associates and the Essex Company of Lawrence, Massachusetts, effective December 1, 1978, and terminating November 30, 2028, for the construction, operation, and maintenance of the Lawrence Hydroelectric Project No. 2800, located on the Merrimack River, a navigable waterway of the United States, subject to the terms and conditions of the Act, which is incorporated by reference as part of this license, and subject to such rules and regulations as the Commission issues or prescribes under the provisions of the Act.

(B) Project No. 2800 consists of: (i) all lands, to the extent of the Licensees' interest in those lands, constituting the project area and enclosed by the project boundary, the project area and boundary being shown and described by certain exhibits which form part of the application for license and are designated and described as:

<u>Exhibit</u>	FERC Drawing No. 2800	<u>Titled</u>
J-1	1	General Map of the Project Project Area
K-1	2	Detail Map of the Project Area
K-2	3	"
K-3	4	"
K-4	5	"
K-5	6	"
K-6	7	"

(ii) Project works consisting of: (1) the existing 33-foot high and 900-foot-long dam of rubble masonry construction; (2) an existing 9.8-mile-long reservoir having a surface area of 655 acres at normal high water elevation 44.17 msl and a maximum storage capacity of approximately 19,900 acre-feet; (3) the existing South Canal approximately 35 feet wide and 10 feet deep, originating at the south abutment of the Essex Dam and generally paralleling the Merrimack River bed, below the Essex Dam, for a distance of approximately 2,750 feet; (4) the existing North Canal, approximately 95 feet wide and 15 feet deep, originating at the north abutment of the dam and paralleling the Merrimack River below the dam for a distance of approximately 5,300 feet; (5) a fish elevator installed at the dam and a fish ladder; (6) a powerhouse containing two 7.4 MW hydroelectric generating units and a tailrace channel extending into the Merrimack River Channel; (7) a single-circuit overhead 13.8-kV powerline to the Massachusetts Electric Company's Lawrence No. 1 substation; and (8) appurtenant facilities which are generally shown and described by the previously mentioned exhibits and specifically described by the following exhibits:

<u>Exhibit</u>	FERC Drawing No. 2800	<u>Titled</u>
L-1	8	Powerhouse Plan
L-2	9	Powerhouse and Section Details
L-3	10	Existing Essex Dam Plan- Profile Section
L-4	11	Existing Canals-North
L-5	12	Canal, Wasteway Plans and Sections

Exhibit M

Entitled, "Description of Major Equipment", consisting of 12 typewritten pages filed January 27, 1978.

Exhibit R

Filed June 30, 1977, and as supplemented on November 15, 1977, and January 27, 1978, consisting of: (1) 7 pages of text; (2) 5 pages of photographs; (3) Plate 1; (4) Exhibit R Map, Sheet 1, entitled "Recreation Plan Extended Project Area", (FERC No. 2800-13), and Exhibit R Drawing, Sheet 2, entitled "Recreation Plan Immediate Project Area", (FERC No. 2800-14); and (5) Appendix 1.

Exhibit S

Filed June 30, 1977, consisting of: (1) 5 pages of text; (2) 1 page of photographs; (3) 2 tables; and (4) 2 drawings, entitled "Conceptual Plan of Proposed Fish Elevator System at Lawrence Hydro Plant", (Plate 1) and "Schematic Elevation Fish Elevator or Fish Lift System", (Plate 2).

(iii) All of the structures, fixtures, equipment, facilities or property which may be employed in connection with the project, located on or off the project area, as approved by the Commission, and all riparian or other rights, which are necessary or appropriate for the maintenance or operation of the project.

(C) Exhibits K, L, and M, designated and described in Paragraph (B) above, are hereby approved and made a part of the license only to the extent that they show the general location and layout of the project. Exhibit S, also designated and described in Paragraph (A), is also approved and made a part of the license only to the extent that it proposes measures to conserve and enhance fishery resources affected by the project and conceptual plans for fishways.

(D) Exhibits J and R designated and described in Paragraph (B) above, are hereby approved and made a part of the license.

(E) This license is also subject to the terms and conditions set forth in FERC Form L-4 (revised October 1975) entitled "Terms and Conditions of License for Unconstructed Major Projects Affecting Navigable Waters of the United

States." These terms, designated as Articles 1 through 28, are made a part of the license. This license is also subject to the following special conditions set forth as additional articles:

ARTICLE 29: Licensees shall continue to cooperate with the Massachusetts Historical Commission in order to avoid any adverse impact on identified historic structures at the project. In addition, if any previously unrecorded archeological resources are discovered during the course of construction, construction activity shall be halted, a qualified archeologist shall be consulted to determine the significance of the resources, and the Licensees shall consult with the Massachusetts Historical Commission and the State Archeologist to develop a mitigation plan for the protection of significant archeological resources. Licensees shall provide funds in a reasonable amount for any salvage activities which may be necessary. If at any point the Licensee and the Executive Director of the Massachusetts Historical Commission (State Historic Preservation Officer) cannot agree on the amount of money to be expended on archeological work at the project, the Commission reserves the right, after notice and opportunity for hearing, to require the Licensees to conduct at their own expense such archeological work as may be found necessary.

ARTICLE 30: Licensees shall, within two years after the date of issuance of this license, file, for Commission approval, a revised Exhibit S developed in cooperation with the U. S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Massachusetts Division of Fisheries and Game. The revised Exhibit S shall include, but not be limited to, functional design drawings of the fish lift and passage facilities to be constructed at the project, a construction schedule, and cost estimates for the facilities. Within six months from the date of completion of construction of the fish passage facilities, Licensee shall file with the Commission "as built" drawings.

ARTICLE 31: Licensees shall, within two years following completion of construction of the fish passage facilities, in cooperation with the U. S. Fish and Wildlife Service, National Marine Fisheries Service, and the Massachusetts Division of Fisheries and Game, conduct or pay for others to conduct an operational study to determine the effectiveness of the fish passage facilities in assisting the migration of anadromous fish. A final report containing the results of the study, together with recommendations of any need for further studies or for changes in operation of fish passage

facilities, shall be filed with the Commission within six months following completion of the study. The Commission reserves the right, after notice and opportunity for hearing, to require additional studies and require such reasonable changes in the project's fish passage facilities and operations as may be found necessary to maintain fish migration.

ARTICLE 32: Licensees shall maintain a continuous minimum flow of 951 cfs unless and until the reservoir water surface elevation is reduced below the crest of the dam; thereupon the minimum flow shall equal the inflow to the reservoir. The release of minimum flows from the reservoir shall be made at locations determined in cooperation with the U. S. Fish and Wildlife Service, the National Marine Fisheries Service, and the Commonwealth of Massachusetts. A report developed in consultation and cooperation with these agencies, indicating the location and quantities to be released from project outlet works, shall be filed with the Commission within one year from the date of issuance of this order. Such established flows may be modified temporarily if required by operating emergencies and other emergencies beyond the control of the Licensees; and for short periods of time in the interest of recreation and protection of the fisheries resource, upon mutual agreement between the Licensees and the Massachusetts Division of Fisheries and Game.

These flow requirements may be altered by further order of the Commission, upon its own motion, or upon the recommendations of the Commonwealth of Massachusetts or the Secretary of the Interior, after notice and opportunity for hearing.

ARTICLE 33: Licensees shall, in cooperation with the U. S. Fish and Wildlife Service, the National Marine Fisheries Service and the Massachusetts Division of Fisheries and Game, monitor or arrange for the monitoring of the fish lift and passage facilities when in operation, for the purpose of determining the presence of threatened or endangered fish species such as the shortnose sturgeon, and, if any are found, Licensees shall implement measures to protect and conserve any such species that may pass through the project works. A monitoring plan shall be submitted to the Commission within one year after the initial operation of the project.

ARTICLE 34: Licensees shall, to the satisfaction of the Commission's authorized representative, install and operate

any signs, lights, sirens, or other safety devices that may reasonably be needed to warn the public of fluctuations in flow from the project and protect the public in its recreational use of project lands and waters.

ARTICLE 35: In the interest of protecting and enhancing the scenic, recreational, and other environmental values of the project, Licensees: (1) shall supervise and control the use and occupancy of project lands and waters; (2) shall prohibit, without further Commission approval, the further use and occupancy of project lands and waters other than as specifically authorized by this license; (3) may authorize, without further Commission approval, the use and occupancy of project lands and waters for landscape plantings and the construction, operation, maintenance of access roads, power and telephone distribution lines, piers, landings, boat docks, or similar structures and facilities, and embankments, bulkheads, retaining walls, or other similar structures for erosion control to protect the existing shoreline; (4) shall require, where feasible and desirable, the multiple use and occupancy of facilities for access to project lands and waters; and (5) shall ensure to the satisfaction of the Commission's authorized representative that all authorized uses and occupancies of project lands and waters: (a) are consistent with shoreline aesthetic values, (b) are maintained in a good state of repair, and (c) comply with State and local health and safety regulations. Under item (3) of this Article, Licensees may, among other things, institute a program for issuing permits to a reasonable extent for the authorized types of use and occupancy of project lands and waters. Under appropriate circumstances, permits may be subject to the payment of a fee in a reasonable amount. Before authorizing construction of bulkheads or retaining walls, Licensees shall: (a) inspect the site of the proposed construction, (b) determine that the proposed construction is needed, and (c) consider whether the planting of vegetation or the use of riprap would be adequate to control erosion at the site. If an authorized use or occupancy fails to comply with the conditions of this Article, or with any reasonable conditions imposed by the Licensees for the protection of the environmental quality of project lands and waters, Licensees shall take appropriate action to correct the violations, including, if necessary, cancellation of the authorization and removal of any noncomplying structures or facilities. Licensees' consent to an authorized use or occupancy of project lands and waters shall not, without their express agreement, place upon the Licensees any obligation to construct or maintain any associated facilities. Within

one year of issuance of this license, Licensees shall furnish a copy of their guidelines and procedures used to implement the provisions of this Article to the Commission's authorized representative and its Director, Office of Electric Power Regulation. Whenever Licensees make any modifications to those guidelines and procedures, they shall promptly furnish a copy to each of those persons. The Commission reserves the right to require modifications to these guidelines and procedures.

ARTICLE 36: Licensees shall file, for Commission approval, revised Exhibit L drawings and an Exhibit M showing final designs and locations of project works. Licensees shall not begin construction of any such project structures until the Director, Office of Electric Power Regulation, has approved the Exhibit L drawings.

ARTICLE 37: Licensees shall, within one year from the date of issuance of this license, make additional investigations by subsurface explorations during the excavations for the powerhouse, to ensure that the dam is founded on competent rock and to verify that there has been no undercutting at the contact of the dam with the foundation bedrock. A final report containing the results of the investigation, together with a recommendation of any need for further studies or for remedial work, shall be filed with the Commission within six months following completion of the investigation. If the investigation shows a need for remedial work, Licensees shall submit as part of the final report a plan and schedule for such work for approval by the Director, Office of Electric Power Regulation.

ARTICLE 38: Pursuant to Section 10(d) of the Act, after the first 20 years of operation of the project under the license, the rate as computed below shall be the specified rate of return on the net investment in the project for determining surplus earnings of the project for the establishment and maintenance of amortization reserves. One-half of the project surplus earnings, if any, accumulated after the first 20 years of operation under the license, in excess of the specified rate of return per annum on the net investment, shall be set aside in a project amortization reserve account as of the end of each fiscal year: Provided, that, if and to the extent that there is a deficiency of project earnings below the specified rate of return per annum for any fiscal year or years after the first 20 years of operation under the license, the amount of any surplus earnings accumulated thereafter until absorbed, and one-half of the remaining surplus earnings, if any, thus cumulatively computed, shall be set aside in the project amortization

reserve account; and the amounts thus established in the project amortization reserve account shall be maintained until further order of the Commission.

The annual specified reasonable rate of return shall be the sum of the weighted cost components of long-term debt, preferred stock, and the cost of common equity, as defined herein. The weighted cost component for each element of the reasonable rate of return is the product of its capital ratios and cost rate. The current capital ratios for each of the above elements of the rate of return shall be calculated annually based on an average of 13 monthly balances of amounts properly includable in the Licensee's long-term debt and proprietary capital accounts as listed in the Commission's Uniform System of Accounts. The cost rates for such ratios shall be the weighted average cost of long-term debt and preferred stock for the year, and the cost of common equity shall be the interest rate on 10-year government bonds (reported as the Treasury Department's 10-year constant maturity series) computed on the monthly average for the year in question plus four percentage points (400 basis points).

Article 39: The Licensees shall pay the United States the following annual charge, effective as of the first day of the month in which this license is issued for the purpose of reimbursing the United States for the cost of administration of Part I of the Act: a reasonable annual charge as determined by the Commission in accordance with the provisions of its regulations, in effect from time to time. The authorized installed capacity for such purposes is 19,700 horsepower.

Article 40. Licensees shall file with the Commission within one year from the date of issuance of this order, implement, and modify when appropriate, an emergency action plan designed to provide an early warning to upstream and downstream inhabitants and property owners if there should be an impending or actual sudden release of water caused by an accident to, or failure of, project works. That plan shall include: instructions to be provided on a continuing basis to operators and attendants for actions they are to take in the event of an emergency; detailed and documented plans for notifying law enforcement agents, appropriate Federal, State, and local agencies, operators of water-related facilities, and those residents and owners of properties that could be endangered; actions that would be taken to reduce the inflow to the reservoir, if possible, by limiting the outflow from upstream dams

or control structures; and actions to reduce downstream flows by controlling the outflow from dams located on tributaries to the stream on which the project is located. Licensee shall also submit a summary of the study used as a basis for determining the areas that may be affected by an emergency, including criteria and assumptions used. Licensee shall monitor any changes in upstream or downstream conditions which may influence possible flows or affect areas susceptible to damage, and shall promptly make and file with the Commission appropriate changes in the emergency action plan. The Commission reserves the right to require modifications to the plan.

Article 41: The Licensees shall, within three years following the date of issuance of the license, file a revised Exhibit F and, for Commission approval, an Exhibit K to show the project as finally constructed and located pursuant to the Commission's regulations.

Article 42: The Licensees shall commence construction of the project within one year of the date of issuance of the license, and shall thereafter in good faith and with due diligence prosecute and complete construction of the project works within four years of the date of issuance.

(F) Licensees are authorized to engage in negotiations for the sale of securities subject to the following:

- (1) Licensees are required to file a separate application requesting Commission approval for the issuance of securities pursuant to final negotiated terms;
- (2) The authorization granted by this order is solely for the purpose of engaging in negotiations and shall have no other or further effect, and shall be without prejudice to the consideration on the merits of any application which may be filed; and
- (3) The provisions hereof shall not be construed as dispensing with the necessity for full compliance with any of the applicable requirements of the Securities Act of 1933, the Securities Exchange Act of 1934, or any order, rule or regulation thereunder.

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(G) This order shall become final 30 days from the date of its issuance unless application for rehearing shall be filed as provided in Section 313(a) of the Act, and failure to file such an application shall constitute acceptance of the license for Project No. 2800. In acknowledgment of this acceptance of the license and its terms and conditions, the license shall be signed for the Licensees and returned to the Commission within 60 days from the date of issuance of this order.

By the Commission.

(S E A L)



Handwritten signature of Lois D. Cashell in cursive script.

Lois D. Cashell,
Acting Secretary.